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SPECIFICATION

Project No. R.068557.001
Environment Canada
Fuel Pipeline Upgrade
Eureka, Nunavut

Solicitation No. ET025-142736/A



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Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises renovation of the fuel oil pipeline system, located at Eureka, NU.

1.2 CONTRACT METHOD

- .1 Construct Work under stipulated price contract.

1.3 WORK BY OTHERS

- .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Departmental Representative.
- .2 Co-ordinate 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 Work.

1.4 SPECIAL CONSIDERATIONS

- .1 Travel to Site: Contractor is to provide on seat on his crew charter to and from Eureka for the Departmental Representative's use. Cost for the seat to be included in the Contract.

1.5 WORK SEQUENCE

- .1 Construct Work in stages to accommodate Owner's continued use of the complex during construction.
- .2 Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.
- .3 Fuel usage at the Central Plant to operate the boilers and generators must be maintained throughout the fuel pipe shutdown.
- .1 Data on the fuel usage at the facility follows:

Generator Day Tanks	2-567	L	
Generator kWhr Production	174	kWhrs/day	
Generator Fuel Usage	36,000	L/mo	average for July and Aug for last 2 years
Site Fuel Usage	51,000	L/mo	
Generator Fuel Usage	1,180	L/day	
At all times the generators are to have 40% minimum fuel levels. Generator Day Tank will need to be filled 2 to 3 times per day, during shutdown of the fuel line to the plant.			

The fuel trailer is	1,850	L in size so it can contain 1 days usage	
The fuel trailer will need to be filled at least once a day.			
Other Fuel tanks at Eureka include:			
Transmitter Bldg	9,000	L	
Old Maintenance building	9,000	L	
Warehouse	9,000	L	
Incinerator	9,000		
Pearle Generator Day Tank	1,150	L	
These tanks account for the other site fuel usage and may need to be filled during any shutdown.			
Prior to shutdown arrange the site staff will fuel all vehicles and other on –site fuel tanks to reduce fuel needs during the shutdown			

- .4 The fuel resupply pipeline must be restored to full service prior to the resupply vessel arriving to fill the fuel tanks in late August.
- .5 Maintain fire access/control.

1.6 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises for Work, for storage, for access, to allow:
 - .1 Owner occupancy.
- .2 Co-ordinate use of premises under direction of Departmental Representative.
- .3 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .4 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .5 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.7 OWNER OCCUPANCY

- .1 Owner will occupy facility during entire construction period for execution of normal operations.
- .2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.8 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING SYSTEMS

- .1 Execute work with least possible interference or disturbance to facility operations and normal use of the site. Arrange with Departmental Representative to facilitate execution of work.

1.9 EXISTING SERVICES

- .1 Notify, Departmental Representative of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to base operations.
- .3 Provide alternative routes for personnel 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 adequate bridging over trenches which cross roads to permit normal traffic.
- .7 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .8 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .9 Record locations of maintained, re-routed and abandoned service lines.
- .10 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.10 DOCUMENTS REQUIRED

- .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.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 ACCESS AND EGRESS

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

1.2 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of facility. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to facility and provide for personnel and vehicle access.
- .3 Departmental Representative will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.
- .4 Closures: protect work temporarily until permanent enclosures are completed.

1.3 SPECIAL REQUIREMENTS

- .1 Hours of work: no restrictions
- .2 Submit schedule in accordance with 01 32 16.07 - Construction Progress Schedule - Bar (GANTT) Chart.
- .3 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

1.4 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not permitted.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 APPLICATIONS FOR PROGRESS PAYMENT

- .1 Submit to Departmental Representative at least 14 days before first application for payment: Schedule of values for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment. After approval by Departmental Representative, Cost Breakdown will be used as a basis for progress payments.
- .2 Must support claims for products delivered to place of Work but not yet incorporated into work by such evidence as Departmental Representative may reasonably require to establish value and delivery of said Products.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting 4 days in advance of meeting date to Departmental Representative.
- .4 Preside at meetings.
- .5 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .6 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants.
- .7 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 and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 3 days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
 - .3 Schedule of submission of shop drawings, samples. 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 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

- .10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .11 Monthly progress claims, administrative procedures, photographs, hold backs.
- .12 Appointment of inspection and testing agencies or firms.
- .13 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 During course of Work, schedule progress meetings b-weekly.
- .2 Contractor, major Subcontractors involved in Work Departmental Representative are to be in attendance.
- .3 Notify parties minimum 3 days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 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.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

1.4 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule.
 - .1 Interim Certificate (Substantial Completion) to be within 73 working days of Contract award.
 - .1 Assuming Contract award by 21-April 2014, the facility must be ready to receive fuel by 7-August-2014.
 - .2 Note: Fuel delivery to Eureka is in late August.

1.5 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .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.

1.6 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Shop Drawings.
 - .3 Permits.
 - .4 Mobilization.
 - .5 Draining of Fuel
 - .6 Work on Section A of the Pipeline
 - .7 Work on Section B of the Pipeline
 - .8 Work on Section C of the Pipeline
 - .9 Pigging and Hydrostatic Testing
 - .10 Refilling Fuel Lines
 - .11 Final Inspection

1.7 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.8 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit 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.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Nunavut.
- .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 5 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.

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- .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 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 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.
 - .10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
 - .11 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.
 - .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.

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- .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.
 - .13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
 - .14 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.
 - .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
 - .17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
 - .18 Delete information not applicable to project.
 - .19 Supplement standard information to provide details applicable to project.
 - .20 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.
 - .21 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.

1.3 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic digital photography in jpg format, standard resolution as directed by Departmental Representative.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints:
 - .1 Viewpoints and their location as determined by Departmental Representative.
- .4 Frequency of photographic documentation: weekly as directed by Departmental Representative.
 - .1 Upon completion of: excavation, and as pipe is bedded as directed by Departmental Representative.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Northwest Territories and Nunavut
 - .1 Safety Act, R.S.N.W.T. C-S-I 2010, C16

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation.
- .3 Submit copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.
- .7 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.
- .8 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.
- .9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.3 FILING OF NOTICE

- .1 File Notice of Project with Territorial authorities prior to beginning of Work.

1.4 SAFETY ASSESSMENT

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

1.5 MEETINGS

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

1.6 REGULATORY REQUIREMENTS

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.7 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Diesel fuel oil.

1.8 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.9 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.10 COMPLIANCE REQUIREMENTS

- .1 Comply with Safety Act, General Safety Regulations, R.R.N.W.T. 2010, C-16.
- .2 Comply with Occupational Health and Safety Regulations, 2012.
- .3 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.11 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 Territory having jurisdiction and advise Departmental Representative verbally and in writing.

1.12 HEALTH AND SAFETY CO-ORDINATOR

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

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

1.13 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 Territory having jurisdiction, and in consultation with Departmental Representative.

1.14 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.

1.15 BLASTING

- .1 Blasting or other use of explosives is not permitted without prior receipt of written instruction by Departmental Representative.

1.16 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

1.17 WORK STOPPAGE

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

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 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.
- .2 Reference Standards:
 - .1 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.

1.2 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 and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review 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 training site personnel.
 - .3 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.
 - .4 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.

- .5 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .6 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- .7 Hazardous waste plan. Note pipe that is being removed is painted with lead paint and is to be shipped south as hazardous waste.
- .8 Waste Water Management Plan identifying methods and procedures for management and discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, hydrostatic test water, and water used in flushing of lines.

1.3 FIRES

- .1 Fires and burning of rubbish on site is not permitted.
- .2 Where fires or burning is permitted, prevent staining or smoke damage to structures, materials or vegetation which is to be preserved.
 - .1 Restore, clean and return to new condition stained or damaged work.
- .3 Provide supervision, attendance and fire protection measures as directed.

1.4 DRAINAGE

- .1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations, EPA 832/R-92-005, Chapter 3.
- .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.

1.5 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Use waterway beds for borrow material only after written receipt of approval from Departmental Representative.
- .3 Waterways to be kept free of excavated fill, waste material and debris.
- .4 Design and construct temporary crossings to minimize erosion to waterways.

1.6 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.

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.

Part 2 Products

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.
 - .1 Leave Work area clean at end of each day.
- .2 Consult with Eureka Site Management and the Departmental Representative for any and all landfill requirements.
- .3 Bury rubbish and waste materials on site where directed after receipt of written approval from Departmental Representative.
- .4 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .5 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 REFERENCES AND CODES

- .1 Perform Work in accordance with National Fire Code of Canada (NFC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 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. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.2 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.

1.3 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.

1.4 REJECTED WORK

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

1.5 REPORTS

- .1 Submit electronic copies of inspection and test reports to Departmental Representative.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

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

1.2 INSTALLATION AND REMOVAL

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

1.3 DEWATERING

- .1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.4 WATER SUPPLY

- .1 Departmental Representative will provide continuous supply of potable water for construction use.

1.5 TEMPORARY POWER AND LIGHT

- .1 Maximum power supply of 1 kVA, at 115 V, 1 phase, 60 Hz is available and will be provided for construction use at no cost. Connect to existing power supply in accordance with Canadian Electrical Code.
- .2 Connections to temporary power as well as returning connections to the original condition are the responsibility of the Contractor.
- .3 Temporary power for other equipment requiring in excess of above is responsibility of contractor.

1.6 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 INSTALLATION AND REMOVAL

- .1 Indicate use of supplemental or other staging area.
- .2 Provide construction facilities in order to execute work expeditiously.
- .3 Remove from site all such work after use.

1.4 SITE EQUIPMENT

- .1 Equipment is available on site as shown in Appendix I.

1.5 HOISTING

- .1 Operate and maintain hoists required for moving of workers, materials and equipment.
- .2 Hoists to be operated by qualified operator.

1.6 SITE STORAGE/LOADING

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

1.7 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

1.8 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff any adjacent fish habitats, according to requirements of authorities having jurisdiction, in a manner that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

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

1.2 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations.
- .2 Provide as required by governing authorities.

1.3 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. 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 Work.
- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .5 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .6 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.

1.6 MANUFACTURER'S INSTRUCTIONS

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

1.7 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.8 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

1.9 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.10 LOCATION OF PIPING

- .1 Consider location of and mechanical and electrical items indicated as approximate.
- .2 Inform Departmental Representative of conflicting installation. Install as directed.

1.11 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.12 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.13 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to continuing operation of the facility.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 EXISTING SERVICES

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

1.2 RECORDS

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

1.3 SUBSURFACE CONDITIONS

- .1 Promptly notify Departmental Representative in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
- .2 After prompt investigation, should Departmental Representative determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

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

1.2 MATERIALS

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

1.3 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Restore work with new products in accordance with requirements of Contract Documents.
- .8 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 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, unless approved by Departmental Representative.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling.
- .6 Dispose of waste materials and debris at designated dumping areas on Crown property.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8 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, unless approved by Departmental Representative.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

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

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 Request Departmental Representative's inspection.
 - .2 Departmental Representative's Inspection:
 - .1 Departmental Representative and Contractor to inspect 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 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative.
 - .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 from Eureka.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

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

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 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.
 - .1 Bind in with text; fold larger drawings to size of text pages.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Departmental Representative and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

- .5 Typewritten Text: as required to supplement product data.

1.5 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of opaque drawings provided by Departmental Representative .
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .2 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .3 Field changes of dimension and detail.
 - .4 Changes made by change orders.
 - .5 Details not on original Contract Drawings.
 - .6 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

1.2 REFERENCES

- .1 Public Works and Government Services Canada (PWGSC)
 - .1 PWGSC - Commissioning Guidelines CP.4 -3rd edition-[03].

1.3 GENERAL

- .1 Provide a fully functional facility:
 - .1 Systems, equipment and components meet user's functional requirements.
 - .2 O M personnel have been fully trained in aspects of installed systems.
 - .3 Complete documentation relating to installed equipment and systems.
- .2 Term "Cx" in this section means "Commissioning".
- .3 Use this Cx Plan as master planning document for Cx:

1.4 CX REPORTS

- .1 Submit reports of tests, witnessed and certified by Departmental Representative who will verify reported results.

Task	Other Testing	Include in O&M Manual	Departmental Representative Sign-off
- Existing pipe removed and transported south with lead paint on pipe		Y	
- New pipe assembled			
- All welds x-rayed	Radiologist on site to review all welds	Y	
- Heat shrink sleeves put in place	Holiday Testing		
- Holiday testing of pipe coating		Y	
- Move pipe into place			
- Welding of final flanges			
- All welds x-rayed	Radiologist on site to review all welds	Y	
- Blind flange and hydrostatic testing of primary pipe		Y	
- Pigging of primary pipe			
- Air testing of secondary pipe		Y	
- Testing drain and vent valves for proper operation.			

- Visual inspection of liner at tank farm			
- Backfilling			
- Reconnection of wiring to fuel facility			
- Re-filling line with fuel			
- Final pressure test examining flanges for leaks			
- Testing Operation of wiring to fuel facility			
- Flange Bonding			
- Pipe painting			
- Operator Training		Y	
- Ensure vent and drain valves are left in closed position.			

1.5 TESTS TO BE PERFORMED BY OWNER/USER

- .1 None is anticipated on this project.

1.6 TRAINING PLANS

- .1 The new system replaces 3 sections of pipe in the system and adds in 3 drain valves and 3 vent valves. Training will involve training the operators to:
 - .1 Keep the valves normally closed.
 - .2 Open the valves once every fall, before or after resupply, to examine the secondary containment for leaks.
 - .3 Action to take if a fluid is found in interstitial space.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Council of Ministers of the Environment (CCME)
 - .1 CCME PN 1326-2003, Environmental Code of Practice for Underground Storage Tank Systems Containing Petroleum Products and Allied Petroleum Products.
 - .2 CCME PN 1299-2006, Canadian Environmental Quality Guidelines.
 - .1 Chapter 7-2006, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health.
- .2 Canadian Federal Legislation
 - .1 Canadian Environmental Protection Act (CEPA), SOR/2013-188.
 - .2 Canadian Environmental Assessment Act (CEAA), S.C. 2012,c.19,c.31.
 - .3 Canada Labour Code 2013 c40.
 - .1 Part II (September 2000) - Occupational Health and Safety.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 SITE CONDITIONS

- .1 If material resembling spray or trowel-applied asbestos or other designated substance be encountered, stop work, take preventative measures, and notify Departmental Representative immediately.
 - .1 Proceed only after receipt of written instructions have been received from Departmental Representative.
- .2 Notify Departmental Representative before disrupting access or services.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Segregate and deliver non-salvageable or non-recyclable materials, including waste liquids and sludges to Provincially/Territorially licensed waste facility.
- .2 Piping removed from this facility contains lead painted pipe and is to be shipped south for recycling.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 PREPARATION SAFETY AND SECURITY

- .1 Conform to or exceed Federal, Provincial and Territorial codes, local municipal by-laws, by-laws, and codes and regulations of utility authorities having jurisdiction.
- .2 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Protection:
 - .1 Meet safety requirements of Occupational Safety and Health, Canada Labour Code Part II and Regulations for Construction Projects.
 - .2 Cut, braze or weld metal only in monitored areas established to be free of ignitable vapour concentrations.
 - .3 Ground and bond metal equipment, including tanks and transfer pipes, before operating equipment or transferring flammable materials.
 - .4 Use non-sparking tools and intrinsically safe electrical equipment.

3.2 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.
- .4 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.
 - .1 Immediately notify Departmental Representative and utility company concerned in case of damage to any utility or service, designated to remain in place.
 - .2 Immediately notify the Departmental Representative should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.3 DRAINING

- .1 Drain piping into the oil delivery trailer.
- .2 Use explosion proof, air driven or hand pump.

3.4 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .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: sediment and erosion control plan, specific

to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.

- .2 Inspect, repair, and maintain erosion and sedimentation control measures during demolition.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal after completion of demolition work..
- .2 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 Provide temporary dust screens, covers, railings, supports and other protection as required.
 - .5 Do Work in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Demolition/Removal:
 - .1 Remove items as indicated.

3.5 EXCAVATION TRENCHING AND BACKFILL

- .1 Do work in accordance with Section 31 22 15 - Grading.
- .2 Provide protective material around excavation.
- .3 Provide constant supervision during excavation and backfilling.
- .4 Excavation:
 - .1 Excavate until pipe and culvert and openings are exposed.
 - .2 Disconnect piping:
 - .1 Cap or plug open ends of lines that are not to be used further.
 - .2 Remove piping from ground.
 - .3 Temporarily stockpile on site soil in vicinity of tank, until waste classification can be established prior to final disposal.
- .5 Prevent movement, settlement or damage of adjacent structures. Provide bracing as required.

3.6 PIPE REMOVAL

- .1 Contact Departmental Representative immediately if there is evidence of contamination in pipe excavation, stop Work until further notice.
- .2 Remove and replace contaminated soil and accumulated flammable or combustible liquid with clean fill common to local area in accordance with Section 31 22 15 – Grading.

3.7 SITE REMEDIATION

- .1 To CCME PN 1299.

- .2 To 2006, Canadian Environmental Quality Guidelines Insert 1.1 – Chapter 7, 2006 Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health.
- .3 Repair/replace finish grade to match surrounding area, as specified in Section 31 22 15 - Grading.

3.8 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.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

- .2 Steel Structures Painting Council (SSPC)

.1 SSPC Specification

Title

SP1	Solvent Cleaning
SP2	Hand Tool Cleaning
SP3	Power Tool Cleaning
SP6	Commercial Blast Cleaning
SP7	Brush-off Blast Cleaning
SPI2/NACE No.5	High Pressure Water Jetting
VIS.1	Pictorial Surface Preparation Standards for Painting Steel Structures
VIS.2	Visual Standard No. 2 Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces
PA.1	Paint Application Specification No. 1
PA.2	Measurement of Dry Paint Thickness with Magnetic Gauges

- .3 American Society for Testing and Materials (ASTM)

.1 ASTM Specification D1186: Measurement of Dry Film Thickness of Non-magnetic Organic Coatings Applied on a Magnetic Base

.2 ASTM Specification D2200: Pictorial Surface Preparation Standards for Painting Steel Surfaces

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 paint and coating products and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

- .3 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and 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 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store painting materials and supplies away from heat generating devices.
 - .3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.
- .4 Fire Safety Requirements:
 - .1 Supply one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

1.4 SITE CONDITIONS

- .1 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.
 - .2 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.

1.5 QUALITY ASSURANCE

- .1 Retain purchase orders, invoices and other documents to prove that all materials utilized in this contract meet the requirements of the specifications. Produce documents when requested by the Departmental Representative.
- .2 The surface preparation methods as described by the Steel Structures Painting Council (SSPC) are the minimum preparation specifications for each system. Proper surface preparation is essential.
- .3 The materials approved in this specification are designed for application by professionally trained personnel, using proper equipment under controlled conditions, and in accordance with SSPC PA.1 Paint Application Spec. No. 1. Before using any of the products, the manufacturer's product data sheets, application procedures and safety precautions must be read and thoroughly understood.
- .4 The surface preparation, primer and finish coats for relatively severe moist salt laden atmosphere for this Work require the cleaning, preparation and painting systems as summarized in below.

- .5 All work and materials applied under this specification shall be subject to inspection by the Departmental Representative or his designated representative.

Part 2 Products

2.1 MATERIALS

- .1 Supply paint materials for paint systems from single manufacturer.
- .2 Conform to latest MPI requirements for painting work including preparation and priming.
- .3 Materials in accordance with MPI - Architectural Painting Specification Manual.
- .4 Colours:
 - .1 Submit proposed Colour Schedule to Departmental Representative for review.
 - .2 Pipelines to be painted off white similar in colour to existing.
- .5 Mixing and tinting:
 - .1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written recommendations. Obtain written approval from Departmental Representative for tinting of painting materials.
 - .2 Use and add thinner in accordance with paint manufacturer's recommendations.
 - .1 Do not use kerosene or similar organic solvents to thin water-based paints.
 - .3 Thin paint for spraying in accordance with paint manufacturer's written recommendations.
 - .4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.2 Exterior painting:

- .1 Surface Preparation: SSPC SP2or SP3 hand/power tool cleaning.
 - .1 Primer: 1 coat 0.5 mils Polyvinyl-Butyral Wash Primer.
 - .2 Finish Coat: 1 coat 3 mils low temp cure hi-build epoxy.
- .2 Steel pipelines (system 2):
 - .1 Surface Preparation: SSPC SP2or SP3 hand/power tool cleaning.
 - .2 Primer: 1 coat 4 mils low temp cure aluminum epoxy mastic.
 - .3 Finish Coat: 2 coats 8 mils low temp cure hi-build epoxy.

2.3 Execution

2.4 GENERAL

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

- .2 Typical contaminants that shall be removed during surface preparation are moisture, oil, grease, chloride salts, loose paint, rust, loose mill scale, corrosion products and dirt. Tightly adhered or intact mill scale does not have to be removed unless SP6 blast cleaning is specified.
- .3 Where high pressure water jetting (hydro blasting) is specified, all surfaces to be re-coated shall be cleaned in accordance with SSPC-SP 12/NACE NO. 5 STANDARDS to WJ-2/SC-2 cleanliness. The method of high-pressure (HP) water jetting (WJ) ultimately selected by the Contractor will be based on the Contractor's confidence in the capabilities of the equipment and its components. A minimum of 34,475 kPa to 137,900 kPa shall be used, unless otherwise authorized in writing.
- .4 The WJ-2 surface shall be cleaned to a matte finish with all loose paint and rust blisters removed. The nozzle may include a rotating head and must be held a minimum of 50 mm to a maximum of 254 mm from the surface being cleaned.
- .5 All dirt, stones and other debris must be cleaned out of the skid beams of the buildings, from the bases of the horizontal and vertical tanks and from the steel bases of the pipe supports.
- .6 As a general rule, the following SSPC specifications shall be applied to surfaces being prepared for painting:

SSPC SPECIFICATION	DESCRIPTION
SP1 - Solvent Cleaning	Removal of oil, grease, dirt, soil, salts and contaminants by cleaning with solvent, vapour, alkali, emulsion or steam.
SP2 - Hand Tool Cleaning	Removal of loose rust, loose mill scale and loose paint to the degree specified, by hand chipping, scraping and wire brushing.
SP3 - Power Tool Cleaning	Removal of loose rust, loose mill scale and loose paint to the degree specified, by power tool chipping, descaling, sanding, wire brushing and grinding.
SP6 - Commercial Blast Cleaning	Blast clean until at least two-thirds of the surface area is free of all visible residues.
SP7 - Brush-Off Blast Cleaning	Blast clean to remove loose rust, loose mill scale and loose paint to the degree specified, by power tool chipping, descaling, sanding, wire brushing and grinding.
SP12/NACE NO.5 - High Pressure Water Jet Cleaning	Water blast clean to remove all salt, oil, grease, dirt, soil, loose paint scale etc. Water pressure in excess of 5,000 psi is required.

- .7 Paint manufacturer to provide minimal allowable remaining surface salt concentrations and make recommendations for methods of verification or testing for salt levels, and cost-effective means of salt removal during the surface preparation phase.
- .8 Clean no more surface than can be dried and primed the same day.
- .9 Prior to painting, all metal surfaces shall be blown down and free of all surface dust.

- .10 Particular attention shall be given to edges, crevices, nuts, bolts, rivets and weld seams.
- .11 Tight, inaccessible metal to metal plates, etc. shall be sealed with a compatible joint sealing compound, as approved by the manufacturer.
- .12 After cleaning, the steel surfaces shall be primed as soon as possible. If the cleaned steel surfaces become contaminated by flash rust, dirt, grease or oil after the initial cleaning but before the priming paint can be applied, the surfaces shall be re-cleaned to meet the requirements specified for the initial cleaning of the steel. Some light flash rusting is acceptable if cleaning is by water blasting.
- .13 Painting shall be carried out only after the surface is clean, dry and free from dust, dirt, oil, grease, peeling or blistering paint, loose rust or loose mill scale. The existing paint film shall be sound and firmly bonded to the substrate and prepared in accordance with this Section.
- .14 Piping surfaces:
 - .1 All piping, valves and fittings shall be cleaned and prepared for painting in accordance with SSPC Surface Preparation Specification SP2 - Hand Tool Cleaning or SP3 - Power Tool Cleaning.
 - .2 Where severely pitted piping is encountered, the Contractor shall advise the Departmental Representative of the condition of the piping and await further instructions before proceeding with the surface preparation.

2.5 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

2.6 PREPARATION

- .1 Protection of in-place conditions:
 - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Departmental Representative.
 - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - .3 Protect factory finished products and equipment.
- .2 Surface Preparation:
 - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
 - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

- .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.
- .4 Clean and prepare surfaces in accordance with [MPI - Architectural Painting Specification Manual] [MPI - Maintenance Repainting Manual] specific requirements and coating manufacturer's recommendations.
- .5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements.
- .8 Touch up of shop primers with primer as specified.

2.7 APPLICATION

- .1 Painting shall not be carried out:
 - .1 During a rain if the surface to be painted will be exposed to or is wetted by rain.
 - .2 When the temperature of the air, product and the steel surface to be painted is lower than 5°C, or when less than 3°C above the dew point, unless approved by the paint manufacturer.
 - .3 When the relative humidity is greater than 85%, unless approved by the paint manufacturer.
 - .4 If the atmospheric temperature is expected to drop below 0°C before the paint is dry, unless otherwise recommended by the paint manufacturer.
 - .5 If agreed upon with the Departmental Representative, and where it is practical to do so, painting may be carried out when the outside temperatures are below the minimum described above, provided that heated shelter conditions are employed in which the paint work is protected from rain, sleet, snow and the temperature of the air and steel substrate, and paint is maintained at not less than the minimum specified above. Open flame heaters shall not be used.
 - .6 Adequate ventilation shall be supplied in the sheltered areas, so that a buildup of toxic and/or flammable fumes does not occur which would present a fire, explosion or health hazard to the workers.
 - .7 The shelter conditions shall be maintained during the painting, and for a sufficient length of time after the painting, such that the coatings will have dried or cured sufficiently, that recoating will not produce such deleterious effects as lifting, loss of adhesion, or loss of serviceability.
 - .8 Information should be obtained from the paint manufacturer concerning the period that his product should be sheltered.
- .2 Paint only after prepared surfaces have been accepted by Departmental Representative.
- .3 Use method of application approved by Departmental Representative.
 - .1 Conform to manufacturer's application recommendations.

- .4 Apply coats of paint in continuous film of uniform thickness.
 - .1 Repaint thin spots or bare areas before next coat of paint is applied.
- .5 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .6 Sand and dust between coats to remove visible defects.
- .7 Mechanical/Electrical Equipment:
 - .1 Paint all new above ground conduits, piping, hangers and other new mechanical and electrical equipment exposed to match adjacent surfaces, except as indicated.
 - .2 Do not paint over nameplates.

2.8 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 Place paint, primer defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME)
 - .1 ANSI/ASME B31.3-2013, Process Piping.
- .2 American Petroleum Institute
 - .1 API Std 1104-21 Welding of Pipelines and Related Facilities
- .3 American Welding Society (AWS)
 - .1 AWS C1.1M/C1.1-2012, Recommended Practices for Resistance Welding.
 - .2 AWS Z49.1-2005, Safety in Welding, Cutting and Allied Process.
 - .3 AWS W1-2000, Welding Inspection Handbook.
- .4 Canadian Standards Association (CSA International)
 - .1 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding.
 - .2 CSA B51-09, Boiler, Pressure Vessel and Pressure Piping Code.
 - .3 CSA-W117.2-12, Safety in Welding, Cutting and Allied Processes.
 - .4 CSA W178.1-08(R2013), Certification of Welding Inspection Organizations.
 - .5 CSA W178.2-08(R2013), Certification of Welding Inspectors.
 - .6 CSA Z662-11 Oil and Gas Pipeline Systems

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Welders:
 - .1 Welding qualifications in accordance with CSA B51.
 - .2 Use qualified and licensed welders possessing certificate for each procedure performed from authority having jurisdiction.
 - .3 Submit welder's qualifications to Departmental Representative.
 - .4 Each welder to possess identification symbol issued by authority having jurisdiction.
 - .2 Welding of steel pipes shall conform to API Standard 1104 - Welding Pipelines and Related Facilities or CSA-Z662, Oil and Gas Pipeline Systems.
 - .1 The welding work shall be carried out by fully qualified tradesmen, in accordance with appropriate CSA and API Standards, using good trade practices.

- .2 Welder qualification for work on pressure piping and fuel tanks shall be as per Section XI of the ASME Code - Boiler and Pressure Vessel Code: Welding Qualifications. All welders, to be accepted, must be registered in the Nunavut prior to starting work and possess a valid 'B' Pressure Welding certification.
- .3 Welding electrodes are affected by humidity and therefore, to retain their quality, special precautions must be followed when same are not maintained in dry environments or when containers are opened. Prior to utilization, electrodes in open containers shall be maintained heated in proper sized ovens as per manufacturer's recommendations at all times.
- .4 Prior to commencing work, qualified welding procedures shall be submitted to the Departmental Representative in accordance with Section 01 33 00 Submittal Procedures.
- .5 Welders shall be qualified to the procedures in accordance with the latest CSA-Z662 - Oil and Gas Pipeline Systems, ASME Code Section IX and /or CSA W47.1 or W55.2 Specifications.
- .3 Inspectors:
 - .1 Inspectors qualified to CSA W178.2.
- .4 Certifications:
 - .1 Registration of welding procedures in accordance with CSA B51.
 - .2 Copy of welding procedures available for inspection.
 - .3 Safety in welding, cutting and allied processes in accordance with CSA-W117.2.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle in accordance with Section 01 61 00 - Common Product Requirements.

Part 2 Products

2.1 ELECTRODES

- .1 Electrodes: in accordance with CSA W48 Series.

Part 3 Execution

3.1 APPLICATION

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

3.2 QUALITY OF WORK

- .1 Welding, repairs and radiographic inspections shall be in accordance with CSA-Z662, Oil Pipeline Systems, latest publication.

3.3 INSTALLATION REQUIREMENTS

- .1 Identify each weld with welder's identification symbol.
- .2 Backing rings:
 - .1 Where used, fit to minimize gaps between ring and pipe bore.
 - .2 Do not install at orifice flanges.
- .3 Fittings:
 - .1 NPS 2 and smaller: install welding type sockets.
 - .2 Branch connections: install welding tees or forged branch outlet fittings.

3.4 INSPECTION AND TESTS - GENERAL REQUIREMENTS

- .1 Review weld quality requirements and defect limits of applicable codes and standards with Departmental Representative before work is started.
- .2 Formulate "Inspection and Test Plan" in co-operation with Departmental Representative.
- .3 Do not conceal welds until they have been inspected, tested and approved by inspector.
- .4 Provide for inspector to visually inspect welds during early stages of welding procedures in accordance with Welding Inspection Handbook. Repair or replace defects as required by codes and as specified.

3.5 SPECIALIST EXAMINATIONS AND TESTS

- .1 General:
 - .1 Perform examinations and tests by specialist qualified to CSA W178.1 and CSA W178.2 and approved by Departmental Representative.
 - .2 Inspect and test 100 % of welds in accordance with "Inspection and Test Plan" by non-destructive visual and full gamma ray radiographic (hereinafter referred to as "radiography") tests].
- .2 Hydrostatically test welds pipeline as indicated in Section 23 08 01 Performance Verification of Mechanical Piping Systems.
- .3 Visual examinations: include entire circumference of weld externally and wherever possible internally.
- .4 Full radiographic tests for the new piping systems, of both internal and external pipes.
 - .1 Radiographic film:
 - .1 Identify each radiographic film with date, location, name of welder, and submit to Departmental Representative. Replace film if rejected because of poor quality.
 - .2 Interpretation of radiographic films:
 - .1 By qualified radiographer.
- .5 Failure of Radiographic or Visual tests: all welds to be repaired and retested until they are passed.

3.6 DEFECTS CAUSING REJECTION

- .1 As described in ANSI/ASME B31.1 and ANSI/ASME Boiler and Pressure Vessels Code.

3.7 REPAIR OF WELDS WHICH FAILED TESTS

- .1 Re-inspect and re-test repaired or re-worked welds at Contractor's expense.

3.8 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Part 1 General

1.1 CLEANING AND START-UP OF MECHANICAL PIPING SYSTEMS

- .1 In accordance with Section 23 08 02 - Cleaning and Start-up of Mechanical Piping Systems.

1.2 FUEL OIL SYSTEMS

- .1 Notify authorities having jurisdiction to enable witnessing of tests as required.
- .2 Hydrostatic test of piping system.
 - .1 Testing of the piping, prior to connection to the existing piping systems shall be done hydrostatically at 1034 kPa, isolated with blind flanges. The pressure shall be maintained for 2 hours minimum, and all joints inspected. Any leak shall be repaired immediately.
- .3 Air pressure test of interstitial space.
 - .1 Testing of the interstitial space in the double walled pipe system shall be air (soap bubble) tested at 415 kPa. The pressure shall be maintained for two (2) hours. Any leak shall be repaired immediately.
- .4 For buried piping,
 - .1 Conduct holiday testing of buried pipe coatings prior to backfilling.
- .5 Once the hydrostatic and/or air testing are completed and accepted, the Contractor shall connect all piping to the existing systems proceed to the start-up and trial operation.
 - .1 Once connected conduct a final hydrostatic test using fuel oil as the test medium at 415 kPa pressure for 2 hours. All flanged connections to be inspected. Any leak to be repaired immediately.
 - .2 Demonstrate resumed operation of fuel transfer to the dispenser pumps and to the plant.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 Procedures and cleaning solutions for cleaning mechanical piping systems.

1.2 REFERENCES

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.
- .2 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Instructions: submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

- .1 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle in accordance with manufacturer's written instructions and Section 01 61 00 - Common Product Requirements.

Part 2 Products

2.1 PIGGING OF PIPELINES

- .1 Prior to connecting the new pipelines to the existing and after the hydrostatic testing of the pipelines is completed, the pipelines shall be drained and pigged with T.D. Williamson Inc. FJR Pig, or equivalent, to remove debris and all water from the lines.
- .2 Collect water from hydrostatic test and any materials from pigging and dispose of water in a manner approved by the Departmental Representative.

- .3 The pig shall be moved with air pressure not exceeding 1034 kPa. A minimum of three passes of the pig in each line shall be made to assure cleanliness and that the pipelines are free of water.

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 datasheet.

3.2 CLEANING

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

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American Society of Mechanical Engineers (ASME)
 - .1 ASME-B16.3-12, Malleable-Iron Threaded Fittings: Classes 150 and 300.
 - .2 ASME-B16.9-12, Factory-Made Wrought Steel Buttwelding Fittings.
- .2 ASTM International
 - .1 ASTM A47/A47M-12, Standard Specification for Ferritic Malleable Iron Castings.
 - .2 ASTM A333/A333M-13, Standard Specification for Seamless and Welded Steel Pipe for Low Temperature Service and Other Applications which Require Notch Toughness.
 - .3 ASTM A350/A350M-13, Standard Specification for Carbon and Low Alloy Steel Forgings requiring Toughness Resting for piping Components.
 - .4 ASTM A105A/ A105M -13 Standard Specification for Carbon Steel for Pipe Applications
- .3 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 Storage Tank Systems for Petroleum Products and Allied Petroleum Products (SOR/DORS/2008-197).
- .4 CSA International
 - .1 CSA-B139-09, Installation Code for Oil Burning Equipment.
- .5 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .6 National Fire Code of Canada (NFCC 2010)

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meeting:
 - .1 Convene pre-installation meeting one week prior to beginning on-site installations in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Charts.
 - .1 Verify project requirements.
 - .2 Review installation conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature, specifications and datasheets for piping, fittings and equipment and include product characteristics, performance criteria, physical size, finish and limitations.
 - .1 Provide copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements 01 35 43 - Environmental Procedures.
- .3 Certificates:
 - .1 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .4 Manufacturers' Instructions: provide manufacturer's installation instructions.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 QUALITY ASSURANCE

- .1 Ensure piping is installed by individual authorized by authority having jurisdiction.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

Part 2 Products

2.1 PRODUCT PIPE

- .1 Pipe and pipe nipples, unless otherwise specified, shall be low temperature carbon steel (seamless or welded) ASTM Specification A333, Grade 6 carbon steel pipe conforming to the following:
 - .1 Pipe 100 mm dia. and larger to be ERW.
 - .2 Pipe 75 mm dia. and smaller to be seamless.
 - .3 Pipe 50 mm dia. and larger to be Schedule 40.
 - .4 Pipe 38 mm dia. and smaller to be Schedule 80.

2.2 DOUBLE WALLED PIPE

- .1 All secondary containment piping shall be an engineered and totally prefabricated double pipe type containment system. Product pipe to be protected from exterior environment by the secondary containment. System supplier to have 5 years experience in the manufacture of secondary contained pipe systems.
- .2 Product pipe to match product pipe specifications in 2.1 above.

- .3 Secondary containment pipe to also match product pipe specifications in 2.1 above.
- .4 Cladding:
 - .1 Secondary pipe jacket to be a fibreglass reinforced plastic (FRP) external cladding at least 2.5mm thick. The cladding shall be applied to a shot basted steel surface that meets SSPC SP-7 surface finish.
 - .2 The cladding on straight sections shall consist of multiple layers of helical windings of continuous glass reinforcements applied at a winding angle of 58 to 62 degrees. The cladding on fittings shall consist of either a chopped spray-up plastic resin/fibreglass reinforcement composite, or wrapping of glass cloth fully saturated with a two part catalyst adhesive.
 - .3 All field joints to be covered with a wrapping of glass cloth, fully saturated with a two part catalyst adhesive, identical in properties to the factory applied cladding system. The minimum thickness of the field hand lay-up shall be 2.mm
 - .4 All containment piping shall be subjected to a holiday test using a 35,0000 volt electric resistance holiday detector.
- .5 Pipe supports inside the secondary containment to be steel and shall be designed and factory installed by the secondary containment manufacturer.

2.3 JOINTING MATERIAL

- .1 Except where shown otherwise. all joints to be welded.

2.4 FITTINGS

- .1 All butt weld piping fittings shall be wrought carbon steel for low temperature service ASTM specification A420, Grade WPL-6.
- .2 Fittings shall be carbon steel, butt weld type, seamless, black, conforming to ASTM A234 Grade B, unless otherwise specified.
- .3 Fittings 50 mm and larger shall be Schedule 40 and butt weld fittings 38 mm and smaller, shall be Schedule 80.
- .4 Socket weld and threaded type fittings shall be forged steel, black, conforming to ASTM A-350, Grade LF2, 20680 kPa (Class 3000), unless otherwise specified, with dimensions to ANSI B16.11 and threads to ANSI B1.20.1.

2.5 Flanges, Gaskets, Nuts and Bolts

- .1 Flanges shall be 1034 kPa, ANSI B16.5, raised face, ASTM A-350, Grade LF2, faced and drilled, forged steel, welding neck, slip-on or threaded as called for, unless otherwise specified.
- .2 Gaskets shall be ring type for raised face flanges, and full face type for flat faced flanges. Gaskets shall be John Crane Style 2160, non-asbestos, or approved equal, 1.6 mm thick suitable for use with petroleum products. Do not apply a surface treatment of any kind to the gasket.
- .3 Flange bolting shall be alloy steel stud bolts, threaded full length, to ASTM Spec. A-320, Grade L7, sizes and lengths to suit. Nuts for stud bolts shall be alloy steel, semifinished, hexagonal head nuts of standard heavy duty series per ASTM Spec. A-194, Grade 4 Stud

Bolts, threaded in accordance with ANSI B1.1, coarse thread series, Class 2A fit. Nuts tapped in accordance with ANSI B1.1, coarse thread series, Class 2B fit.

2.6 GATE VALVES

- .1 Forged steel threaded gate valves shall have conventional port opening, bolted bonnet, O.S.&Y., ANSI Class 600 and as follows:
 - .1 Body material: Carbon steel to ASTM A105N.
 - .2 Trim material: Wedge - stainless steel 316 stellited.
 - .3 Seat - stainless steel 316 stellited.
 - .4 Stem - stainless steel 316B.
 - .5 Standard of Acceptance: Crane #B-3604 LU-T or equivalent Velan, Kitz or Newman-Hattersly.

Part 3 Execution

3.1 APPLICATION

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

3.2 PIPING

- .1 Install oil piping system in accordance with NFCC.
- .2 Above ground piping to be protected from physical impact due to impact.
- .3 Install buried piping or piping run in culverts in double-wall piping to CSA-B139.
- .4 Layout and Installation
 - .1 All pipe, fittings, appurtenances and equipment, shall be laid out and installed in accordance with the lines, elevations, and grades indicated on the Drawings.
 - .2 Equipment shall be set in place and final alignments completed before connections are made. Flexible connectors shall be installed straight, in a relaxed condition, as their inclusion into systems is intended to offset minor future misalignments that may occur due to natural conditions.
 - .3 Pipes shall be joined and supported so that no undue stress or strain is created in the lines or in connected equipment.
 - .4 Flanges shall be installed with holes straddled about the vertical axis and tightened evenly in balanced fashion. Flanges shall not be used to force parts into position.
 - .5 The Contractor shall install pipelines with gradual uniform slopes as specified on the Drawings, with no low areas which will trap water.

3.3 JOINTING OF THREADED FITTINGS

- .1 Jointing of threaded fittings shall be with the use of Gasiola Thread Lubricating Compound suitable for gasoline and petroleum products use. The compound shall be applied to the male threads only at the connection point.
- .2 Teflon tape is not allowed.

3.4 DOUBLE WALLED PIPING

- .1 Install the system in accordance with the directions furnished by the manufacturer.
- .2 Ensure all pipe ends of both the primary and secondary piping are sealed during transportation and installation to prevent the entry of contamination to the piping.
- .3 Secondary containment to be kept clean and dry at all times during the installation process.

3.5 VALVES

- .1 Install valves with stems upright or horizontal unless approved otherwise by Departmental Representative.
- .2 Install gate valves as indicated.

3.6 FIELD QUALITY CONTROL

- .1 Site Tests/Inspection:
 - .1 Test system to CSA-B139 and authorities having jurisdiction.
 - .2 Isolate tanks from piping pressure tests.
 - .3 Maintain test pressure during backfilling.

3.7 CLEANING

- .1 Clean in accordance with Section 23 08 02 - Cleaning and Start-Up of Mechanical Piping Systems, supplemented as follows:
 - .1 Ensure entire installation is approved by authority having jurisdiction.
 - .2 Clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA C22.1-12, Canadian Electrical Code, Part I, the latest edition, Safety Standard for Electrical Installations.
- .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.

1.2 DEFINITIONS

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

1.3 SCOPE OF WORK

- .1 As electrical scope of work is minor, electrical drawing details are submitted as part of mechanical drawings.
- .2 Remove the existing electrical cables and wiring in the mechanical pipe line in dike and re-route as shown in the contract drawings.
- .3 Perform grounding/bonding across flange as shown in the contract drawings.
- .4 Re-wiring to control valve and pumps as shown in the contract drawings.

1.4 GENERAL

- .1 These specifications shall be read together with the Drawings and all other sections of the contract documents.
- .2 The complete Work under this trade shall be governed by the dictates of good practice in all details of materials and methods even if not minutely specified. The Work shall be properly co-ordinated with the requirements of other units of work specified in other sections.
- .3 When all work has been completed, the Contractor shall obtain a Final Certificate of Approval (without reservations) from the Electrical Inspector having jurisdiction certifying that the installation is in accordance with the requirements of the contract drawings, specifications, and all governing codes and regulations.
- .4 Upon completion of the project, the Contractor shall provide the Owner with a complete set of record drawings, with changes indicated in red pencil.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

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

- .2 The Contractor shall provide Operation and Maintenance data for incorporation into maintenance manual as specified in Section 01 33 00.

1.6 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
- .2 Qualifications: electrical Workmanship shall be the best quality, executed by workmen experienced and skilled in their respective trades. Ensure full cooperation among all trades and coordination of the Work with continuous supervision.
- .3 Materials and Products: supplied and installed shall be new. Materials and products supplied shall conform to these specifications and to applicable standards. Use product for which replacement parts and service are readily available. Use product of one manufacturer for product of the same type or classification.
- .4 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

Part 2 Products

2.1 MATERIALS AND EQUIPMENT

- .1 Provide material and equipment in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Material and equipment to be CSA certified and approved for hazardous classification based on CEC Section 18. Where CSA certified material and equipment are not available, obtain special approval from authority having jurisdiction or inspection authorities before delivery to site and submit such approval as described in PART 1 - SUBMITTALS.

2.2 MANUFACTURER'S INSTRUCTION

- .1 Unless otherwise specified, comply with the manufacturer's/supplier's instructions for material or product and installation methods.
- .2 Notify the Departmental Representative in writing of any conflict between these Specifications and the instructions of the manufacturer/supplier.

2.3 WARNING SIGNS

- .1 Warning Signs: in accordance with requirements of authority having jurisdiction or inspection authorities Departmental Representative.

2.4 WIRING TERMINATIONS

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

2.5 WIRES AND CONDUCTORS

- .1 All wires and conductors shall be to be copper and to match the existing wires and conductors as shown on the drawing.

2.6 FITTINGS, BOXES AND SEALS

- .1 Fittings, seals, flexible couplings and boxes used in hazardous locations, as defined in CEC Section 18, shall be explosion-proof and rated for use in Class I, Zone 0, 1 or 2 locations, as applicable, and as shown on drawings, and shall be rated for use in Group IIA vapour atmospheres.
- .2 Boxes shall be copper- free aluminum and/or malleable iron, cadmium or zinc finish, Crouse-Hinds or approved equal. All fittings shall have sufficient room for insulated joints, wires and bushings.
- .3 Seals shall be provided as per code requirements.

2.7 CONDUITS

- .1 All conduits shall be sized in accordance with the Canadian Electrical Code unless a larger size is specifically called for on the Drawings.
- .2 All conduits shall be rigid, heavy wall, mild steel tube, electro-galvanized or hot-dipped galvanized. Aluminum conduits shall be considered in certain areas as applicable and permitted by Canadian Electrical Code to those areas only.

2.8 FASTENINGS

- .1 Provide metal fastenings and accessories in the same texture, colour and finish as the base metal in which they occur. Prevent electrolytic action between dissimilar metals. Use non-corrosive fasteners, anchors and spaces for securing exterior work, or work that may be located in a corrosive atmosphere.
- .2 Malleable iron clamps shall be used for anchoring conduits.
- .3 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage.
- .4 Space fastenings evenly and lay out neatly.

2.9 GROUNDING AND GROUNDING CONDUCTOR

- .1 Materials for grounding systems shall be in accordance with Section 10 of the Canadian Electrical Code, except that the ground wire sizes shall be no less than the sizes indicated on the drawings and shall be copper stranded.
- .2 The ground wire for anti-static grounding shall be minimum No. 4 AWG stranded copper.

Part 3 Execution

3.1 INSTALLATION

- .1 Complete installation in accordance with CSA C22.1 except where specified otherwise.

3.2 NAMEPLATES AND LABELS

- .1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.3 FIELD QUALITY CONTROL

- .1 Conduct following tests in accordance with Section 01 45 00 - Quality Control.

3.4 CLEANING

- .1 Clean and touch up surfaces of shop-painted 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.

END OF SECTION

Part I **General**

1.1 **DESCRIPTION**

- .1 This Section specifies requirements for:
 - .1 Recovery and placement of granular material as backfill around new pipe crossings associated with the upgrading of fuel supply piping.
 - .2 Restoration of road surfaces at culvert crossings.

1.2 **DEFINITION**

- .1 Pipe Bedding Sand: Locally derived sand fill used for bedding material around newly installed culverts. Sand is to be derived from local Blacktop Creek borrow source located approximately 3 km southwest of the airstrip. Given the small quantities required selective recovery of borrow material will be required in lieu of screening the aggregate.
- .2 Gradation of pipe bedding sand is to be within the following limits when tested to ASTM C136 and ASTM C117, sieve sizes to CAN/CGSB-8.2:

Sieve Designation	% Pass by Weight
50	100
12.5	55 to 95
5	45 to 90
2	35 to 80
0.425	25 to 70
0.08	15 to 40

- .3 Road Surface Aggregate: Existing road surface material will be sidecast from the work area and reused to reinstate the road surface.

1.3 **SITE CONDITIONS**

- .1 Ensure that all work under this section meet the terms and references of applicable operations-use permits for the site.
- .2 Suspend operations whenever climatic conditions are unsatisfactory for backfill or road aggregate placement to conform to this Specification.
- .3 Only operate equipment in work areas where materials are sufficiently dry to prevent excessive rutting.
- .4 Areas to be backfilled and re-instated are to be free from excessive snow, ice or standing water.

1.4 PROTECTION

- .1 Protect existing infrastructure during the course of work. Repair or replace at no cost to the Departmental Representative, any damaged by the Contractor's operations.
- .2 Protect archaeological features, if encountered, from construction and construction traffic.

1.5 SAMPLES

- .1 Inform Departmental Representative of proposed source materials. Given the nature of the work gradation testing by the Contractor will not be required. The Departmental Representative will review the proposed borrow source to confirm its acceptability for the current assignment.

1.6 MEASUREMENT OF PAYMENT

- .1 The supply, transport, placement, and compaction of pipe bedding sand, approved by the Departmental Representative, into the trench cuts to facilitate the pipe installation at discrete locations across the Work.
- .2 The following work items will be incidental to the work described in this Section, and will not be measured separately:
 - .1 Water for moisture conditioning, compaction and dust control.
 - .2 All construction surveying.
 - .3 Removal of surficial boulders over 300 mm in diameter from construction areas.
 - .4 Excavating, separating, and haulage of borrow materials.
 - .5 Site preparation, maintenance grading of the site as well as placement, grading and compaction of borrow material. Diversion and draining to keep areas free of standing water comprises part of the site preparation and backfill work
 - .6 Draining of wet areas prior to backfill or restoration operations.
 - .7 Work undertaken to drain borrow areas prior to excavation.
- .3 No measurement for payment will be made for:
 - .1 Rejected material.
 - .2 Surplus material.
- .4 Except as indicated above, work under this section will not be measured.

Part 2 Products

2.1 MATERIALS

- .1 Borrow material use as backfill requires the approval of Departmental Representative.

Part 3 Execution

3.1 EXCAVATION FOR CULVERT

- .1 Excavate and sidecast road surface aggregate (upper 300 mm) in a temporary stockpile for future reuse.
- .2 Excavations are to be sized to meet the pipe installation requirements.
- .3 Maintain positive drainage patterns within the trenches and keep work areas free of standing water.

3.2 BORROW SOURCE:

- .1 Obtain from borrow source all required pipe bedding sand material.
- .2 The existing operational driveway, access route, and roadways at the site are not to be used as granular material borrow sources unless specifically authorized by Departmental Representative.
- .3 Advise Departmental Representative of selected borrow source.
- .4 Borrow material cannot be obtained from the site unless authorized in writing by Departmental Representative.
- .5 Final grading upon completion to be tidy, well drained, free of standing water all to the satisfaction of Departmental Representative.
- .6 Upon completion of final grading, leave all slopes in a stable condition and spread all stripped organics.

3.3 PLACEMENT, MOISTURE CONDITIONING, AND COMPACTION OF PIPE BEDDING SAND

- .1 Recover and haul pipe bedding sand material from borrow site to designated work areas.
- .2 Place and compact pipe bedding sand material to within 300 mm of the final grades within the work area, or as agreed to with the Departmental Representative.
- .3 Do not place fill on snow or surface ice.
- .4 Maintain positive drainage patterns, unless otherwise directed, and fill depressions to avoid any ponding of water within the trench excavation.
- .5 All bedding material is to be placed in an unfrozen state. Bedding material to be free from debris, snow and ice. Do not place bedding material if the outside air temperature is below zero degrees Celsius, unless otherwise directed by Departmental Representative.

- .6 Place and compact bedding material in horizontal lifts not to exceed 250 mm in loose thickness. Compaction is to be achieved using portable manually operated vibratory compaction equipment suitable for working in trenches.
- .7 Moisture condition granular fill as required to meet compaction requirements. Provide a means to efficiently water bedding material if necessary. If material is excessively moist remove and replace with drier material.

3.4 RESTORATION OF ROAD SURFACE

- .1 Recover sidecast road surface aggregate and grade across work area.
- .2 Compact road surface aggregate by passing the bulldozer track over the area a minimum of six times or until the Departmental Representative is satisfied with the level of compaction. The compactor used to compact the bedding material may be used however will require thin lifts (<150 mm) to be placed to achieve reasonable compaction.

3.5 TESTING

- .1 Compaction testing will be carried out and paid for by Departmental Representative.
- .2 Frequency of testing will be determined by Departmental Representative.

3.6 FINISHING AND TOLERANCES

- .1 All areas to be restored with road aggregate are to be uniform without projections or depressions exceeding 25 mm in one (1) metre.
- .2 Finished surfaces are to be graded to promote positive drainage, to minimize standing water and to match existing site road conditions.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 ASTM International
 - .1 ASTM D413-98(2007), Standard Test Methods for Rubber Property-Adhesion to Flexible Substrate.
 - .2 ASTM D638-10, Standard Test Method for Tensile Properties of Plastics.
 - .3 ASTM D746-13, Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
 - .4 ASTM D792-13, Standard Test Method for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
 - .5 ASTM D1004-13, Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
 - .6 ASTM D1204-08, Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature.
 - .7 ASTM D1238-13, Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
 - .8 ASTM D1593-13, Standard Specification for Nonrigid Vinyl Chloride Plastic Film and Sheeting.
 - .9 ASTM D1603-12, Standard Test Method for Carbon Black in Olefin Plastics.
 - .10 ASTM D1693-13, Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics.
 - .11 ASTM D882-12, Standard Test Methods for Tensile Properties of Thin Plastic Sheeting.
 - .12 ASTM D1203-10, Standard Test Methods for Volatile Loss from Plastics Using Activated Carbon Methods.
 - .13 ASTM D1790-08, Standard Test Method for Brittleness Temperature of Plastic Sheeting by Impact.

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 geomembranes and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Certificates:
 - .1 Submit certificates, including test results 2 weeks before delivery to job site.

1.3 QUALITY ASSURANCE

- .1 Test quality of resin and membrane to ensure consistency of raw material and geomembrane quality in accordance with manufacturer's recommendations.

- .2 Test seams in strength and peel at beginning of each seaming period, and at least once every 4 hours if welding operation is interrupted, for each seaming apparatus and seamer used that day.
 - .1 Also test at least two samples from each panel, with samples taken from extra material, such that panel is not damaged and blanket geometry is not altered.
- .3 If seam test specimen fails in seam, repeat on new specimen.
 - .1 If new specimen fails in seam, material will not be used for seaming until deficiencies are corrected and two consecutive successful test seams are achieved.
- .4 Test seams by non-destructive methods over their full length, using vacuum test unit or air pressure test.
 - .1 Vacuum chamber to contain glass viewport and seal for sealing chamber to seam area. With chamber sealed in place and after partly filling chamber with water, apply vacuum of 17.2 kPa. Seam failure is detected by presence of air bubbles through water.
 - .2 Use air lance to apply air at 343 kPa through nozzle directed at edge of overlap seam. Seam failure is indicated by inflation or lifting of any part of geomembrane.
- .5 Provide test results to Departmental Representative, for each shift's production, including documentation of non-destructive testing and repairs at end of each shift.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and 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 During delivery and storage, protect geo-membranes from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.
- .4 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

- .1 Geomembrane: extruded synthetic sheet.
 - .1 Composed of high density polyethylene resin with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure for 60 days.
 - .2 Reinforced with scrim.
- .2 Physical properties:
 - .1 Specific gravity of resin: to ASTM D792, Method A, minimum 0.93.

- .2 Melt index of resin: to ASTM D1238, Condition E, minimum 0.15-0.60 g/min.
- .3 Thickness: to ASTM D1593, minimum 1.5 mm.
- .4 Tensile strength and elongation at yield: to ASTM D638.
 - .1 Tensile strength: minimum 14.5 MPa.
 - .2 Elongation: minimum 12%.
- .5 Tensile strength and elongation at break: to ASTM D638:
 - .1 Tensile strength: minimum 27.5 MPa +/- 10%.
 - .2 Elongation: minimum 600%.
- .6 Modulus of elasticity: to ASTM D882, minimum 318 kPa.
- .7 Tear resistance: to ASTM D1004, Die C, minimum 173 N.
- .8 Dimensional stability, each direction: to ASTM D1204, 100 degrees C, 1 hour, maximum 2%.
- .9 Low temperature brittleness: to ASTM D746, Procedure B, minus 60 degrees C.
- .10 Seam strength (at yield point): 280 N and film tear bond.
- .11 Seam peel adhesion: to ASTM D413, ASTM D638, ASTM D882.
- .12 Total content of additives, fillers or extenders: maximum 3% by weight.
- .13 Geomembrane: free of striations, roughness, pinholes, bubbles, blisters, undispersed raw materials and any sign of contamination by foreign matter.
- .3 Seams: welded in accordance with manufacturer's recommendations.
 - .1 Physical properties for resin used for welding are same as those for resin used in manufacture of membrane.

2.2 PREFABRICATED FITMENTS AND SEALING OF JOINTS

- .1 Where piping must go through the membrane material, prefabricated fitments shall be factory fabricated of liner membrane material, as specified herein, continuously seamed to provide an unbroken fitment and leak proof joint. No grounding cable, electrical conduit or teck cable shall pass through the liner. The base panel shall be sized to provide no less than 300 mm overlap with the liner. There shall be allowance for movement of pipe, i.e., contraction, expansion, settlement, etc., in the fitment, as shown on the Drawings.
- .2 Where pipes must go through the liner, the sealing shall be done as per the manufacturer's recommended practice, provided that the details of installation are submitted by the Contractor to the Departmental Representative for approval prior to manufacture or installation. No installation shall proceed prior to obtaining approval.
- .3 The physical properties of the finished joints shall equal or exceed the liner membrane specification.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for geomembranes installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 PREPARATION

3.3 INSTALLATION

- .1 Maintain area of installation free of water and snow accumulations.
- .2 Prepare excessively soft supporting material as directed by Departmental Representative.
- .3 Do not proceed with panel placement and seaming when ambient temperatures are below minus 5 degrees C or above 40 degrees C, during precipitation, in presence of excessive moisture (i.e. fog, dew), nor in presence of high winds.
- .4 Place and seam panels in accordance with manufacturer's recommendations on graded surface in orientation and locations indicated. Minimize wrinkles, avoid scratches and crimps to geomembranes and avoid damage to supporting material.
- .5 Protect installed membrane from displacement, damage or deterioration before, during and after placement of material layers.
- .6 Keep seam area clean and free of moisture, dust, dirt, debris and foreign material.
- .7 Make field seam samples in accordance with requirements described in PART 2 on fragment pieces of geo-membrane and test to verify that seaming conditions are adequate.
- .8 Test field seams as seaming work progresses by non-destructive methods over their full length. Repair seams which do not pass non-destructive test. Reconstruct seam between failed location and any passed test location, until non-destructive testing is successful.
- .9 Repair minor tears and pinholes by patching until non-destructive testing is successful. Patches to be round or oval in shape, made of same geomembrane material, and extend minimum of 75 mm beyond edge of defect.
- .10 Sleeves shall be installed where pipes go through the membrane and sealed against the pipes as recommended by the manufacturer or as detailed on the Drawings. The manufacturer's recommended method of sealing around pipes may be utilized if approved.

3.4 VACUUM BOX TESTING

- .1 Extrusion seams shall be vacuum box tested by the Contractor according to the following methods:
 - .1 Equipment for testing extrusion seams shall be comprised of, but not limited to: a vacuum box assembly consisting of a rigid housing, a transparent viewing window, a soft rubber gasket attached to the base, port hole or valve assembly and a vacuum gauge, a steel vacuum tank and pump assembly equipped with a pressure controller and pipe connections, a rubber pressure/vacuum hose with fittings and connections, a plastic bucket, a wide paint brush or mop, and a soapy solution. The vacuum box should be similar to the Series A 100 Straight Seam Tester as supplied by the American Parts Service Company.
 - .2 The vacuum pump shall be charged and the tank pressure adjusted to 35 kPa absolute.
 - .3 The Departmental Representative shall observe that a leak tight seal is created. The Contractor shall create the leak tight seal by wetting a strip of geomembrane approximately 300 mm by 1,200 mm (length of box) with a soapy solution, placing the box over the wetted area then compressing. The Contractor shall then close the bleed valve, open the vacuum valve, maintain 35 kPa gauge pressure for a period of approximately 5 seconds and examine the geomembrane through the viewing window for the presence of soap bubbles. If no bubbles appear after 5 seconds, the area shall be considered leak tight. The box shall be moved over the next adjoining area with an appropriate overlap and the process repeated. The extrusion seams should be vacuum box tested under the observation of the Departmental Representative.
 - .4 All areas where soap bubbles appear shall be marked and repaired and then retested under the observation of the Departmental Representative.
 - .5 At locations where seams cannot be non-destructively tested (including pipe penetrations), as determined by the Departmental Representative, and the seam cannot be tested prior to final installation, the seaming operations shall be observed by the Departmental Representative for uniformity and completeness.
 - .6 The Departmental Representative shall observe all testing operations for uniformity and completeness.
 - .7 All seams that are vacuum tested shall be marked with the date tested, the name of the liner technician performing the test and the results of the test.

3.5 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.

3.6 PROTECTION

- .1 Do not permit vehicular traffic directly on membrane.

END OF SECTION

Appendix I

Eureka

HIGH ARCTIC WEATHER STATION

Visitor Permit Application
Release Waiver and
User Charges



Environment
Canada

Environnement
Canada



HIGH ARCTIC WEATHER STATION

Visitor Permit Application

Visitors to Environment Canada High Arctic Weather Stations are required to complete the following documents:

- i) Application Form - Release, Waiver and Assumption of Risk and Indemnity
- ii) Visitor Permit Request Form

Once completed both forms should be sent by mail, fax or e-mail to:

John.MacIver@ec.gc.ca

EurekaWxStn@ec.gc.ca

Aerological and Surface Operational Programs

Environment Canada

Suite 150 - 123 Main Street

Winnipeg, MB R3C 4W2

Fax: 204-984-2072

Canada



Environment
Canada

Environnement
Canada

RELEASE, WAIVER AND ASSUMPTION OF RISK AND INDEMNITY

I, (We)*

(Individual or organization name)

hereby acknowledge and agree that in consideration of being granted use of the facilities owned and/or operated by Environment Canada:

1. I (We) do hereby release, Her Majesty the Queen in right of Canada, Her heirs, successors, officers, employees, servants, independent contractors and agents from all liability, and do hereby waive as against Her Majesty the Queen in right of Canada, Her heirs, successors, officers, employees, servants, independent contractors and agents, all recourse, claims, causes of action of any kind whatsoever, in respect of all personal injuries or property losses which I (We) may suffer arising out of or connected with the use of the facilities, aircraft, and vehicles, owned and/or operated by employees, independent contractors or agents of Environment Canada, except when such injuries or losses may have been caused by the willful acts or by the negligence of Her Majesty the Queen in right of Canada, Her heirs, successors, officers, employees, servants, independent contractors and agents.

2. And, I (We) do hereby acknowledge and agree:

a) that Arctic visitors are exposed to many risks and hazards, some of which are inherent in the very nature of the Arctic operations itself, others which result from but not limited to human error and negligence on the part of persons involved in operating and maintaining the facilities;

b) that, as a result of the aforesaid risks and hazards, I (We) as a user may suffer serious personal injury, even death, as well as property loss;

c) that some of the aforesaid risks and hazards are foreseeable, but others are not;

d) that I (We) understand that any fuel (aviation or motor) that may be purchased at Eureka, will be at our own risk and take full responsibility for its use. I (We) will not hold Environment Canada, Her Majesty the Queen in right of Canada, Her heirs, successors, officers, employees, servants, independent contractors and agents liable for any consequences it may cause.

e) that I (We) nevertheless, freely and voluntarily, assume all the aforesaid risks and hazards, and that, accordingly, my (our) use of the facilities, aircraft, and vehicles, owned and/or operated by employees, independent contractors or agents of Environment Canada shall be entirely at my own risk;

f) that I (We) understand that neither Her Majesty the Queen in right of Canada, Her heirs, successors, officers, employees, servants, independent contractors and agents assume any responsibility whatsoever for my safety during the course of my (our) use of the facilities, aircraft, and vehicles, owned and/or operated by employees, independent contractors or agents of Environment Canada;

g) that I (We) have carefully read this **RELEASE, WAIVER AND ASSUMPTION OF RISK AND INDEMNITY** agreement, that I (We) fully understand same and that I (We) am (are) freely and voluntarily executing same;

h) that I (We) understand clearly that by signing this **RELEASE, WAIVER AND ASSUMPTION OF RISK AND INDEMNITY** agreement that I (We) will be forever prevented from suing or otherwise claiming against Her Majesty the Queen in right of Canada, Her heirs, successors, officers, employees, servants, independent contractors

Canada 



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and agents and do hereby indemnify Her Majesty the Queen in right of Canada, Her heirs, successors, officers, employees, servants, independent contractors and agents for any loss or damage connected with any property loss or personal injury that maybe sustained as a result of the use of the facilities owned and/or operated by employees, independent contractors or agents of Environment Canada, except where such loss or injury is caused solely or partly by negligence on the part of the heirs, successors, officers, employees, servants, independent contractors and agents to any of the persons who are by virtue of this **RELEASE, WAIVER AND ASSUMPTION OF RISK AND INDEMNITY** entitled to the use of the said facilities;

i) that I (We) understand clearly that personal firearms are not allowed on the station at any time. Firearms brought onto the station for use in legitimate scientific research are to be used for that purpose only. All firearms are to be reported to the Station Program Manager upon arrival;

j) that I (We) understand clearly that Environment Canada, would not permit use of the facilities, aircraft, and vehicles, owned and/or operated by employees, independent contractors or agents of Environment Canada, unless I (We) signed this **RELEASE, WAIVER AND ASSUMPTION OF RISK** agreement;

k) that this **RELEASE, WAIVER AND ASSUMPTION OF RISK** agreement is binding on myself (ourselves), heirs executors, administrators, personal representatives and assigns.

DATED this day of _____, 20__, at

APPLICANT'S NAME (Please print)

WITNESS

X

X

APPLICANT'S SIGNATURE

WITNESS

NAMES OF MEMBERS IN PARTY, TITLE & CITIZENSHIP (attach a separate list if necessary):

Canada



**Environment
Canada**

**Environnement
Canada**

Name:

Title & Citizenship:



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Canada

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Canada

VISITOR PERMIT REQUEST FORM
HIGH ARCTIC WEATHER STATIONS
ENVIRONMENT CANADA

APPLICANT

MAILING ADDRESS

PHONE NO. / FAX NO.

EMAIL

PURPOSE OF VISIT

IDENTIFICATION:

You are required to self identify in which category you belong.

Continuing Research Programs
(On going studies that have been on-going at
Eureka in previous years)

Canadian Researchers

Non-Canadian researchers

Tourists

Facilities/Maintenance Project

Other Canadian Government Department



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Canada

**VISITOR PERMIT REQUEST FORM
HIGH ARCTIC WEATHER STATIONS
ENVIRONMENT CANADA**

Total Number in Party

Number of Males:	Number of Females:
------------------	--------------------

Anticipated Arrival

Date:	Time:
-------	-------

Anticipated Departure

Date:	Time:
-------	-------

Length of Stay

--

Services Requested as per attached Schedule of Fees (attach a separate list if necessary):

--

Calculated Costs as per attached Schedule of Fees:

\$

*Payment must be made by credit card, either by Master Card or Visa only at the time of visit.
All other forms will require advance payment.

NAME OF CARRIER:

--

VISIT SPECIFICS:

(e.g. Joe Brown & 3 techs, Dept. of Energy, fuel/power audit of station power system for Environment Canada.)

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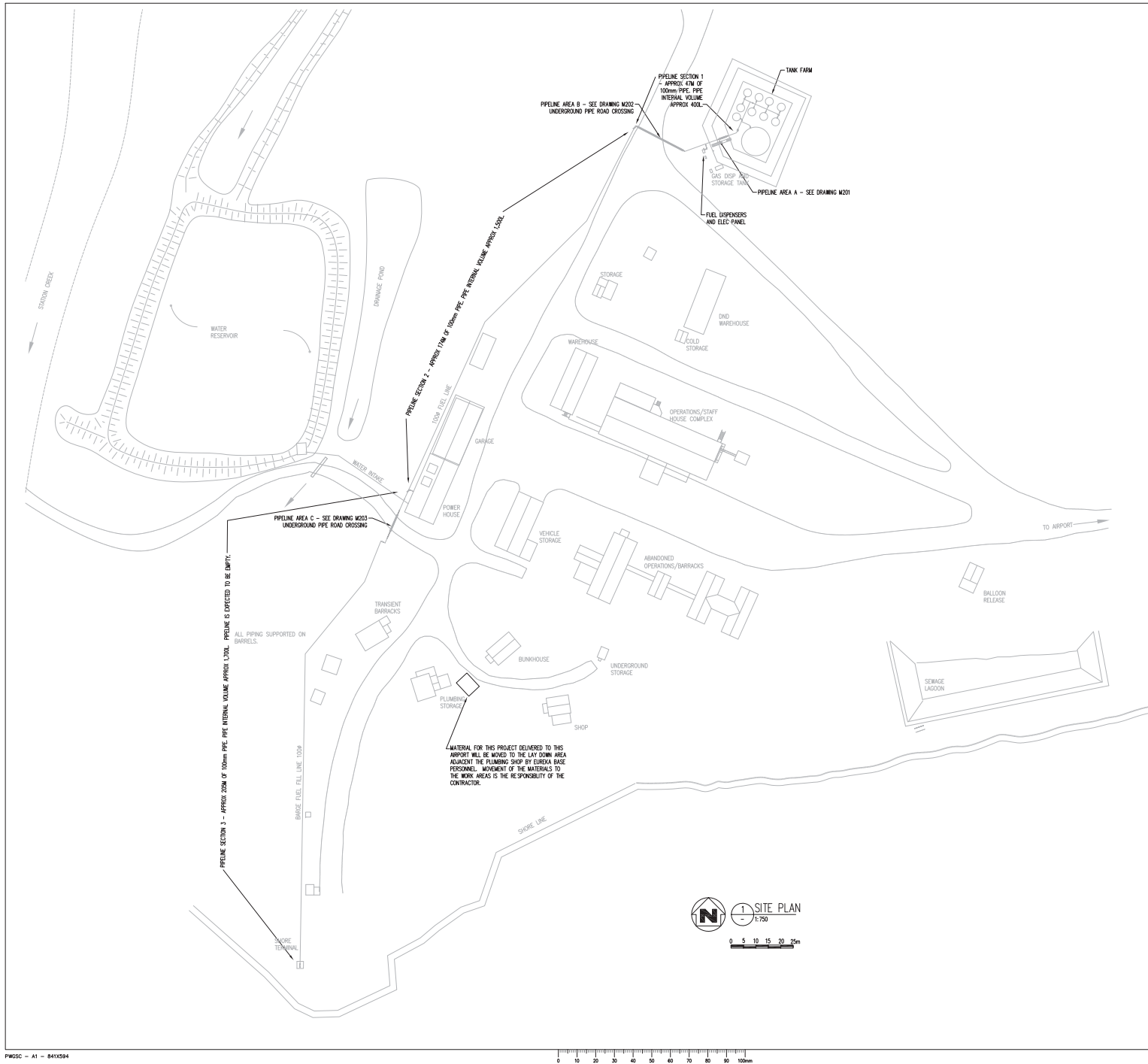


Eureka Weather Station
User Charges
April 01, 2013 – March 31, 2014

	<u>OGD</u>
Meals	
Breakfast	45.00
Lunch	45.00
Dinner	95.00
Accommodations	
Per Bed per Night	175.00
Comprehensive Daily Charge	360.00
Daily Station Usage Fee (Shower & Laundry) per person if not staying at station	20.00
Hydro per KWH	0.740
Drum Handling Fee	35.00
Labour Per Hour (3 hour minimum may apply)	95.00
Vehicle per hour including driver	
Light Wheeled Vehicle (Transportation to or from airstrip - 1 hour minimum either way)	105.00
Grader	140.00
Front End Loader	140.00
Crane	150.00
Bull Dozer	185.00
Aircraft Movements (each per landing or take off)	
Light Aircraft	115.00
Heavy Aircraft	345.00
Diesel & Mo Gas (per litre)	5.00

Updated – Feb 28, 2013

Canada



Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Western Region
SERVICES IMMOBILIERS
Région de l'ouest

WCC 208-W-20-040-03

WILLIAMS ENGINEERING INC.

WE

REGISTERED PROFESSIONAL ENGINEER
B.F. GEORGE
P.E. 12345
N.W.T.

PERMIT TO PRACTICE
NUNAVUT PROVINCE, CANADA, INC.
PERMIT NUMBER
P-646
NWT/NU Association of Professional Engineers and Geoscientists

DO NOT SCALE DRAWINGS

Revision/Revisions	Description/Description	Date/Date
1	ISSUED FOR CONSTRUCTION	2014-03-25

Client/client: **Environment Canada**

Project title/Titre du projet:
**PETROLEUM AND ALLIED PRODUCTS
STORAGE TANK SYSTEMS
PIPELINE UPGRADE
EUREKA TANK FARM
NUNAVUT**

Approved by/Approuvé par:
BFG

Designed by/Concept par:
BFG

Drawn by/Dessiné par:
JK

PM50C Project Manager/Admistrateur de Projets TP50C

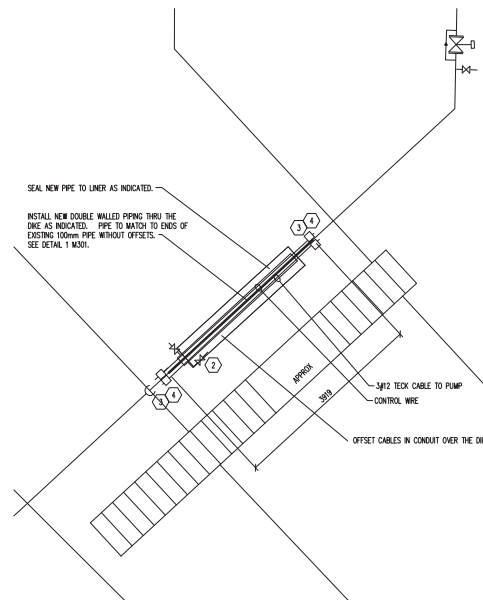
PM50C Architectural and Engineering Resources Manager/
Ressources Architectural et de Directeur d'Ingénierie, TP50C

Client/client:

Drawing title/Titre du dessin:
**SITE PLAN
GENERAL ARRANGEMENT**

Project No./No. du projet: R.068557.001	Sheet/Fauille: M101 OF 5	Revision no./ L2: Revision no.: 0
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1 EXISTING PIPING LAYOUT
M101 SCALE: 1:50

② NEW PIPING LAYOUT

NEW
SCALE: 1:5



KEYNOTES:

- 1 PROVIDE GROUNDING ACROSS NEW FLANGE SEE DETAIL 7 DRAWING M301
- 2 PROVIDE DRAIN AND VENT VALVES ON SECONDARY CONTAINMENT. SEE DETAIL 2 DRAWING M301.
- 3 PROVIDE JUNCTION BOXES SIZED TO THE WIRE GAUGE AND TYPE FOLLOWING CEC GUIDELINES. JUNCTION BOXES SHOULD BE CSA APPROVED AND WEATHER PROOF.
- 4 ALL EQUIPMENT AND TECHNIQUES USED, SHOULD BE IN ACCORDANCE WITH CEC SECTION 18 : HAZARDOUS LOCATIONS.



PHOTO PH1



PHOTO PH2

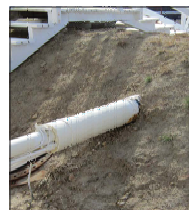


PHOTO PH3



PHOTO PH4



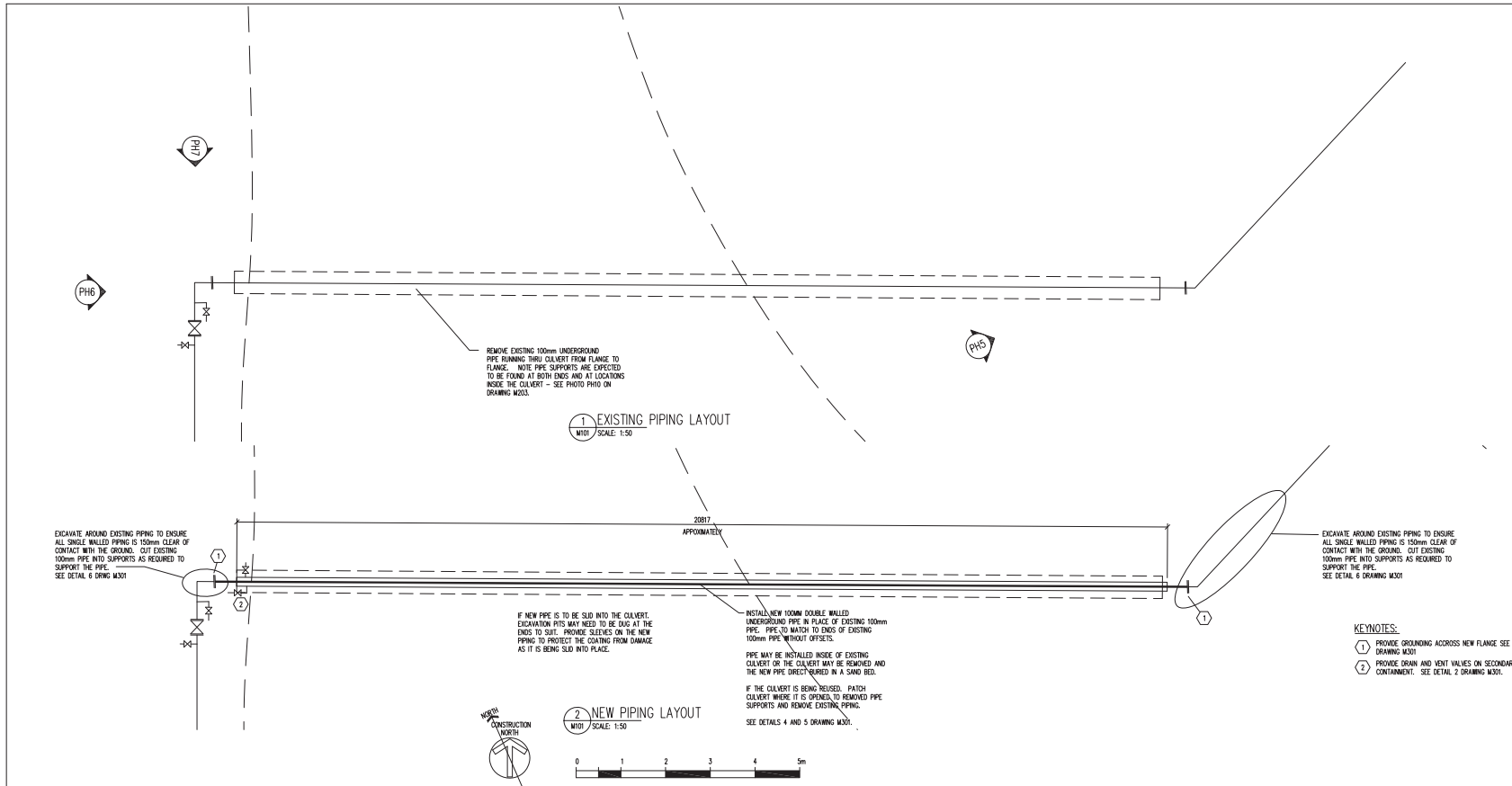


PHOTO PH5



PHOTO PH6



PHOTO PH7

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Western Region
SERVICES IMMOBILIERS
Région de l'ouest

WILLIAMS ENGINEERING INC.

WE

PERMIT TO PRACTICE
NUNAVUT REGULATION, CANADA INC.
PERMIT NUMBER
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DO NOT SCALE DRAWINGS		
Revision/Description	Description/Description	Date/Date
1	ISSUED FOR CONSTRUCTION	2014-03-25
2		
3		
4		
5		
6		
7		
8		
9		
10		

Environment Canada

Project title/titre du projet
PETROLEUM AND ALLIED PRODUCTS
STORAGE TANK SYSTEMS
PIPELINE UPGRADE
**EUREKA TANK FARM
NUNAVUT**

Approved by/approuvé par
BFG

Designed by/Conçue par
BFG

Drawn by/Dessiné par
JK

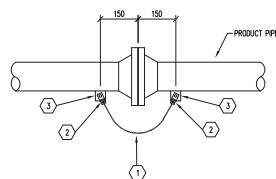
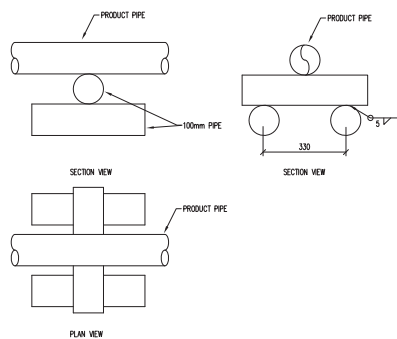
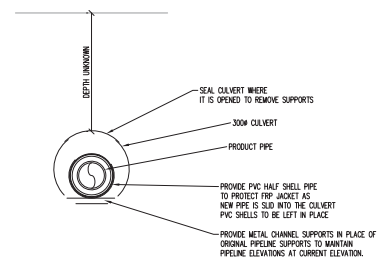
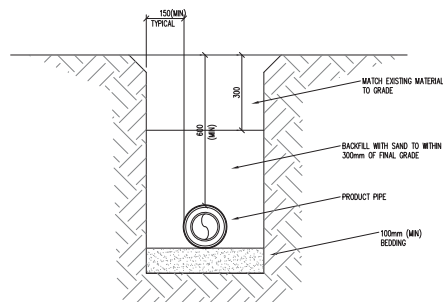
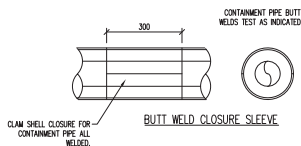
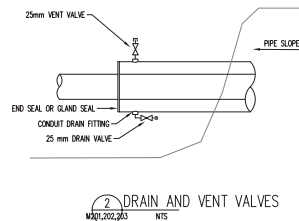
PMSC Project Manager/Administrateur de Projets TPSC

PMSC Architectural and Engineering Resources Manager/
Ressources Architectural et de Directeur d'Ingénierie, TPSC

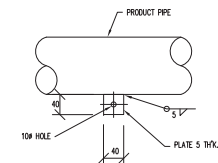
Client/client

Drawing title/titre du dessin
PIPELINE SECTION C

Project No./No. du projet R.068557.001	Sheet/Feuille M202 OF 5	Revision 0
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- KEYNOTES:**
- 1 #4 STRANDED BARE COPPER GROUND WIRE
 - 2 BURNDY CONNECTOR SCRULLUGS TYPE KPA c/w BRASS BOLT & NUTS
 - 3 GROUND LUG PLATE 40 x 40 x 6 TH'K. SEE DETAIL 8 DING. M303



DO NOT SCALE DRAWINGS

0	ISSUED FOR CONSTRUCTION	2014-03-20
Revision/ Revision	Description/Description	Date/Date
Client/client		

Environment Canada

Project title/Titre du projet
PETROLEUM AND ALLIED PRODUCTS
STORAGE TANK SYSTEMS
PIPELINE UPGRADE
EUREKA TANK FARM
NUNAVUT

Approved by/Approuve par
BFG

Designed by/Concept par

BFG
Drawn by/Designe par JK

PMGSC Project Manager/Administrateur de Projets TPSGC

PWGSC, Architectural and Engineering Resources Manager/
Ressources Architectural et de Directeur d'ingénierie, TPWGSC

Client/client

Drawing title/Titre du dessin

DETAILS

Project No./No. du projet	R.068557.001
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Sheet/Feuille
M301
OF 5

Revision no. La Révision no.	
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