



Travaux publics et
Services gouvernementaux
Canada

Public Works and
Government Services
Canada

REPAIR OF LIGHTING SYSTEM LA ROMAINE WHARF

SPECIFICATIONS

V/REF: R.088251.001

N/D: 6198



REPAIR OF LIGHTING SYSTEM - LA ROMAINE WHARF

SPECIFICATIONS

V/REF: R.088251.001

N/D: 6198

MODIFICATION TRACKING			
Number	Revision	By	Date
0	For submission	Claude Mercier, eng.	2018-08-09
A	For submission	Claude Mercier, eng.	2018-08-28

PREPARED BY:

Claude Mercier, eng.
Groupe-conseil TDA

q.v.:  _____

Section number	Section title	No. of pages
01 11 01	Work related general information	3
01 14 00	Work restrictions	2
01 29 00	Payment procedures	1
01 33 00	Submittal procedures	5
01 35 29.06	Health and safety requirements	11
01 35 43	Environmental procedures	3
01 45 00	Quality control	3
01 56 00	Temporary barriers and enclosures	2
01 74 11	Cleaning	2
01 77 00	Closeout procedures	2
02 41 99	Demolition for minor works	2
26 05 00	Common work results for electrical	5
26 05 20	Wire and box connectors (0-1000 V)	3
26 05 21	Wires and cables (0-1000 V)	2
26 05 34	Conduits, conduit fastenings and conduit fittings	3
26 05 43.01	Installation of cables in trenches and in ducts	3
26 09 23.02	Lighting control devices – Photoelectric	2
26 56 19	Roadway lighting	2

1 GENERAL**1.1 WORK SEQUENCE**

- .1 Construct Work in stages to accommodate the Departmental Representative's use of premises during construction.
- .2 Co-ordinate Progress Schedule and co-ordinate with the Departmental Representative Occupancy during construction.
- .3 Construct Work in stages to provide for continuous public usage. Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.
- .4 Maintain fire access/control.
- .5 The Department's representative is David Lesage (Phone: 418-649-2790, E-Mail: david.lesage@tpsgc.pwgsc.gouv.ca).

1.2 CONTRACTOR USE OF PREMISES

- .1 Overall, the Contractor shall plan and coordinate its work in such a way to allow the continuity of operation on the installation (all the federal wharf).
- .2 Regularly communicate with the harbor director (418-796-4296) to be informed of expected traffic affected by the works.
- .3 The company Relais Nordik operates the ship "Bella-Desgagnés" which comes to the wharf twice a week, which is Wednesday at night and Saturday in the afternoon. This schedule may vary depending on weather conditions and the Contractor must follow the boat's journey on the website:

<http://position.desgagnes.com/rni.asp>
- .4 In addition to the Bella-Desgagnés, an oil tanker is scheduled for November 2018. There are also opportunities for barges to come to the wharf.
- .5 The Transport Canada warehouse is fully leased to Relais Nordik for the storage of merchandise and for the Bella-Desgagnés office and waiting rooms. For the work in the warehouse, the Contractor must coordinate with Mr. Jean Fortin, director of operations of Relais Nordik:
Phone: 418-723-8787, extension 4225
E-Mail: jean.fortin@relais.nordik.desgagnes.com
- .6 The Contractor must ensure continuity of service and not adversely affect port operations.

- .7 Request of current regulations in public harbors.
- .8 Comply with signalling and access control on site.
- .9 Find additional storage space required to the execution of work under this agreement and assume all charges.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS

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

1.4 REQUIRED DOCUMENTS

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 Other documents as specified.

2 PRODUCTS

2.1 NOT USED

- .1 Not Used.

3 EXECUTION**3.1 HARBOR DUES EXEMPTION FOR CONTRACTOR**

- .1 During the contract period and exclusively within the frame work or the current construction works, the Contractor will be exempt of all public harbor and public harbor installation dues from Transport Canada, which are storage (site determined by government representative), harbor.

1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 ACCESS AND EGRESS

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

1.3 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Closures: protect work temporarily until permanent enclosures are completed.

1.4 EXISTING SERVICES

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Provide for pedestrian and vehicular traffic.
- .3 Build protective barriers around light poles during lighting changes, to avoid traffic below.

1.5 SPECIAL REQUIREMENTS

- .1 Submit schedule in accordance with Section 01 33 00 – Submittal procedures.
- .2 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .3 Keep within limits of work and avenues of ingress and egress.

1.6 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.

1.7 NO SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions.

2 PRODUCTS**2.1 NOT USED**

- .1 Not Used.

3 EXECUTION**3.1 NOT USED**

- .1 Not Used.

1 GENERAL**1.1 MEASUREMENT METHOD**

- .1 The Contractor shall, within ten (10) days after receiving an acceptance notice for the contract, provide cost breakdown for global cost of contract.
- .2 The lump sum prices will include, but not limited to, leasing, equipment installation, equipment, tools, labour, administrative costs, profit, funding, expenditure for work even if not specifically defined either in the plan, or specifications or any other tender documents, but considered necessary so as to conform to best practices.
- .3 All work described in this specifications, or presented in the plan, or necessary for the completion of all the work specified herein, but not defined as a separate item requiring a fixed rate, will be considered as directly or indirectly linked to the overall purpose of the contract and no separate payment will be made for any of these works; the cost of any work that is directly or indirectly linked to the aim of this contract must however be included in the price quoted in the tender.
- .4 The method used to measure labour, tools or materials for the contract will be as follows:
 - .1 Lump sum works: such jobs will be appraised as a global unit.
 - .1 This item will be paid following a 50% proportion at the beginning of the contract on site and 50% after premises have been returned to pre-work state and the final cleaning. If some equipment are to be demobilized before the end of the contract, a justified payment may be done upon approval from the Departmental Representative.

2 PRODUCTS**2.1 NOT USED**

- .1 Not used.

3 EXECUTION**3.01 NOT USED**

- .1 Not Used.

1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 Not used.

1.3 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.

1.4 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 Allow 7 days for Departmental Representative's review of each submission.
- .4 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.
- .5 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.
- .6 Email submissions with PDF documents.
- .7 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 SubContractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:

- .1 Fabrication.
- .2 Layout, showing dimensions, including identified field dimensions, and clearances.
- .3 Setting or erection details.
- .8 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .9 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .10 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .11 Delete information not applicable to project.
- .12 Supplement standard information to provide details applicable to project.
- .13 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, transparency copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .14 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

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

1.5 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic copy of colour digital photography in jpg format, standard resolution at the end of works as directed by Departmental Representative.
- .2 Project identification: name and number of project and date of exposure indicated.

1.6 CERTIFICATES AND TRANSCRIPTS

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

1.7 PROJECT SCHEDULE

- .1 Submit to Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, project progress.
- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.
- .5 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Shop Drawings, Samples.
 - .3 Permits.
 - .4 Mobilization.
 - .5 Demolition.
 - .6 Fabrication.
 - .7 Cross joint.
 - .8 Longitudinal transition.

- .9 Ladders.
- .10 Demobilization.
- .6 Update Project Schedule on [weekly] basis reflecting activity changes and completions, as well as activities in progress.
- .7 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .8 Weather related delays with their remedial measures will be discussed and negotiated.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 – Submittal procedures

1.2 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations (L.R.Q. c. S-2.1)
- .2 Province of Quebec, an Act Respecting Occupational Health and Safety (L.R.Q., c.S-2.1 current edition) - Updated 2016.
- .3 Canada Shipping Act, 2001- Collision Regulations (C.R.C., ch.1416).
- .4 Workplace Hazardous Materials Information System (WHMIS)
- .5 CAN/CSA-Z259.10-12 – Full body harnesses
- .6 CAN/CSA-Z460-13 – Control of hazardous energy - Lockout and other methods
- .7 CAN/CGSB-65.7-2007 – Life Jackets
- .8 CAN/CSA-Z275.2 - Occupational safety code for diving operations

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative the site-specific Health and Safety Plan: Within seven (7) days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Commitment of the management and the workers to the health and the safety.
 - .2 Policy of the company regarding health and safety.
 - .3 Procedures in case of accidents/incidents.
- .3 Each two Weeks submit two (2) copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative.
- .4 Submit to Departmental representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by Federal, Provincial and Territorial health and safety inspectors.

- .5 Submit to Departmental representative within 24 hours an investigation report for any accident or incident.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets if needed. Contractor must also keep one copy of these documents on the construction site.
- .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within ten (10) days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within ten (10) days after receipt of comments from Departmental Representative.
- .8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .10 Submit to Departmental Representative copies of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:
 - .1 First aid in the workplace and cardiopulmonary resuscitation;
 - .2 Wearing and adjustment of personal protective equipment;
 - .3 Any other training requirement of Regulations or the safety program.
- .11 Engineer's plans and certificates of compliance: Contractor must submit to the Departmental representative and to the Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST) a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the Code de sécurité pour les travaux de construction (S-2.1, r.4) (Safety code for the construction industry) or by any other legislation or regulation or by any other clause in the specifications or in the contract. The Contractor must also submit a certificate of conformity signed by an engineer once the facility for which these plans were prepared has been completed and before a person uses the facility. A copy of these documents must be available on site at all times.
 - .1 Any modification in an equipment or a part of machinery which was not authorized in writing by the manufacturer. A copy of these documents must be available any time on the work site.

- .12 Submit all the documents relative to diving works.

1.4 COMMISSION DES NORMES, DE L'ÉQUITÉ, DE LA SANTÉ ET DE LA SÉCURITÉ DU TRAVAIL DU QUÉBEC (CNESST)

- .1 Comply with the Loi sur la santé et la sécurité du travail (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the Code de sécurité pour les travaux de construction (S-2.1, r. 4.) (Safety code for the construction industry) in addition to respecting all the requirements of this specification manual.

1.5 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

- .1 Notice of site opening: Notice of site opening shall be submitted to the CNESST before work begins. A copy of such notice shall be submitted to Departmental Representative at the same time and another posted in full view on the worksite. At demobilization, a notice of site closing shall be forwarded to CNESST with copy to Departmental Representative.
- .2 The Contractor shall assume the role of being the Primary Contractor in the limits of the construction site and elsewhere where he must execute work within the framework of this project. The Contractor shall recognize the responsibility of being the Principal Contractor of the project and identify himself as such in the notice of the construction site opening he provides to the CNESST.
- .3 Works will take place in zones below:
- .1 Defined on plans.
- .4 The Contractor shall accept to divide and identify the construction site adequately in order to define time and space at all times throughout the course of the project.

1.6 CERTIFICATION OF COMPLIANCE (CNESST)

- .1 Certification of compliance delivered by CSST: the certification of compliance (Attestation de conformité) is a document issued by CSST to confirm that the Contractor is in good standing with CSST, that is, all amounts owing to CSST with respect to a given contract have been paid. The document shall be submitted to the Departmental Representative at work completion.

1.7 EVALUATION OF RISKS/DANGERS

- .1 Contractor must proceed to an identification of the dangers relative to each of the tasks carried out on the working construction site / place.

- .2 Plan and organize work so as to eliminate the risk of fall at the source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers must use a safety harness that complies with CSA standard CAN/CSA Z-259.10 M90. A safety belt must not be used as fall protection.
- .3 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
- .4 All mechanical equipment shall be inspected before delivery to the construction site. The Departmental representative can at all times, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.

1.8 MEETINGS

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

1.9 RISK INHERENT TO THE WORK SITE

- .1 Personnel responsible for the execution of the work on the construction site will be exposed to the following risks :
 - .1 Ground transportation and stones transshipment, concrete blocks and massive steel elements, assembled or not.
 - .2 Sea transport and maritime construction work, on the floating material, the operation involving risks of drowning and the work near heavy equipment used for the implementation steel ladders.
 - .3 Works exposed to the variable weather conditions, among which the heat, the cold, the winds, the rain, the snow, etc.
 - .4 Demolition works.
 - 5 Diving works.

1.10 GENERAL REQUIREMENTS

- .1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified according to the article "HAZARD ASSESSMENT" and the article "RISKS INHERENT TO THE WORKSITE" in this section. Apply this program in its totality from the start of the project until demobilization of all personnel from the

construction site. The prevention program shall take into consideration the specific characteristics of the project and cover all the work to be executed on the construction site.

The safety program must include at least the following:

- .1 company safety and health policy;
- .2 description of the stages of the work;
- .3 total costs, schedule and projected workforce curves;
- .4 flow chart of safety and health responsibilities;
- .5 physical and material layout of the construction site;
- .6 risk assessment for each stage of the work, including preventive measures and the procedures for applying them;
- .7 identification of the preventive measures relative to the specific risks inherent to the worksite indicated in the article "RISKS INHERENT TO THE WORKSITE";
- .8 identification of preventive measures for health and safety of employees and / or public works site as indicated in the article "SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC";
- .9 training requirements;
- .10 procedures in case of accident/injury;
- .11 written commitment from all parties to comply with the safety program;
- .12 construction site inspection checklist based on the preventive measures;
- .13 emergency response plan which shall contain at least the following:
 - .1 construction site evacuation procedures;
 - .2 identification of resources (police, firefighters, ambulance services, etc.);
 - .3 identification of persons in charge of the construction site;
 - .4 identification of the first-aid attendants;
 - .5 communication organizational chart (including the person

responsible for the site and the Departmental representative);

- .6 training required for those responsible for applying the plan;
- .7 any other information needed, in the light of the construction site's characteristics.

If available the Departmental representative will provide the evacuation procedures to the Contractor who shall then coordinate the construction site procedure with that of the site and submit it to the Departmental representative.

- .2 Departmental representative may respond in writing, where deficiencies or concerns are noted in the prevention program and may request resubmission with correction of deficiencies or concerns.
- .3 In addition to the prevention program, during the course of the work the Contractor shall elaborate and submit to the Departmental representative specific written procedures for any work having a high risk factor of accident (for example: demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space, etc.) or at the request of the Departmental representative.
- .4 The Contractor shall plan and organize work so as to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.
- .5 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
- .6 All mechanical equipment (for example, but not limited to: hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) shall be inspected before delivery to the construction site. Before using any mechanical equipment, the Contractor shall obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate shall remain on the construction site and transmitted to the Departmental representative on demand.
- .7 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental representative on demand.

- .8 The Departmental representative can at all times, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.
- .9 The Departmental representative must be consulted for the location of storing gas cylinders and tanks on the construction site.

1.11 RESPONSIBILITY

- .1 The Contractor must acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the Loi sur la santé et la sécurité du travail (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the Code de sécurité pour les travaux de construction (S 2.1, r.4) (Safety code for the construction industry).
- .2 The Contractor must be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.
- .3 No matter the size or location of the construction site, the Contractor must clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site must be submitted to the Departmental representative.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific prevention Plan.

1.12 COMPLIANCE REQUIREMENTS

- .1 Comply with the Loi sur la santé et la sécurité du travail (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the Code de sécurité pour les travaux de construction (S-2.1, r. 4.) (Safety code for the construction industry) in addition to respecting all the requirements of this specification manual.

1.13 UNFORSEEN HAZARDS

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

1.14 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.

1.15 CORRECTION OF NON-COMPLIANCE

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

1.16 WORK STOPPAGE

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

1.17 WORKS NEAR BODIES OF WATER

- .1 For all the works involving risks of drowning, the following requirements must be met:
 - .1 Respect article 2.10.13 of the Safety code for building work.
 - .1 Wear a life jacket or a floating device allowing to maintain the head of the user outside the water and to be able to float effortlessly arms and in compliance with the following standard:
 - .1 CAN/CGSB-65.7-2007 – Life jackets
 - .2 Or for some exceptions, be accepted by Transport Canada.
 - .2 Or be protected by a safety net or a protective device against the falls.
 - .2 For every boat used (transport, rescue, inspection or other one), submit to the Departmental Representative, before the beginning of the works, a letter emitted by Transport Canada giving evidence that the boat is corresponding to the stipulations statutory of the Law on the merchant navy of Canada 2001. If there is more than a year between the date of delivery of this letter and the date of realization of the present works, submit also to the Departmental Representative a confirmation in the effect that the

annual report of conformity required by Transport Canada was completed for the current year.

- .3 Ensure that a rescue vessel moored and in the water is available at each place where a worker may fall in the water. However, a vessel may serve more than one workplace on the same construction site provided the distance between any of these workplaces and the vessel is less than 100 m.
- .4 Make sure that the boat is equipped with an engine powerful enough to navigate in worksite conditions..
- .5 Make sure that the boat has required characteristics to take onboard the people there susceptible to take part in the rescue operation.
- .6 Make sure that the boat of rescue is available any time for the workers in case of emergency
- .7 Make sure that a qualified person is available to run the emergency equipment. This person has to hold its competence certificate according to the length of the boat.
- .8 Establish and transmit to the Department Representative the emergency procedures in which we find the information mentioned below and make sure that all the workers concerned by these procedures received the necessary training(formation) and the information to apply them :
 - .1 A description of completes procedures, including responsibilities of the people whom is allowed the access instead of work; ;
 - .2 The location of the emergency equipment.
- .9 Where the construction site is a wharf, a pier, a quay or any similar structure, a ladder with at least two (2) rungs below the surface of the water shall be installed on the front of the structure every 60 m. This measure applies even if it is a construction project. In this situation, if the owner does not possess the basic installations, a temporary (or portable) ladder can be used and taken off at the end of works. Contractor shall mention in writing to the owner that the site is not in compliance with the Canadian Code of the work, the part II.

1.18 LIFTING MATERIAL

- .1 Lifting devices shall be positioned in such a way that loads are not carried over workers, occupants or the public.
- .2 All mobile cranes manufactured after January 1st 1980 must be equipped with a safety device against overload.

- .3 All mobile cranes with cables manufactured after January 1st 1970, except if they are used for other end than lifting loads, must be provided with a safety device against two-blocking. Regarding mobile cranes with cables manufactured before January 1st 1970, they will have to be equipped with the device at the latest on December 31st 2006.
- .4 The Contractor shall provide the Department Representative with a mechanical service inspection certificate for each lifting device. Inspections must be carried out just prior to the delivery of the equipment to the work site.
- .5 For all winch installations, the Contractor shall provide the Department Representative with the installation method recommended by the manufacturer. If unavailable, the Contractor shall then provide an installation procedure signed and sealed by an engineer. The installation procedure must take into account load bearing capacity, the amount, weight and location of counterweight and any other detail that may affect the capacity and stability of the device.
- .6 In addition to the mechanical service inspection certificate, the annual inspection certificate and the crane logbook must be aboard all crane and crane-truck cabs.
- .7 The entire lifting area shall be closed off to prevent non-authorized people from entering it.
- .8 The Contractor shall carefully inspect all of the slings and lifting accessories and make sure that those in poor condition are destroyed or scrapped.
- .9 Compressed-gas cylinders shall be lifted with a basket specially designed for this purpose.

1.19 FALL PROTECTION

- .1 Contractor must ensure that any worker exposed to a fall hazard higher than 2.4 m wears a safety harness.
- .2 Plan and organize work so as to eliminate the risk of fall at the source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers must use a safety harness that complies with CSA standard CAN/CSA Z-259.10 M90. A safety belt must not be used as fall protection.
- .3 Every very person using an elevating platform (scissors, telescopic mast, articulated mast, rotative mast, etc.) must have a training regarding this equipment.
- .4 The use of a safety harness is mandatory for all elevating platforms with telescopic, articulate or rotative mast.
- .5 Define the limits of the danger zone around each elevating platform.

2 PRODUCTS**2.01 NOT USED**

.1 Not Used.

3 EXECUTION**3.01 NOT USED**

.1 Not Used.

1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

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.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review by Departmental Representative.
- .2 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .3 Address topics at level of detail commensurate with environmental issue and required construction task[s].

1.4 FIRES

- .1 Fires and burning of rubbish on site.
- .2 Provide supervision, attendance and fire protection measures as directed.

1.5 WORK ADJACENT TO WATERWAYS

- .1 Waterways to be kept free of excavated fill, waste material and debris.

1.6 POLLUTION CONTROL

- .1 Ensure the good working condition of the machinery and the absence of oil spills.
- .2 Prevent fine materials and other materials from contaminating sediment, soil, air and water.

- .3 On Transport Canada properties, no maintenance, cleaning or refueling of trucks and machinery may be performed outside buildings. Outside of Transport Canada property, these operations must be carried out more than 30 meters from a watercourse.
- .4 Operate under constant supervision any handling of fuel, oil, other petroleum products or contaminants to avoid accidental spills and react promptly as necessary.
- .5 On Transport Canada property, do not store petroleum products, oils or hazardous materials outside buildings. Outside TC's property, storage must be more than 30 meters from a watercourse;
- .6 Ensure that emergency kits for the recovery of petroleum products and hazardous materials are complete and easily accessible at all times on the site during construction.
- .7 Employees need to know where the emergency kits are and how to use them.
- .8 Be aware of the emergency plan in effect for the La Romaine wharf.
- .9 In the event of an oil spill or other hazardous material, stop the spill or leak and report immediately to Transport Canada and Environment Canada Emergency Services (1-866-283-2333) and the Canadian Coast Guard (1-800-363-4735). Circumscribe the extent of the spill and recover any spilled quantities as quickly as possible. Clean the contaminated area and remove contaminated material. Contaminated material must be sampled and managed according to the laws and regulations in force.
- .10 No debris may be thrown into the water or the natural environment and any debris that has been accidentally introduced will be removed as soon as possible.
- .11 Be sure to leave no waste on the work site.
- .12 Dispose of waste according to applicable laws and regulations.
- .13 No waste should be burned on the work site.
- .14 Hazardous products, used oils and other contaminated waste must be managed in accordance with the regulations in force. This includes on-site storage, transportation and disposal.
- .15 Any hazardous waste (batteries, oils, solvents, etc.) generated on the site must be managed in accordance with the regulations in force such a way to do not contaminate the environment, particularly with regard to storage, transportation and disposal hazardous waste.

- .16 Promote maximum recovery for the recycling of dismantled metallic materials.
- .17 Any temporary equipment used to carry out the work must be removed from the site at the end of the work.
- .18 Make sure to coordinate work with wharf users such a way to do not interfere with commercial operations and to secure workplaces.

1.7 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 Take action only 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.

2 PRODUCTS

2.1 NOT USED

- .1 Not Used.

3 EXECUTION

3.1 CLEANING

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

1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 Not used.

1.3 INSPECTION

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

1.4 INDEPENDENT INSPECTION AGENCIES

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

1.5 ACCESS TO WORK

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

1.6 PROCEDURES

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

1.7 REJECTED WORK

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

1.8 REPORTS

- .1 Not used.

1.9 TESTS AND MIX DESIGNS

- .1 Not used.

2 PRODUCTS**2.1 NOT USED**

.1 Not Used.

3 EXECUTION**3.1 NOT USED**

.1 Not used.

1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

1.3 INSTALLATION AND REMOVAL

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

1.4 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades.

1.5 ACCESS TO SITE

- .1 Not used.

1.6 PUBLIC TRAFFIC FLOW

- .1 Not used.

1.7 FIRE ROUTES

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

1.8 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.

1.9 PROTECTION OF FINISHES

- .1 Not used.

1.10 WASTE MANAGEMENT AND DISPOSAL

- .1 Not used.

2 PRODUCTS**2.1 NOT USED**

.1 Not Used.

3 EXECUTION**3.1 NOT USED**

.1 Not used.

1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 Not used.

1.3 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from site at daily. Do not burn waste materials on site.
- .3 Clear snow and ice from access.
- .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 Dispose of waste materials and debris.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

1.4 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.
- .5 Remove waste materials from site. 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 Broom clean and wash surfaces.

2 PRODUCTS**2.1 NOT USED**

.1 Not Used.

3 EXECUTION**3.1 NOT USED**

.1 Not used.

1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

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

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Departmental Representative Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .2 Completion Tasks: submit written certificates that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Work: complete and ready for final inspection.
 - .3 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.
 - .4 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

- .5 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
- .6 Final Payment:
 - .1 When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .2 When Work deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.
- .7 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.4 FINAL CLEANING

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

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 CSA International
 - .1 CSA S350-[M1980(R2003)], Code of Practice for Safety in Demolition of Structures.
- .2 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

1.4 SITE CONDITIONS

- .1 Notify Departmental Representative before disrupting access to anybody on wharf.

2 PRODUCTS**2.1 NOT USED**

- .1 Not used.

3 EXECUTION**3.1 EXAMINATION**

- .1 Inspect site with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting demolition.

3.2 PREPARATION

- .1 Protection of In-Place Conditions:
 - .1 Prevent movement, settlement, or damage to adjacent structures, to remain in place. Provide bracing and shoring required.
 - .2 Keep noise, dust, and inconvenience to occupants to minimum.
 - .3 Protect building systems, services and equipment.
 - .4 Do Work in accordance with Section [01 35 29.06 - Health and Safety Requirements] .
- .2 Demolition/Removal:
 - .1 Remove items as indicated.
 - .2 Remove existing parts to permit new construction.
 - .3 Trim edges of partially demolished elements to tolerances as defined by Departmental Representative to suit future use.

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].
- .3 Refer to demolition drawings and specifications for items to be salvaged for reuse.

1 GENERAL**1.1 TRANSLATION**

- .1 In the event that a difference is noted between the English and French documents (description of work and drawing), French documents will prevail.

1.2 DESCRIPTION OF WORK

- .1 The Electricity Contractor is responsible for:
- .1 Provide all lifting equipment, boom truck and required tools.
 - .2 The present description of work does not include everything. Other details are given on the plan.
 - .3 Replace 2 existing light fixtures on the warehouse. The new fixtures must have integrated photoelectric cell.
 - .4 Dismantle temporary electric cables used to power light poles and repair safety slides with a galvanizing compound specified on plan.
 - .5 Supply and install all necessary electrical junction boxes required. These one must be NEMA 4X, in stainless steel #316, closed with screws and filled with an electrical isolating gel specified on plan.
 - .6 Unless specified otherwise, all metallic parts supplied in this project (conduits, screws, etc.) and each time a galvanized part is required, it must be hot dip galvanized.
 - .7 Dismantle 7 existing light fixtures on 6 street light posts located on the wharf. Keep existing bases and light poles.
 - .8 Dismantle existing astronomical timers and light switches and connect the new TECK power supply cable to the street lights as well as the existing power supply of the light pole which has a double light bracket on a double circuit breaker. See details on the drawing.
 - .9 Dismantle all existing apparent cabling of 5 street lights located on the wharf. Cut existing TEK cables underground and let them in place.
 - .10 Replace existing light fixtures with new LED light fixtures (see details on the drawing) with individual photocells.

- .11 The Contractor may provide equivalent light fixtures if approved by the Departmental Representative. However, he must submit his price with the light fixtures proposed in the drawing. No request for additional fees will be accepted in the event of the use of a more expensive equivalent light fixture. The proof of equivalence of light fixtures rests with the Contractor.
- .12 Supply and install hot-dip galvanized light brackets compatible with existing light poles and new light fixtures.
- .13 Supply and install fuse holders with required fuses in each of 6 street lights.
- .14 Supply and install galvanized steel conduits as cable sleeve and install them at the rear of the safety slide. See details on the drawing.
- .15 Reuse existing underground conduits to bring new TECK cables into the building. No digging is allowed.
- .16 Check voltage level of existing street lights. Normally, the supply voltage is 208V, 1Ø. If this is not the case, notify the Departmental Representative.
- .17 Provide all types of firestop seals and gaskets required.
- .18 Repair (sandblast, primer, paint and repair surfaces in an appropriate manner) surfaces (floors, walls, ceilings, exterior field, appliances, etc.) damaged by work.
- .19 Make all necessary drill holes, regardless of size or material to be pierced.
- .20 Collaborate with the Departmental Representative and instruct him on the operation of the new equipment and its maintenance.

1.3 REFERENCE STANDARDS

- .1 CSA Group
 - .1 CSA C22.10, Quebec Construction Code, Chapter V, Electricity.
- .2 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)
 - .1 IEEE SP1122-[2000], The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.

1.4 DEFINITIONS

- .1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on the drawing, are those defined by IEEE SP1122.

1.5 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 light fixtures, wiring, conduits and circuit breakers used.
- .3 Certificates:
 - .1 Provide CSA or ULc certified equipment.
 - .2 Submit test results of installed electrical systems and instrumentation.
 - .3 Permits and fees: in accordance with General Conditions of contract.
 - .4 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to the Departmental Representative.

1.6 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section [01 27 00- Closeout Submittals].
- .2 Operation and Maintenance Data: submit operation and maintenance data for equipment:
 - .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.
 - .2 Operating instructions to include following:
 - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
 - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
 - .3 Safety precautions.
 - .4 Procedures to be followed in event of equipment failure.
 - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.

- .3 Post instructions where directed.
- .4 For operating instructions exposed to weather, provide weather-resistant materials or weatherproof enclosures.
- .5 Ensure operating instructions will not fade when exposed to sunlight and are secured to prevent easy removal or peeling.

1.7 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, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in dry location, indoors, off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for recycling.

2 PRODUCTS

2.1 DESIGN REQUIREMENTS

- .1 Operating voltages: to CAN3-C235.

2.2 MATERIALS AND EQUIPMENT

- .1 Equipment must be CSA or ULc certified.

2.3 WIRING TERMINATIONS

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

3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions before proceeding with the installation:
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

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

3.3 CO-ORDINATION OF PROTECTIVE DEVICES

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

3.4 FIELD QUALITY CONTROL

- .1 Conduct following tests in accordance with Section [01 45 00- Quality Control] .
 - .1 Circuits originating from branch distribution panels.
 - .2 Lighting and its control.
 - .3 Insulation resistance testing:
 - .1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.
 - .2 Check resistance to ground before energizing.
- .2 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

3.5 SYSTEM STARTUP

- .1 Instruct operating personnel in operation, care and maintenance of systems, system equipment and components.

3.6 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.
- .3 Waste Management: separate waste materials for recycling.

1 GENERAL**1.1 REFERENCE STANDARDS**

- .1 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-[2004], LEED (Leadership in Energy and Environmental Design): Green Building Rating System for New Construction and Major Renovations (including Addendum [2007]).
 - .2 LEED Canada-NC-[2009], LEED (Leadership in Energy and Environmental Design): Green Building Rating System for New Construction and Major Renovations 2009.
 - .3 LEED Canada-CI Version 1.0-[2007], LEED (Leadership in Energy and Environmental Design): Green Building Rating System for Commercial Interiors.
 - .4 LEED Canada-EB: O&M-[2009], LEED (Leadership in Energy and Environmental Design): Green Building Rating System for Existing Buildings: Operations and Maintenance 2009.
- .2 CSA Group (CSA)
 - .1 CAN/CSA-C22.2 No.65-[03(R2008)], Wire Connectors (Tri-National Standard with UL 486A-486B and NMX-J-543-ANCE-03).
- .3 National Electrical Manufacturers Association (NEMA)

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 wire and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.

1.3 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 77 00- Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for wire for incorporation into manual.

1.4 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, labelled with manufacturer's name and address.

2 PRODUCTS**2.1 MATERIALS**

- .1 Pressure type wire connectors to: CAN/CSA-C22.2 No.65, with current carrying parts of copper sized to fit copper conductors as required.
- .2 Fixture type splicing connectors to: CAN/CSA-C22.2 No.65, with current carrying parts of copper sized to fit copper conductors 8 AWG or less.
- .3 Clamps or connectors for TECK cable as required to: CAN/CSA-C22.2 No.18.

3 EXECUTION**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wire installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

- .1 Remove insulation carefully from ends of conductors [cables] 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.

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.
- .3 Waste Management: separate waste materials for recycling.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

1 GENERAL**1.1 PRODUCT DATA**

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

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Packaging Waste Management: remove for reuse.

2 PRODUCTS**2.1 TECK 90 CABLE**

- .1 Cable: in accordance with Section 26 05 00- Common Work Results for Electrical.
- .2 Conductors:
 - .1 Grounding conductor: copper.
 - .2 Circuit conductors: copper, size as indicated.
- .3 Insulation:
 - .1 Ethylene propylene rubber EP.
 - .2 Rating: 600 V.
- .4 Inner jacket: polyvinyl chloride material.
- .5 Armour: galvanized steel interlocking.
- .6 Overall covering: thermoplastic polyvinyl chloride, compliant to applicable Building Code classification for this project.
- .7 Fastenings:
 - .1 Two holes galvanised steel straps.
- .8 Connectors:
 - .1 Watertight, approved for TECK cable.

3 EXECUTION**3.1 FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 00- Common Work Results for Electrical.

3.2 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.

3.3 INSTALLATION OF TECK90 CABLE (0 -1000 V)

- .1 Install cable, securely supported by galvanised steel straps.

1 GENERAL

1.1 REFERENCE STANDARDS

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

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product data: submit manufacturer's printed product literature, specifications and datasheets.
 - .1 Submit cable manufacturing data.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for [recycling] [reuse] in accordance with Section 01 74 19- Waste Management and Disposal.
- .2 Place materials defined as hazardous or toxic waste in designated containers.
- .3 Ensure emptied containers are sealed and stored safely for disposal away from children.

2 PRODUCTS

2.1 CABLES AND REELS

- .1 Provide cables on reels or coils.
 - .1 Mark or tag each cable and outside of each reel or coil, to indicate cable length, voltage rating, conductor size, and manufacturer's lot number and reel number.
- .2 Each coil or reel of cable to contain only one continuous cable without splices.

2.2 CONDUITS

- .1 Rigid metal conduit: to CSA C22.2 No. 45, hot dipped galvanized steel threaded.
- .2 Electrical metallic tubing (EMT): to CSA C22.2 No. 83.
- .3 Rigid pvc conduit: to CSA C22.2 No. 211.2.

2.3 CONDUIT FASTENINGS

- .1 One hole steel straps to secure surface EMT conduits inside building.
- .2 Two hole galvanized steel straps for outside galvanized conduits.

2.4 CONDUIT FITTINGS

- .1 Fittings: [to CAN/CSA C22.2 No. 18,] manufactured for use with conduit specified. Coating: same as conduit.

2.5 FISH CORD

- .1 Polypropylene.

3 EXECUTION**3.1 MANUFACTURER'S INSTRUCTIONS**

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

3.2 INSTALLATION

- .1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
- .2 Surface mount conduits.
- .3 Use rigid hot dipped galvanized steel threaded conduit.
- .4 Bend conduit cold:
 - .1 Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .5 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .6 Install fish 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 SURFACE CONDUITS

- .1 Run parallel or perpendicular to building lines.
- .2 Do not pass conduits through structural members except as indicated.
- .3 Do not locate conduits less than 75 mm parallel to steam or hot water lines with minimum of 25 mm at crossovers.

3.4 CONDUITS UNDERGROUND

- .1 Reuse existing underground conduits.

3.5 CLEANING

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

1 GENERAL

1.1 REFERENCE STANDARDS

- .1 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-EB: O&M-[2009], LEED (Leadership in Energy and Environmental Design): Green Building Rating System for Existing Buildings: Operations and Maintenance 2009.

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 cables and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 DELIVERY, STORAGE AND HANDLING

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

2 EXECUTION

2.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for cable installation in accordance with manufacturer's written instructions.

2.2 CABLE INSTALLATION IN DUCTS

- .1 Install cables as indicated in ducts.
- .2 Do not pull spliced cables inside 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 multiconductor 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 cable installation is complete, seal conduit ends with product designed to seal conduits above cables and outcrop with final soil level.

2.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00- Common Work Results for Electrical.
- .2 Perform tests using qualified personnel.
 - .1 Include 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.
 - .1 Ensure resistance to ground of circuits is not less than 50 megohms.
- .5 Pre-acceptance tests:
 - .1 After installing cable but before splicing and terminating, perform insulation resistance test with 1000V megger on each phase conductor.
 - .2 Check insulation resistance after each splice and/or termination to ensure that cable system is ready for acceptance testing.
- .6 Acceptance Tests:
 - .1 Ensure that terminations and accessory equipment are disconnected.
 - .2 Ground shields, ground wires, metallic armour and conductors not under test.
- .7 Remove and replace entire length of cable if cable fails to meet any of test criteria.

2.4 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.
- .3 Waste Management: separate waste materials for reuse.

2.5 PROTECTION

- .1 Repair damage to adjacent materials caused by cables installation.

1 GENERAL**1.1 REFERENCE STANDARDS**

- .1 CSA Group (CSA)
 - .1 CSA C22.1-[09], Canadian Electrical Code, Part 1 (21st Edition), Safety Standard for Electrical Installations.

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 photoelectric devices and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Waste Reduction Work plan highlighting recycling and salvage requirements.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Transport, store and handle materials properly to prevent breakage of equipment.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in dry location, indoors, off ground and in accordance with manufacturer's recommendations in clean, well-ventilated area.
 - .2 Store and protect photoelectric devices from nicks, scratches, and blemishes.
 - .3 Protect metal accessories and trim from being bent or damaged.
 - .4 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for recycling.

2 PRODUCTS

2.1 PHOTOELECTRIC LIGHTING CONTROL

- .1 Photoelectric Lighting Controls: to CSA C22.1.
 - .1 Light fixture mounting with switching time delay of 30s.
 - .2 Temperature range: - 40 °C to 40 °C.
 - .3 Wall mounting bracket.
 - .4 Required options:
 - .1 Lightning arrester.
 - .2 Fail-safe circuit completed when relay de-energized.
 - .3 Twist-lock type receptacle.
 - .4 Sensitivity adjustment.
 - .5 Colour coded leads: size 10AWG, 460 mm long.

3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for lighting control device installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

- .1 Install photoelectric controls in accordance with manufacturer's written instructions and to CSA C22.1.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning. 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.
- .3 Waste Management: separate waste materials for recycling

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by lighting control devices installation.

1 GENERAL**1.1 POLES POUR LIGHT POLES**

- .1 Dismantle existing fixtures (7 fixtures to be dismantled which are presently installed on 6 poles).
- .2 Poles are existing and to be reused. Provide and install all required galvanized steel brackets to install the new LED fixtures.

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.
- .3 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials properly to prevent breakage of equipment.
- .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, off ground, in dry location and in accordance with manufacturer's recommendations in clean, well-ventilated area.
 - .2 Store and protect roadway lighting from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for recycling.

2 PRODUCTS

2.1 LIGHT FIXTURE MOUNTING BRACKETS

- .1 Galvanised steel mounting brackets for specified light fixtures:
 - .1 Single and twin brackets as indicated.
 - .2 Arm extension length not defined but which must adapt itself to the existing light poles.

2.2 LIGHT FIXTURES

- .1 Luminaire with cast aluminum weatherproof housing and:
 - .1 DEL lamp with an IES distribution type II by adjusting position of lamp socket.
 - .2 Factory wired including power supply ready to be connected at the terminal block.

3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for roadway lighting installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

- .1 Install supports in a straight and level manner according to manufacturer's instructions.
- .2 Install light fixtures on light mounting brackets.
- .3 Connect the luminaires to the lighting circuit by adding a fuse terminal block at the bottom of the light post. Perform tests.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section [01 74 11- Cleaning]. 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].
- .3 Waste Management: separate waste materials for recycling.