SNC·LAVALIN
Bâtisseurs d'avenir

Parks Canada Agency
Saint-Ours Lock – National Historic Site of Canada
Lock Refurbishment

CONSTRUCTION SPECIFICATION

Issued for tender

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COUR-1525
Revision 00
July 2019

Liste des modifications

Révision				Pages révisées	Remarques
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Drawing List – St-Ours Lock

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RUO-20-121.01	641613-0500-45DD-0001	M1	PLAN D'ENSEMBLE LOCALISATION DES TRAVAUX LAYOUT PLAN LOCALIZATION OF WORKS
RUO-20-121.02	641613-0500-45DD-0002	M2	DÉMOLITION VANNE PAPILLON, SYSTÈME D'OUVERTURE DE PORTE ET CAILLEBOTIS DEMOLITION BUTTERFLY VALVE, DOOR OPENING SYSTEM AND GRATING
RUO-20-121.03	641613-0500-45DD-0003	M3	RÉFECTION VANNE PAPILLON, SYSTÈME D'OUVERTURE DE PORTE ET CAILLEBOTIS REHABILITATION BUTTERFLY VALVE, DOOR OPENING SYSTEM AND GRATING
RUO-20-121.04	641613-0500-45DD-0004	M4	RÉFECTION VANNE PAPILLON, SYSTÈME D'OUVERTURE DE PORTE SECTIONS ET DÉTAILS REHABILITATION BUTTERFLY VALVE, DOOR OPENING SYSTEM SECTIONS AND DETAILS
RUO-20-121.05	641613-0500-45DD-0005	M5	RÉFECTION DES ANCRAGES DES GRILLES À DÉBRIS REHABILITATION OF TRASH RACK ANCHORS
RUO-20-121.06	641613-0500-45DD-0006	M6	SYSTÈME D'OUVERTURE DE PORTE ET MOTO-RÉDUCTEUR DOOR OPENING SYSTEM AND REDUCER
RUO-20-121.07	641613-0500-45DD-0007	M7	SYSTÈME D'OUVERTURE DE PORTE SECTION ET DÉTAILS DOOR OPENING SYSTEM SECTION AND DETAILS
RUO-20-121.22	641613-0500-41DD-0001	C1	OUVRAGES MÉTALLIQUES COUPES ET DÉTAILS MISCELLANEOUS STEEL WORKS

			SECTIONS AND DETAILS
RUO-20-121.23	641613-0500-41DD-0002	C2	OUVRAGES EN BÉTON COUPES ET DÉTAILS MISCELLANEOUS CONCRETE WORKS SECTIONS AND DETAILS

REFERENCE DRAWING LIST

Drawing no	*Drawing Title*
184-00-PR.1-209-F1	PLAN DE LOCALISATION LOCATION PLAN
184-00-PR.1-209-F2	PLAN D'ENSEMBLE GENERAL LAYOUT
184-00-PR.1-209-F3	ÉLÉVATION PORTE AVALFACE AMONT LOWER GATE ELEVATION UPSTREAM FACE
184-00-PR.1-209-F4	COUPES ET DÉTAILS FEUILLE 1 DE 2 SECTIONS AND DETAILS SHEET 1 OF 2
184-00-PR.1-209-F5	COUPES ET DÉTAILS FEUILLE 2 DE 2 SECTIONS AND DETAILS SHEET 2 OF 2
184-00-PR.1-209-F6	DÉTAILS PIVOTS PIVOTS DETAILS
184-00-PR.1-209-F7	DÉTAILS PASSERELLE FOOTBRIDGE DETAILS
184-00-PR.1-209-F8	RÉPARATION AU SEUIL DES PORTES AVAL DOWNSTREAM GATES SILL REPAIRS
RU-23-101.00	PROPOSED MECHANISM OPERATING CULVERT VALVE
RUO-20-102.02	GENERAL PLAN OF LOCK
RUO-20-103.01	STOP-LOG CHECKS, SILL & EMBEDDED PARTS
RUO-20-104.04	ANCHOR BOXES, COLLARS AND ANCHOR BOLTS FOR NEW LOCK

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RUO-20-110.05	UPPER STOP-LOG CHECKS SILL AND EMBEDDED PARTS
RUO-35-101.01	GUIDES SLIDES & BARS TO OPERATE BUTTERFLY VALVES
RUO-35-101.02	FRAMES FOR BUTTERFLY VALVES FOR NEW LOCK
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RUO-35-104.00	INDICTORS SHOWING ACTUAL POSITION OF BUTTERFLY VALVES
RUO-35-104.02	DETAILS OF LEVERS TO OPERATE BUTTERFLY VALVES BY ELECTRICITY
RUO-35-106.00	PROPOSED MECHANISM OPERATING CULVERT VALVE

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General Requirements – Summary of Work
Section 01 11 00

PART 1 GENERAL

1.1 DESCRIPTION OF FACILITIES

.1 The national historic site of Canada of Saint-Ours Canal is located on the Richelieu river, 52 km downstream of Chambly. At this location, on each side of Darvard Island, we can find de Dam and the Saint-Ours lock.

.2 The dam allows to higher the water level so that the river between Saint-Ours and Chambly is navigable. The actual concrete dam has been built in 1967 in replacement of the old wood dam.

.3 The lock consists of upstream and downstream wooden doors. The four doors are activated by four rack and pinion systems located in pits on the side of each door. These systems are driven by a motor and a gearbox. The filling and draining of the lock are done by delivering water through 2 underground tunnels located on each side of the lock. Water is controlled by 4 butterfly valves. There are 2 butterfly valves per tunnel, one on the upstream side and the other downstream. These valves are operated by hydraulic cylinders located in the valve pits. Two control stations (upstream and downstream) allow operating the doors and the butterfly valves. Dewatering of the lock is made possible by installing stop logs in the guides on the upstream and downstream sides of the lock.

1.2 OBJECT

.1 This document defines the works including labor supply, materials and equipment and all works required for the supply and the installation of electrical and mechanical equipment systems and associated civil work as part of the Saint-Ours Lock rehabilitation Project, in accordance with the drawings, the related technical specifications and the associated requirements from Parks Canada.

1.3 EXIGENCES CONNEXES

.1 Section 02 41 16 – Structure Demolition

.2 Section 02 50 13 – Management of Waste

.3 Section 05 50 00 – Metal - Metal Fabrications

.4 Section 06 05 73 – Wood Treatment

.5 Section 11 90 00 – Mechanical Systems – Valves, Gates and Mechanisms

.6 Section 26 05 00 – Electricity – Common Work Results for Electrical

.7 Section 26 05 03 – Electricity - Commissioning

.8 Section 26 05 20 – Electricity – Wire and Box Connectors

.9 Section 26 05 21 – Electricity – Wires and Cables

.10 Section 26 05 22 – Electricity – Connectors and Terminations

.11 Section 26 05 31 – Electricity - Splitters, junction, pull boxes and cabinets

.12 Section 26 05 34 – Electricity - Conduits Fastenings

.13 Section 26 12 16.01 – Electricity – Dry type, Medium Voltage Transformers

.14 Section 26 24 16.01 – Electricity – Distribution Panels

.15 Section 26 24 19 – Motor Control Centers

.16 Section 26 27 26 – Wiring Devices

.17 Section 26 29 03 – Control Devices

1.4 CONTRACT TYPE

.1 Work shall be subject to a Lump Sum contract.

1.5 WORK BY OTHERS

.1 Cooperate with other Contractors, if required, in carrying out their respective works and carry out instructions from Parks Canada Agency.

.2 Coordinate work with that of other Contractors, if required. If any part of work under this Contract depends for its proper execution or result upon work by another Contractor, report promptly to Parks Canada Agency, in writing, any anomalies or defects which may interfere with proper execution of Work.

1.6 WORK SEQUENCE

.1 Portion of works shall be executed during the closing period of the canal for navigation. This period begins the week following Thanksgiving (in October) until the end of April.

.2 Saint-Ours shall be dewatered by the Contractor. Information related to dewatering is provided in Appendix A for information only. The final methodology remains the responsibility of the Contractor.

1.7 CONTRACTOR'S USE OF PREMISES

.1 The use of the premises is limited to required areas for work, storage and access roads to allow work to be performed by other contractors, if required;

.2 Coordinate use of premises under direction of Parks Canada Agency.

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

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

.5 Repair or replace portions of existing work which have been altered during construction to match existing or adjoining work, as directed by the Parks Canada Agency.

.6 At completion of construction, the existing works condition shall be equal to or better than that which existed before work.

.7 The available mobilization areas are identified in Appendix C.

1.8 OWNER OCCUPANCY

.1 The Owner will use the premises during the entire construction period for normal operation.

.2 Coordinate with the Owner in scheduling activities to minimize conflicts and facilitate operation by Owner.

1.9 EXISTING SERVICES

.1 Notify the Parks Canada Agency and utility companies of intended interruption of services and obtain required authorizations.

.2 Establish location and extent of existing services located in work area before starting work. Notify the Parks Canada Agency of any findings.

.3 Submit a schedule and obtain approval from Parks Canada Agency for any shut-down or temporary closure of services or facilities including power and communication services. Adhere to approved schedule and provide notices to affected parties.

.4 Provide temporary services as directed by Parks Canada Agency to maintain existing services.

.5 Where unknown services are encountered, immediately notify the Parks Canada Agency and record findings in writing.

.6 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by required authorities.

.7 Record location of maintained, re-routed and abandoned utility lines.

.8 Install temporary barriers in accordance with Section 01 56 00 – Temporary Barriers and Enclosures.

1.10 RIGHTS, PERMITS AND INSPECTION

.1 The Navigation Protection Act (NPA) applies to this work. Submit all required documents (Notice of Works form and Works Plan) to the Parks Canada Agency so that he can obtain all approvals or permits required.

.2 Pay all required fees.

.3 If required, Drawings and Specifications required by Hydro-Québec will be providing free by the Parks Canada Agency.

.4 At the end of the work, obtain from authorities having jurisdiction, an acceptance certificate and forward it to Parks Canada Agency.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 SCOPE OF WORK

.1 General

.1 The work covered by this contract shall include the supply of all materials, labour, tools, equipment, protection and transportation required to complete the work in accordance with the requirements specified on the drawings and in the specification.

.2 The coordination and distribution of work for subcontractors is the Contractor's responsibility and any reference to documents referring to subcontractors shall not be construed as binding the Parks Canada Agency to such a distribution.

.2 Saint-Ours Lock

.1 Lock dewatering by the Contractor

.1 The work covered by this contract shall include but not be limited to:

.1 Loading of the Stoplogs at Parks Canada Agency, transport and installation of the upstream and downstream stoplogs. Before the installation of the stoplogs, Contractor shall make sure that there's no debris on the upstream and downstream sills so that the installation of the lower stoplogs are not compromised. Furthermore, Contractor shall consider the fact that the stoplogs are not 100% watertight. It is the responsibility of the Contractor to make sure that sealing between the stoplogs sections is acceptable (i.e., addition of Rodofoam or sealing membrane).

.2 Docks and safety barriers remain at the center of the lock during winter. Contractor shall move them at his own cost if required.

.3 Lock dewatering and pumping of the excess of water during work period. See section 01 35 43 for environment requirements.

.4 The supply and installation of pumps or agitators allowing for water circulation to prevent ice formation on the stoplogs surfaces (upstream and downstream) during the dewatering period.

.5 Filling of the lock at the end of works.

.6 Removal of all dewatering equipment at the end of the works.

.7 The removal of upstream and downstream stoplogs, transport and unloading of the stoplogs at Parks Canada Agency.

.2 Civil Work

.1 The civil work covered by this contract shall include but not be limited to:

.1 The removal and disposal of the existing gratings and their fixing systems.

.2 The supply, fabrication, transport and installation of new gratings and hinged trap.

.3 The supply, fabrication, transport and installation of new stairs.

.4 The supply, fabrication, transport and installation of new removable handrails.

.5 The supply, transport and installation of anchor points for the rescue system.

.6 Construction of a new trench in the existing building as shown on drawings including steel cover and demolition and excavation works.

.7 Demolition, excavation and construction of pull box as shown on drawings including steel cover.

.3 Mechanical work

.1 The mechanical work covered by this contract shall include but not be limited to:

.1 The supply, design, fabrication, transport and installation of new wooden top beams on the upstream doors only. The reference drawings of the downstream doors are provided in annex. The replacement methodology shall be provided for review and approval by the Parks Canada Agency.

.2 The supply, fabrication, transport and installation of eight door upper pivot retaining blocks as shown on drawings.

.3 The supply of the shop drawings of the new wooden top beams of the upstream doors and doors upper pivot retaining blocks for review and approval by the Parks Canada Agency.

.4 The removal and disposal of the butterfly valves hydraulic power units.

.5 The removal and the disposal of the existing butterfly valves.

.6 The supply, fabrication, transport and installation of eight bronze bushings for the new butterfly valves.

.7 The design, supply, fabrication, transport and installation of new butterfly valves.

.8 The design, supply, fabrication, transport and installation of new butterfly valves operating systems.

.9 The supply of design briefs (calculation notes) and fabrication drawings for the new butterfly valves and their operating systems for review and approval by the Parks Canada Agency.

.10 The supply, transport and installation of new gear motors and couplings for the door opening mechanisms and the removal/disposal of the existing gearboxes. The existing motors shall be handed over to Parks Canada Agency.

.11 The supply, fabrication, transport and installation of new gear motor steel bases.

.12 The supply of shop drawings of the new gear motors steel bases for review and approval by the Parks Canada Agency.

.13 The supply and installation of new anchors for the trash racks.

.14 The supply and installation and new rack stainless steel bolts on all lock doors.

.15 The commissioning of the mechanical equipment.

.4 Electrical work

.1 The electrical work covered by this contract shall include but not be limited to :

.1 The removal and disposal of the 200 A breaker in the «HQ Incoming and Metering» section, the 600 V distribution panel, three section of 600-120/240 V transformers and 120/240 V distribution panels and two sections of motor control center. These equipments are located in the Lockhouse.

.2 The removal and disposal of the power and control cables for the hydraulic valve system and the door opening systems, including to the control cabinets located in the upstream and downstream control cubicles.

.3 The removal and disposal of all unused cables in the cable trench.

.4 The removal and disposal of all electrical devices located in the valve and door opening system pits.

.5 The supply, manufacturing, transport, installation and commissioning of a new 600 V motor control center.

.6 The supply and installation of a new 600 V 200 A breaker in the «HQ Incoming and Metering» section.

.7 The supply and installation of a cabinet with a 600 V, 200 A manual transfer switch and a 600 V 200 A receptacle for the generator connection.

.8 The relocation of the 60 A and 100 A receptacles located on the downstream side of the lock.

.9 The supply and installation of junction boxes, disconnect switches, emergency push-button stations in the valves and opening door system pits.

.10 The supply and installation of the proximity sensors for the door opening systems.

.11 The supply and installation of three 4 inches conduits on the upstream side of the lock.

.12 The cleaning of the empty 4-inches conduits on the downstream side of the lock (with a mandrel) and the evaluation of their condition.

.13 The connection of the motor control center to the 200 A breaker located in the «HQ Incoming and Metering» section.

.14 The supply, installation and connection of all electrical cables (power and control) indicated on drawings.

.15 The connection of all loads non relative to the lock systems to the motor control center (including their 120/240 V distribution panels). If necessary, use junction boxes if some cables are too short.

.16 The modification of the control cabinets in the upstream and downstream control cubicles as indicated on drawings, including the dismantling of all actual components. The superior face of the cabinet is reused.

.17 The commissioning of all electrical equipment.

END OF SECTION

General Requirements – Work Restrictions
Section 01 14 00

PART 1 GENERAL

1.1 CONSTRUCTION CONSTRAINTS

.1 Several constraints will affect the realization of work.

.2 Work shall consider:

.1 Access availability according to weather conditions;

.2 Spaces availability for sites facilities;

.3 Environmental restrictions;

.4 Security constraints.

1.2 ARCHEOLOGY

.1 Not Used

1.3 CONTRACTOR SITE ACCESS

.1 If Contractor causes damage to roads and installations, Contractor is responsible to repair or replace at his own cost to the complete satisfaction of Parks Canada Agency.

1.4 SITE CLEANING AND MAINTENANCE AND ENVIRONMENT PROTECTION

.1 Keep the site clear of all material accumulations, scrap and waste and make a complete and final cleaning to the satisfaction of Parks Canada Agency.

.2 Contractor is responsible to dispose waste and debris in appropriate places.

1.5 WINTER CONDITIONS

.1 Snow removal of the site is the responsibility of the Contractor. Contractor is also responsible for all its accesses off the existing roads.

1.6 WEEKEND WORK

.1 If the Contractor plan any work on Saturdays, Sundays, statutory holidays or nights, he shall give a written notice to Parks Canada Agency at least five (5) business days before the work.

1.7 WORK BY OTHERS

.1 Cooperate with other Contractors working at site.

1.8 SITE INSPECTION

.1 Starting the work completely or partially means that the Contractor accepts the existing conditions of the site. If the Contractor performs its work on defective surfaces or conditions, corrections or rework will be made at his own cost.

1.9 DYNAMITING

.1 No blasting work of any kind is allowed.

1.10 ENVIRONMENTAL RESTRICTIONS

.1 Environmental restrictions are defined in section 01 35 43 – Environmental Procedures.

.2 Work shall meet federal, provincial and local noise requirements.

1.11 LAND-SURVEYING

.1 Contractor responsible to characterize the various structures according to Parks Canada Agency drawings and do a survey of the existing all around to validate the connection to the existing. Contractor shall notify to the Parks Canada Agency any unforeseen of anomaly detected. Contractor shall plan the time required for a possible verification by the Parks Canada Agency.

.2 Before the final acceptance of the work, Contractor shall provide survey plans of the final work (Final Drawings) on a computer media.

1.12 WORK SCHEDULE

.1 Construction work is allowed between 7h00 and 19h00, Monday to Friday.

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 DESCRIPTION OF THE ITEMS ON THE PRICE SCHEDULE

.1 General Conditions

.1 Item 1.1 – Site Organization

.1 Payment of this item shall me made as follows:

.1 25% with the first monthly payment, after mobilization and installation of site facilities;

.2 50% also distributed with milestone payments and in proportion to the progress of the work;

.3 25% with payment issued upon issuance of "Substantial Completion Certificate" after final cleaning.

.2 This item is paid on a lump sum basis and includes the costs of mobilization and demobilization, the cost of purchasing, depreciating or leasing machinery, tools and equipment, personnel, materials, site facilities and any mobilization as may be required to meet the work schedule.

.3 Maintenance and operating costs for the maintenance of machinery, equipment and tools included in the worksite facilities during the work and the personnel supporting these facilities are also included.

.4 This price includes, but is not limited to:

.1 Land

.1 Expenses for the acquisition, lease, compensation and use of land other than those made available to the contractor, either for the site installations or for temporary laydown areas.

.2 The costs of use and maintenance of the lands made available to the contractor.

.2 Layout of the site work zones

.1 Land layout required for set-up of site facilities

.2 Site drainage.

.3 Site office of the personnel.

.4 Premises for storage of equipment.

.5 External storage for material and equipment.

.6 Barriers and fencing required throughout the duration of the work, including its eventual movement and all temporary safety devices

.3 Access roads

.1 Any additional access roads required.

.2 Maintenance of access roads (cleaning in summer, leveling of gravel roads, installation of dust suppressant, etc.).

.3 Temporary signage.

.4 Required temporary road diversions.

.5 Snow removal during winter, if required.

.4 Materials and supply

.1 Generators and temporary lighting;

.2 Scaffolding;

.3 Small tools;

.4 Compressors;

.5 Other required equipment;

.5 Temporary works

.1 Required actions and supplies such as, but not limited to, labor, equipment, tools and machinery, materials, professional services and land surveys for transportation and land surveys for temporary support of utilities.

.2 Engineering and expertise as well as the design of structures and the provision of drawings signed and sealed by an engineer who must be a member of the “Ordre des Ingénieurs du Québec” (OIQ) as well as technical data sheets (materials, equipment, etc.) to the Parks Canada Agency for approval.

.6 Networks

.1 Toilets on site;

.2 Water supply to existing site facilities;

.3 Fire protection;

.4 Water for compaction of material and dust suppressant.

.5 Power supply;

.7 Health and Safety

.1 All equipment, labour, materials, machinery, tooling and accessories required to ensure health and safety in accordance with Section 01 35 29.06 of the construction Specification and applicable laws and regulations.

.8 Environment

.1 The protection of the environment, in accordance with section "01 35 43 - Environmental Protection" of the construction specifications and applicable laws.

.2 Construction / demolition waste management, in accordance with the requirements of all sections of "Division 1 - General Requirements" of the Construction Specification.

.9 Miscellaneous

.1 Transportation of contractor's personnel;

.2 Disposal of waste.

.3 All loading and unloading activities required by the contractor.

.4 Coordination with users and other contractors in same areas.

.5 Coordination of sub-contractors and suppliers;

.6 Site coordination meetings.

.7 All other costs required for the complete execution of the works but not included in other unit or lump sum costs;

.2 Dewatering and control of water of work zones

.1 This item remunerates on a lump sum basis all the necessary steps, actions and supplies such as, but not limited to, management, transportation, labor, equipment, materials, permits, professional services, construction engineering, work platforms, for dewatering and control of water of the work zones.

.2 This item also includes the supply and installation of cofferdams not shown or not identified on the drawings or in the specifications which may be required for the complete and safe execution of the works including dismantling and restoration of the site at the end of the works.

.3 All costs necessary to complete this item must be included.

.4 Engineering and expertise as well as the design of structures and the provision of drawings signed and sealed by an engineer who must be a member of the "Ordre des Ingénieurs du Québec" (OIQ) as well as technical data sheets (materials, equipment, etc.) to the Parks Canada Agency for approval.

.5 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.2 Lock

.1 Item 2.1.1 – Replacement of the grating and the frame in the butterfly valve access wells

.1 This item remunerates on a lump sum basis (per sets) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the replacement of the grating and the frame in the butterfly valve access well, all in accordance with the drawings and requirements of the specifications.

.2 Dismantled equipment to be disposed off site.

.3 All costs necessary to complete this item must be included.

.4 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.2 Item 2.1.2 – Supply and installation of new stairs in the butterfly valve access wells

.1 This item remunerates on a lump sum basis (per set) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of new stairs in the butterfly valve access wells, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.3 Item 2.1.3 – Supply of new portable guardrails for the butterfly valve access wells.

.1 This item remunerates on a lump sum basis (per set) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply of new portable guardrails for the butterfly valve access wells, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.4 Item 2.1.4 – Supply and installation of new anchor points

.1 This item remunerates on a lump sum basis (per set) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of new anchor points, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.5 Item 2.2.1 – Replacement of the upper wooden beams of the upstream lock gates

.1 This item remunerates on a lump sum basis (per set) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the replacement of the upper wooden beams of the upstream lock gates, all in accordance with the drawings and requirements of the specifications.

.2 Dismantled equipment to be disposed off site.

.3 All costs necessary to complete this item must be included.

.4 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.6 Item 2.2.2 – Supply and installation of new upper pivot retaining blocks for the lock gates

.1 This item remunerates on a lump sum basis (per set) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of new upper pivot retaining blocks for the lock gates, all in accordance with the drawings and requirements of the specifications.

.2 Dismantled equipment to be disposed off site.

.3 All costs necessary to complete this item must be included.

.4 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.7 Item 2.2.3 – Replacement of the butterfly valves and their actuators

.1 This item remunerates on a lump sum basis (per set) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the replacement of the butterfly valves and their actuators, all in accordance with the drawings and requirements of the specifications.

.2 Dismantled equipment to be disposed off site.

.3 All costs necessary to complete this item must be included.

.4 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.8 Item 2.2.4 – Replacement of butterfly valves bronze bushings

.1 This item remunerates on a lump sum basis (per set) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the replacement of butterfly valves bronze bushings, all in accordance with the drawings and requirements of the specifications.

.2 Dismantled equipment to be disposed off site.

.3 All costs necessary to complete this item must be included.

.4 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.9 Item 2.2.5 – Replacement of the rack geared motor, coupling and steel bases

.1 This item remunerates on a lump sum basis (per set) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment,

materials, surveys, permits, professional services, construction engineering and work platforms for the replacement of the rack geared motor, coupling and steel bases, all in accordance with the drawings and requirements of the specifications.

.2 Dismantled equipment to be disposed off site.

.3 All costs necessary to complete this item must be included.

.4 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.10 Items 2.2.6 – Supply and installation of new trashracks anchors

.1 These items remunerate on a lump sum basis (per set) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of new trashracks anchors, all in accordance with the drawings and requirements of the specifications.

.2 The existing anchors are left in place.

.3 All costs necessary to complete these items must be included.

.4 The payment of these items will be made according to the progress of the work, as approved by the Parks Canada Agency.

.11 Items 2.2.7 – Replacement of the rack attachment bolts

.1 These items remunerate on a lump sum basis (per set) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the replacement of the rack attachment bolts, all in accordance with the drawings and requirements of the specifications.

.2 Dismantled equipment to be disposed off site.

.3 The price includes washers and nuts as required.

.4 All costs necessary to complete these items must be included.

.5 The payment of these items will be made according to the progress of the work, as approved by the Parks Canada Agency.

.12 Item 2.3.1 – Dismantling of the existing electrical equipment

.1 This item remunerates on a lump sum basis (LS) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the dismantling of the existing electrical equipment, all in accordance with the drawings and requirements of the specifications.

.2 Dismantled equipment to be disposed off site except for the following items to be transported to Parks Canada workshop:

.1 Geared motors.

.3 All costs necessary to complete this item must be included.

.4 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.13 Item 2.3.2 – Supply and installation of new 200A electrical outlet

.1 This item remunerates on a lump sum basis (LS) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of new 200A electrical outlet, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.14 Item 2.3.3 – Supply and installation of cabinets and junction, pull and distribution boxes

.1 This item remunerates on a lump sum basis (LS) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of cabinets and junction, pull and distribution boxes, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.15 Items 2.3.4 – Supply and installation of dry type transformers

.1 These items remunerate on a lump sum basis (LS) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of dry type transformers, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete these items must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.16 Item 2.3.5 – Supply and installation of circuit breakers distribution panels

.1 This item remunerates on a lump sum basis (LS) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of circuit breakers distribution panels, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.17 Item 2.3.6 – Supply and installation of new 600V manual transfer switch

.1 This item remunerates on a lump sum basis (LS) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of new 600V manual transfer switch, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.18 Item 2.3.7 – Supply and installation of new motor control center (MCC)

.1 This item remunerates on a lump sum basis (LS) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of new motor control center (MCC), all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.19 Item 2.3.8 – Supply and installation of cabling systems

.1 This item remunerates on a lump sum basis (LS) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of new cabling systems, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.20 Item 2.3.9 – Supply and installation of new control systems

.1 This item remunerates on a lump sum basis (LS) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the supply and installation of new control systems, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.21 Item 2.3.10 – Relocation of existing electrical outlets

.1 This item remunerates on a lump sum basis (LS) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for the relocation of existing electrical outlets, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

.22 Item 2.4.1 – Commissioning of the lock systems

.1 This item remunerates on a lump sum basis (LS) all necessary measures, actions and supplies such as, but not limited to, management, labor, tools and machinery, equipment, materials, surveys, permits, professional services, construction engineering and work platforms for commissioning of the lock systems, all in accordance with the drawings and requirements of the specifications.

.2 All costs necessary to complete this item must be included.

.3 The payment of this item will be made according to the progress of the work, as approved by the Parks Canada Agency.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used

PART 3 EXECUTION

3.1 NOT USED

.1 Not Used

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Inspection and testing to be carried out by Contractor.

1.2 APPOINTMENT AND PAYMENT

.1 Contractor will provide independent laboratory services to perform the tests as described in this technical specification. The costs of the laboratory services are the responsibility of the Contractor.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Parks Canada Agency to verify acceptability of corrected work.

1.3 CONTRACTOR'S RESPONSIBILITIES

.1 Provide labour, equipment and facilities to:

.1 Provide access to Work for inspection and testing.

.2 Facilitate inspections and testing.

.3 Repair disturbed structures during inspections and tests.

.4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

.2 Notify Parks Canada Agency 48 hours minimum sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative sample in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Parks Canada Agency.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

General Requirements – Project Meetings
Section 01 31 19

PART 1 GENERAL

1.1 ADMINISTRATIVE

.1 Schedule project meetings throughout the project at the call of Parks Canada Agency who will manage them. Meetings will be held at intervals or two (2) weeks or less as required by Parks Canada Agency. The meetings will take place in Contractor's trailers.

.2 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act, if required, on behalf of each represented party.

1.2 PRECONSTRUCTION MEETING

.1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Parks Canada Agency, Contractor and any other party required by Parks Canada Agency will be in attendance.

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

.4 Agenda to include

.1 Designation of official representatives of the participants in the Work.

.2 Schedule of Work: in accordance with Section 01 32 16.07 – Construction Progress Schedules - Bar Chart (GANTT).

.3 Schedule of submission of shop drawings, samples, and colour samples. Submittals in accordance with Section 01 33 00 – Submittal procedures.

.4 Requirements for temporary facilities, site signage, offices, storage shed, utilities, fences in accordance with section 01 52 00 – Construction Facilities.

.5 Site security in accordance with Section 01 56 00 – Temporary Barriers and Enclosures.

.6 Proposed changes, change orders, procedures, approvals, mark-up percentages permitted, delays, overtime and others administrative requirements.

.7 Record drawings in accordance with Section 01 33 00 – Submittal Procedures.

.8 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 – Closeout Submittals.

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

.10 Appointment of inspection and testing agencies or firms.

.11 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

.1 Meetings will be held every two (2) weeks or more as needed, as required by Parks Canada Agency.

.2 Agenda to include the following

- .1 Review, approval of minutes of previous meeting.
- .2 Review of Work progress since previous meeting.
- .3 Fields observations, problems and 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 of construction schedule.
- .8 Revision of progress schedule, during succeeding work period.
- .9 Review submittal schedules: expedite as required.
- .10 Maintenance of quality standards.
- .11 Review proposed changes for effect on construction schedule and on completion date.
- .12 Other.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

General Requirements
Construction Progress Schedule – Bar Chart (GANTT)
Section 01 32 16.07

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 (GRANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or another 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 Parks Canada Agency 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 ten (10) working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or beginning time, rate of progress, Interim Certificate and Final Certificates of completion constitute defined project milestones and are essential requirements of the Contract.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Maximum ten (10) working days after contract award, provide to Parks Canada Agency a Bar Chart (GANTT Chart) that would serve as master plan and will be used for planning and monitoring Work and for progress reports.

1.4 PROJECT MILESTONES

.1 Project milestones from interim targets for Project Schedule.

.1 Project granting;

.2 Start of Work (mobilization);

.3 End of Work and provisional acceptance;

.4 Final acceptance.

1.5 MASTER PLAN

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

.2 Parks Canada Agency will review and return revised schedules within five (5) working days.

.3 Revise impractical schedule and resubmit within five (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 Contract Award.

.2 Shop Drawings, Samples.

.3 Permits.

.4 Mobilization.

.5 Excavation.

.6 Backfill.

.7 Supplied equipment long delivery items.

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 Parks Canada Agency submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in time is not considered a valid reason for extension of Contract Time and no claim for extension with such reason will be allowed.

.1 Engineering documents of butterfly valves and operating systems (drawings and calculation notes) shall be treated in priority. At the end of October 2019, all documents related to this equipment shall be submitted and approved for fabrication. Contractor must consider review period allowed to the Parks Canada Agency in the schedule.

.2 Do not proceed with Work where submittals are required until review is complete.

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

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

.5 Notify Parks Canada Agency, in writing at time of submission, identifying deviations from requirements of Contract Documents and stating reasons for deviations.

.6 Verify field measurements related to adjacent structures affected by Work.

.7 Contractor's responsibility for errors and omissions in submission is not relieved by Parks Canada Agency's review of submittals.

.8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Parks Canada Agency review.

.9 Keep one reviewed copy of each submission on site.

.10 Submitted document shall include a transmittal letter containing:

.1 Date;

.2 Project number and title;

.3 Contractor’s name and address;

.4 Title and quantity of each submitted document;

.5 Any other pertinent data.

.11 Submit required data sheets compliant with the Workplace Hazardous Materials Information System (WHMIS).

1.2 DOCUMENTS REQUIRED FROM CONTRACTOR

.1 Documents to be submitted are defined but not limited to in Appendix A.

1.3 CERTIFICATES AND TRANSCRIPTS

.1 Submit to Parks Canada Agency documents required by authorities having jurisdiction for the protection of workers in the case of a work accident immediately after contract award.

1.4 SHOP DRAWINGS AND PRODUCT DATA

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

.2 Quality: Shop drawings will be provided by Email as an original electronic PDF format. No shop drawing will be accepted as a fax for clarity purpose.

.3 Submit drawings stamped and signed by professional engineer registered or licensed in Quebec, Canada

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

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

.6 Accompany submissions with transmittal letter, (Appendix B), containing:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of Contractor, Subcontractor, Supplier and Manufacturer
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.7 Contractor is responsible for the reproduction of the «Shop Drawings Presentation Sheet » and shop drawings in enough quantities for all subcontractors and suppliers, an additional copy for the Parks Canada Agency and copies for operation and maintenance books.

.8 No shop drawing will be verified if not submit in accordance with described procedure.

.9 Before submitting shop drawings to Parks Canada Agency, Contractor shall:

- .1 Number each page;
- .2 Point out all equipment and/or accessories include in shop drawings;
- .3 Verify shop drawings are in accordance with plans and specifications for quality, specifications and space requirements.

.10 Parks Canada Agency will have ten (10) business days for the verification of shop drawings from the day of receipt.

.11 Verification of shop drawings by the Parks Canada Agency is an intermediate step of quality control and can not constitute an order of change to the Contract Documents.

.1 Parks Canada Agency will verify the drawings submitted by the Contractor in accordance with the general layout of the equipment. Examination of this document does not relieve the Contractor or the supplier of their responsibility for the accuracy of this document or its conformity with the contractual documents and the site conditions in any way. Annotations made by the Parks Canada Agency on the drawings are not exhaustive.

.12 Annotations on the Parks Canada Agency verification stamp are:

.1 « FINAL » means Contractor may proceed as per its drawing, no modification is required;

.2 « FOR INFORMATION ONLY » means document is for informational purpose only;

.3 « SUITABLE, START FABRICATION, RESUBMIT CERTIFIED REPRODUCIBLE » means Contractor may proceed as per its drawings by incorporating annotations added by Parks Canada Agency, resubmit document in accordance with the execution;

.4 « MODIFY AS NOTED, COMMENCE FABRICATION AND RESUBMIT » means Contractor may proceed as per its drawing if modified as per Parks Canada Agency comments, resubmit drawing in accordance with comments added by Parks Canada Agency;

.5 « MODIFY AS NOTED, RESUBMIT BEFORE FABRICATION » means information contained in the drawing or the drawing itself is incomplete, illegible, etc., and this information does not allow Parks Canada Agency to make a judgment on compliance with drawings and specifications. In such case, Parks Canada Agency may indicate the points to be specified or completed by Contractor before resubmitting;

.6 « NOT SUITABLE, RESUBMIT BEFORE FABRICATION » means drawings concern materials or works not conform to drawings and specifications. In such case, Contractor shall submit another drawing to Parks Canada Agency.

.13 Make changes requested by Parks Canada Agency to shop drawings in accordance with Contract Documents requirements. When resubmitting, notice Parks Canada Agency in writing of changes made in addition of those required.

.14 Submit electronic one (1) copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Parks Canada Agency where shop drawings will not be prepared due to standardized manufacture.

.15 Keep one (1) annotated copy of Appendix B « Shop Drawings – Presentation Sheet » and shop drawing on site and ensure its availability for future reference use.

.16 Submit (1) electronic copy of test reports for requirements requested in specification Sections and as requested Parks Canada Agency.

.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 three (3) years of date of contract award for project.

.17 Submit (1) electronic copy of certificates for requirements requested in specification Sections and as requested by Parks Canada Agency.

.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.

.18 Submit (1) electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by Parks Canada Agency.

.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.

.19 Submit (1) electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Parks Canada Agency.

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

.21 Submit (1) electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Parks Canada Agency.

.22 Delete information not applicable to project.

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

.24 If upon review by Parks Canada Agency, no errors or omissions are discovered or if only minor corrections are made, copies will be returned, and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.25 The review of shop drawings by the Parks Canada Agency is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that Parks Canada Agency 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.

.26 Upon receipt of the Parks Canada Agency intent letter, Contractor selected will have thirty (30) business days to provide all shop drawings for approval.

1.5 SAMPLES

.1 Contractor submits standard samples of manufacturers that Parks Canada Agency can require for the approval by Parks Canada Agency. Samples shall have a label indicating their origin and the purpose for which they are intended for the work and conform to the requirements of the contract documents.

.2 Contractor provides specified samples of complex and dimensioned products.

.3 No order, purchase or products/materials production shall take place before written approval of the samples required in the specifications has been received.

.4 Products and works are similar to approved samples.

1.6 MIXTURES' DOSING AND TESTING

.1 Provide results of the mixtures' tests and dosage requested by Parks Canada Agency.

.2 No concrete pouring of paving will be authorized before proving the perfect conformity of the materials.

1.7 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic and hard copy of colour digital photography, fine resolution monthly with progress statement as directed by Parks Canada Agency.

.2 Project identification: name and number of project and date of exposure indicated.

1.8 FINAL DRAWINGS

.1 Documents to keep on Site:

.1 Provide one (1) set of drawings and indicate all changes made during the work.

.2 Report information every week noted on the copy of the reproducible drawings so that they show as it is actually installed.

.3 Use Parks Canada Agency specifications for drawings.

.4 Keep these drawings on site and make available for reference and verification.

.2 Final Drawings

.1 Before starting testing, system balances and adjustments, complete as-built drawings.

.2 Identify each drawing in the lower right corner, with letter at least 12 mm high, as follow: FINAL DRAWINGS : THIS DRAWING HAS BEEN REVISED AND INDICATES THE WORK AS BUILT [(Contractor signature)(Date)].

.3 Submit drawings for approval to Parks Canada Agency and make required corrections.

.4 Submit reproducible copies, complete as-built drawings with Operation and Maintenance Manual.

.5 Submit one copy of each as-built drawing and add to final testing, balancing and adjustment report.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

General Requirements – Documents and Samples to Submit
Section 01 33 00
Appendix A – Documents Required From The Contractor

PART 1 DOCUMENTS REQUIRED AT THE BEGINING OF THE WORK

.1 These requirements must be completed before the mobilization:

- .1 Performance bond;
- .2 Bonding for liabilities, equipment and services;
- .3 Insurance certificate;
- .4 List of subcontractors and their contact information;
- .5 List of suppliers with addresses and contact information;
- .6 List of machinery to be used;
- .7 List of hourly rates for labor and machinery;
- .8 List of workers assigned to the project and their contact information;
- .9 Work schedule;
- .10 Health and Safety Plan;
- .11 Notice of opening of a construction site to CNESST;
- .12 RBQ valid license for each subcontractor;
- .13 Localization copy from Info-Excavation for public utilities;
- .14 Health and safety prevention program;
- .15 Contractor's Temporary Facilities Plan;
- .16 Traffic plan;
- .17 List of emergency contacts with phone numbers (traffic, environment, accidents, etc.);
- .18 Identify an emergency contact available 24 hours a day and 7 days a week;
- .19 A copy of rights of way agreement for private areas (if required);
- .20 Environment protection plan (see template in appendix);
- .21 A copy of the ISO 9001 registration for the paving plant.

PART 2 DOCUMENTS REQUIRED DURING THE WORK UNTIL PROVISIONAL ACCEPTANCE

.1 These requirements must be completed before the provisional acceptance (essential prerequisite) to obtain the provisional approval with deductions:

- .1 Shop Drawings list;
- .2 Calculation notes
- .3 Shop Drawings;

.4 Test reports;

.5 Manufacturers' instructions;

.6 Tests and factory inspection reports;

.7 Test and in situ verification plan;

.8 Start-up and commissioning plan;

.9 Operation manual;

.10 Suppliers manual

.11 Final drawings

.12 Employee training plan;

.13 Spare parts list

.14 Mixing formulas and data sheets required for concrete, bituminous concrete and bitumen;

.15 Compliance certificates of materials;

.16 Products data sheets;

.17 Drawings of temporary work describing the recommended method for the construction/repairs of a permanent work;

.18 Welding procedures

PART 3 DOCUMENTS REQUIRED FOR FINAL ACCEPTANCE

.1 These requirements must be completed for the final acceptance:

.1 List of deficiencies fully completed and signed by the Parks Canada Agency.

END OF SECTION

General Requirements – Submittal Procedures
Section 01 33 00
Appendix B – Shop Drawings – Presentation Sheet

CONTRACTOR:	
Supervisor:	
Phone: ( )	Email:

SUBCONTRACTOR: Address:	
Supervisor:	
Phone: ( )	Email:

SPECIALITY (discipline):	
Shop Drawing n°:	**Number of pages:**
Delivery Time (after verification):	
SHOP DRAWING DESCRIPTION:	
Drawing Reference:	
Technical Specification's Reference : Section : Article : Page :	

SUPPLIER: Address:	
Supervisor :	
Phone: ( )	Fax: ( )
SUBMITTED PRODUCT :	**DRAWING ISSUED FOR:**

☐ As built	☐ Verification
☐ Equivalent	☐ Information
☐ Substitution	☐ Coordination
	☐ Other:

REVISION	**DATE**
NOTES:	

COMPLIANCE VERIFICATION

Nature and scope of the audit

☐ Compliance with drawings and specifications
☐ Other:

This audit does not constitute in any way a detailed and complete verification of the design.

☐ Approved
☐ Correct as indicated
☐ Correct and Re-submit
☐ Refused

Signature ☐ Engineer ☐ Other _____ Date _____

Name _____ OIQ No. _____

Verification of this document is restricted to the nature and extent indicated. It does not relieve in any way the person or company that prepared it from its obligations.

PART 1 GENERAL

1.1 TRAFFIC PROTECTION

.1 Comply with existing laws, rules and orders governing the traffic and the use of roads where work or material transportation is required.

.2 Build and maintain an access road to Site and to any other area indicated except if another access road authorized by Parks Canada Agency is available.

1.2 INFORMATION AND WARNING DEVICE

.1 Provide and install delineators, barricades and other warning device in accordance with the Work Area Traffic Control Manual.

.2 Install signs and other devices at locations recommended in the Work Area Traffic Control Manual.

.3 Before the start of Work, consult with the Parks Canada Agency to make a list of the signs and other devices required for the Work. If the Site situation changes, review the list to the satisfaction of the Parks Canada Agency.

.4 Maintain signalling devices as follow:

.1 Check signs every day to ensure they are readable, in good condition, at the right place and meets requirements. If required, clean, fix or replace signs to keep the clarity and reflectance.

.2 Remove or cover signs that don’t apply to existing situations as they may vary day by day.

1.3 TRAFFIC CONTROL

.1 Provide a signalman whose training and equipment are in accordance with the Work Area Traffic Control Manual for the following situations:

.1 When public traffic must bypass vehicles or equipment blocking the roadway wholly or partly.

.2 When temporary protection measures are required for installation or removal of signalling devices.

.3 When emergency protection measures are required due to the impossibility to obtain signalling devices quickly.

.4 In any case where other signalling devices do not provide a total protection to workers, equipment or public traffic.

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 CONTENT

.1 Contractor shall manage its activities so that the health and safety of the public and of the site workers and the environmental protection always take precedence over cost and schedule issues.

1.2 REFERENCE STANDARDS

.1 Latest available revision of the following documents shall be used:

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

.2 Canadian Standards Association (CSA)

.3 An Act Respecting Occupational Health and Safety, R.S.Q., c.S-2.1. (2002)

.4 Safety Code for the Construction Industry, S-2.1, r.6 (2001)

.5 Any other law or rule for health and safety that would be applicable depending on the company status or the context of the Work.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit to Parks Canada Agency a site-specific construction prevention plan in accordance with article 1.9 - Health and Safety Management of this Section at least ten (10) days before starting the work. Contractor shall update its prevention plan if the work differs from projections. Parks Canada Agency may, after receiving the plan or at any time during the work, require that the plan be amended or supplemented to better reflect the Site reality. Contractor shall then make the necessary corrections to the plan before the work begins.

.3 Submit to Parks Canada Agency a Site inspection chart completed to the frequency indicated at article 1.13 – Site Inspection and Dangerous Situations Corrections of this Section.

.4 Submit to Parks Canada Agency within 24 hours, a copy of any inspection report, correction or recommendation notice issued by federal or provincial inspectors.

.5 Submit to Parks Canada Agency within 24 hours, an investigation report for any accident involving injury and any incident highlighting potential risk.

.6 Submit Parks Canada Agency identification sheets of all controlled products used on site at least three (3) days before using the products.

.7 Submit to Parks Canada Agency all training certificate required to meet the requirement of the Prevention Plan, in particular:

.1 Workplace and Corporate First Aid Courses and Cardiopulmonary resuscitation;

.2 Confined space work;

.3 Lockout procedures;

.4 Wearing and adjustment of personal protective equipment;

.5 And any other training required by law or prevention plan.

.8 Medical Examinations: when medical examinations are required by law, rule or to meet the prevention plan, Contractor shall:

.1 Submit to Parks Canada Agency the medical examination certificate for its supervisory staff and employees who will be present at the beginning of the work;

.2 Then, submit as soon as possible, medical examination certificate for any newcomer to the site.

.9 Emergency Plan: emergency plan shall be submitted to Parks Canada Agency with the prevention plan as specified in article 1.9 – Health and Safety Management.

.10 Work Permit: Contractor shall obtain all municipal, provincial and federal permits required in accordance with the Contract requirements. A copy of the permit application shall be sent to Parks Canada Agency without delay.

.11 Plans and Statements of Conformity: Submit to Parks Canada Agency a signed and sealed by an engineer, working methods, drawings and statements of conformity for the following situation:

.1 Any modification to an equipment or machinery part that has not been authorized in writing by the supplier. A copy of these documents shall always be available at site.

1.4 SAFETY ASSESSMENT

.1 Identify all dangers related to any stages of the Work.

.2 Plan and organize the work to reduce on-site health hazards or collective protection and so, mitigate the need for personal protective equipment. When personal fall protection is required, workers shall use a safety harness in accordance with CSA-Z-259.10-M90. A safety belt shall not be use as personal fall protection.

.3 Any equipment, tool or protective means that cannot be installed or uses without compromising health and safety of workers and public is inappropriate for the work to be performed.

.4 Any mechanical equipment shall be inspected before being on Site. Before using mechanical equipment, Contractor shall submit to Parks Canada Agency a conformity statement signed by a competent mechanic. At any time, the Parks Canada Agency can order to stop the equipment and required a second inspection performed by the specialist of its choice if he suspects a defaults or safety hazard.

1.5 MEETINGS

.1 A decision-making representative of the Contractor shall attend all meetings when health and safety is discussed on site.

.2 Not used.

1.6 REGULATORY REQUIREMENTS

.1 Comply with laws, rules and standards related to Work.

.2 Especially, Contractor shall include all measures related to marine environment work (rescue boats, life jackets, buoys, poles, etc.) in its working plan.

1.7 PROJECT/SITE CONDITIONS

.1 On Site, Contractor shall consider the following particular conditions:

.1 Risk related to transshipment, handling and boarding of floating equipment as well as manual work near operating hydraulic or cable-operated excavator during dredging.

.2 Risk related to potential offshore oil spillage and its containing operation.

.3 Risk of drowning

.1 For all work involving drowning risks, respect the following requirements:

.1 Comply with article 2.10.13 of the Safety Code for the construction industry.

.2 (a) Wear lifejacket or floating device in accordance with the following standard:

- Standard CAN/CGSB-65.7-M88 from the Canadian General Standards Board (CGSB) titled Life Jackets, inherently buoyant, standard type.
- Or for some exceptions, be accepted by Transport Canada

(b) Or be protected by a safety net of any fall protection device.

.3 Obtain and submit to Parks Canada Agency a compliance letter provided by Transport Canada for the approval of any boat (transport, rescue, inspection or other) before starting the work.

.4 Make sure that a lifeboat moored and in the water is available for each work station. If a lifeboat is accessible by land, it may serve several work stations provided that distance between each workstation and the boat is less than 100m.

.5 Make sure that the boat has the required characteristics to accommodate people that may participate in the rescue operation.

.6 Make sure that the lifeboat is always available for workers in an emergency.

.7 Make sure that a qualified person is available to operate emergency equipment. This person shall have its Pleasure Craft Operator Card according to the length of the boat used.

.8 Establish written emergency procedure in which there is the following information and make sure that all workers concerned by these procedures have received appropriate training and information to apply them:

- Procedures descriptions including the responsibilities of these allowed on Site;
- Location of the emergency equipment.

.9 When the workstation is a pier, pond, wharf or any other similar structure, a ladder with at least two steps below water level shall be installed on the front of the structure, every 60m. This applies even for a construction project. In this situation, a temporary (or portable) ladder can be used and removed at the end of the work if the owner does not have the basic facilities.

1.8 HEALTH AND SAFETY MANAGEMENT

.1 Accept and assume all duties and responsibilities assigned to the project owner and employer under applicable health and safety laws and rules.

.2 Develop a site-specific prevention plan based on risk identification and implement this program from the beginning to the final stage of demobilization of the work. The prevention plan shall consider all information given in article 1.8- Project/Site Conditions. This plan shall be given to all concerned people in accordance with Article 1.4-Submittal Procedures. This prevention plan shall include, at least:

.1 Company's health and safety policy;

.2 Work description schedule an expected staffing curve;

.3 Organization chart of health and safety responsibilities;

.4 Physical and material disposition plan of the Site;

.5 First Aid standards;

.6 Risk identification related to Site;

.7 Risk identification related to tasks performed, including preventives measures and implementation methods;

.8 Training required;

.9 Accident/injury procedure;

.10 Written commitment to respect this prevention plan from every concerned people;

.11 A Site inspection grid based on the preventive measures included in the prevention plan.

.3 Develop an effective emergency plan, related to characteristics and constraints of the Site. The emergency plan shall be given to all concerned, in accordance with Article 1.4-Submittal Procedures. The plan shall include:

.1 Evacuation procedure;

.2 Resources identification (police, firefighters, ambulances, etc.);

.3 People in charge of the Site;

.4 First-aid worker identification;

.5 Training required for the responsible people;

.6 And any other information that may be required because of the Site characteristics.

1.9 RESPONSIBILITIES

.1 No matter the size of the Site or the quantity of workers, Contractor shall refer a competent person as supervisor and health and safety responsible. Take all measures required to ensure health and safety of people and property on the Site that may be affected by some work.

.2 Take all required measures to ensure effective implementation and enforcement regarding health and safety requirements in contract documents, federal or provincial rules, standards and site-specific prevention plan. Comply with all orders or correction notice issued by an inspector without delay.

.3 Take all measures required to keep work area clean and tidy during the work.

1.10 COMMUNICATION AND DISPLAY

.1 Make all arrangements required to ensure effective communication of health and safety information on Site. As soon as they are on Site, all workers shall be informed about the particularities of the prevention plan, their obligations and their rights. Contractor shall insist on the right of all workers to refuse to perform work if they believe that this work may compromise their or other health, safety or physical integrity. Contractor shall keep a register with the information transmitted and the signature of all workers who received this information on Site.

.2 Following information and document shall be displayed in an easily accessible place:

.1 Project owner identification.

.2 Company health and safety policy.

.3 Site-specific prevention plan.

.4 Emergency plan.

.5 Data sheets for all controlled products used at Site.

.6 Minute of workplace committee meetings.

.7 Names of representatives on Site committee.

.8 First-aid workers names.

.9 Intervention and correction reports issued by inspectors.

1.11 UNFORESEEN

.1 When a hazard situation not specified in the specifications and not identifiable during the preliminary inspection of Site appears by the fact of during execution of work, Contractor shall stop work immediately, implement temporary protection measures for workers and for the public and notify the Parks Canada Agency by writing. Contractor shall make the required modification to the Prevention plan so that the work stays safe.

1.12 SITE INSPECTION AND DANGEROUS SITUATIONS CORRECTIONS

.1 Inspect Site and complete site inspection schedule at least once a week.

.2 Take, without delay, all required measures to correct exceptions to the laws, regulations and hazardous situations identified by the Parks Canada Agency, the Parks Canada Agency's health and safety coordinator, or during periodic inspections.

.3 Submit to Parks Canada Agency written confirmation of all measures taken to correct the exemptions and hazardous situations.

.4 Stopping Work: Contractor shall designate a person hired solely for the health and safety aspect. The application of this person shall be approved by the Parks Canada Agency. Grant to the person authorized by the Contractor to take care of health and safety, all the authority necessary to order the stoppage and resumption of work, when it deems it necessary or desirable to health and safety reasons. It will ensure that the health and safety of the public and site workers and the protection of the environment always take precedence over cost and schedule issues. Without limiting the scope of the section "Management of Health and Safety" and the section "Accountability", the Parks Canada Agency or any person authorized by the Parks Canada Agency to deal with the management or project supervision may, at any time, order the work to be stopped if, in its opinion, there is a danger or risk to the health or safety of the site workers or the public to the environment.

1.13 BLASTING

.1 Blasting or other use of explosives is not permitted.

1.14 SAFETY MEASURES

.1 Recruit reliable security staff to ensure the supervision of the Site, materials and equipment after working hours and during holiday at Contractor's cost.

1.15 APPROVAL STAFF

.1 Not used.

1.16 SAFETY REQUIREMENTS

.1 Protective Equipment

.1 All site workers shall wear approved helmet and safety shoes, safety vest and glasses all the time.

.2 All visitors shall wear approved helmet and safety shoes, safety vest and glasses all the time.

.3 All other personal protective equipment is required depending on the type of work. Strict compliance with security standards as per rule s-2.1, r6.

.2 Prohibitions on Site

.1 Walkman, radio;

.2 Alcohol, drugs (or under the influence of…);

.3 Tobacco;

.4 Gum;

.5 Games;

.6 Weapons;

.7 Theft, vandalism;

.8 Fight;

.9 Construction light;

.10 All other activities that may cause a risk to persons or goods.

.11 Anyone who does not respect these prohibitions will be evicted from Site without further notice.

.3 Non-smoking Policy

.1 It is strictly **FORBIDDEN** to smoke on Parks Canada Agency Site.

.4 Guardrails, Temporary Openings and Dangerous Area

.1 Contractor is responsible to build, modify and replace all the fall protection (no deviation will be tolerated)

.2 Dangerous areas shall be identified with red or yellow band identified “Danger”. This procedure will be used indoor, that is a completely closed area with walls, floor and ceiling. For outdoor dangerous areas, Contractor shall identify the area with a yellow nylon rope with colored band properly tied every four (4) meters. These colour bands shall comply with the needs of the related work.

.3 All materials that may be blown away shall be sufficiently anchored to the ground or stored in closed container.

.5 Cleaning

.1 It is important to keep the Site clean all the time, to dispose waste daily and to hand hoses and extension cords. Contractor and subcontractor shall carry out a good cleaning once a week.

.6 Injuries and Accidents

.1 Contractor and each subcontractor shall appoint a first-aid worker before starting the work.

.2 Any accidents or near-accidents shall be stated to the immediate supervisor. The supervisor shall inform the Parks Canada Agency or the preventing officer designated by Parks Canada Agency.

.3 A first-aid kit is required in each Contractor’s trailer.

.7 Protect Traffic

.1 Contractor shall ensure that a signaling controller is available all the time to drive back dump trucks and any other delivery vehicle.

.8 Fire Protection

.1 Fire Protection Equipment. Contractor shall:

.1 Provide its own fire extinguisher of type ABC;

.2 Inspect equipment regularly;

.3 Provide fire extinguisher for each trailer and dredging equipment;

.4 Have the fire extinguisher pressure checked once a year.

.9 Confined space work

.1 Work and equipment comply with applicable codes and standards. Make sure that the Regulation Respecting Occupational Health and Safety for confined space work is respected, especially articles 3.21.1, 3.21.2 and 3.21.3 of the Safety Code for the Construction Industry (RRQ, c S-2.1, r 4).

.2 Carry out contaminant concentration readings in access well. During surveys in manholes, respirator selection is in accordance with CSA Z94.4.93.

.10 Environmental Protection

.1 Employers and workers shall comply with all rules, codes and laws promulgated by various government's level.

.2 Before mobilization, Contractor shall submit a complete list of contaminants to be used on site with their WHMIS data sheets to Parks Canada Agency.

.3 Work shall be carried out in such way to prevent discharge of liquid or solid waste, fuel, lubricants or other on the ground or water according to laws and regulations.

.4 If a worker or any other person on site notices the presence of a contaminant on the ground, he must notify his immediate superior. Parks Canada Agency must be informed as soon as possible. A report received from an approved site for decontamination shall be provided to the Parks Canada Agency by the related contractor.

.5 Recovery, cleaning, and pumping of spills will be at Contractor's cost and to the satisfaction of Parks Canada Agency or its authorized representatives.

.6 See section 01 35 43 – Environmental Protection for more information.

.11 Temporary Markup

.1 All water structures and equipment must be marked during the work.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

General Requirements – Fire and Safety (DND)
Section 01 35 35

PART 1 GENERAL

1.1 FIRE DEPARTMENT BRIEFING

.1 Parks Cana Agency will take the required measures for the Fire Chief to forward the fire safety instructions to Contractor at the meeting prior to the start of the work.

1.2 REPORTING FIRES

.1 Know location of nearest fire alarm pull station and telephone, including emergency phone number.

.2 Report immediately fire incidents to Fire Department as follows:

.1 Telephone.

.3 When reporting fire by telephone, give location of fire, name or number of building and be prepared to verify location.

1.3 FIRE PROTECTION SYSTEM

.1 Existing fire protection and alarm systems will not be:

.1 Obstructed;

.2 Shut off or disabled;

.3 Left inactive at end of each working day or shift without written authorization from Fire Chief.

.2 Use of fire hydrants, standpipes or hose systems for purposes other than firefighting unless authorized by Fire Chief, is prohibited.

1.4 FIRE EXTINGUISHERS

.1 Supply fire extinguishers, as scaled by Fire Chief, necessary to protect work in progress and contractor's physical plant on site.

1.5 OBSTRUCTION OF ROADS

.1 Notify the Fire Chief for any work that may interfere with the movement of fire fighting vehicles, deviation from the minimum clearances prescribed by the Fire Chief, installation of barricades and carrying out excavation work.

1.6 SMOKING PRECAUTIONS

.1 Observe smoking regulations.

1.7 RUBBISH AND WASTE MATERIALS

.1 Keep rubbish and waste materials to a minimum.

.2 Burning of rubbish is prohibited.

.3 Waste removal:

.1 Remove rubbish from work site at end of each working day or shift or more frequently as directed.

.4 Storage:

.1 Store oily waste in approved receptacles to ensure maximum cleanliness and safety.

.2 Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles and remove at end of each work day.

1.8 FLAMMABLE AND COMBUSTIBLE LIQUIDS

.1 Handle, store and use flammable and combustible liquids in accordance with National Fire Code of Canada).

.2 Store flammable and combustible liquids such as gasoline, kerosene and naphtha in quantities not exceeding 45 liters. Store in approved safety cans bearing Underwriters' Laboratory of Canada or Factory Mutual seal of approval. Obtain written authorization from Fire Chief for storage of quantities of flammable and combustible liquids exceeding 45 liters.

.3 Transfer of flammable or combustible liquids within buildings or on jetties is prohibited.

.4 Transfer of flammable or combustible liquids in vicinity of open flames or any type of heat-producing devices is prohibited.

.5 Use of flammable liquids having flash point below 38 degrees C such as naphtha or gasoline as solvents or cleaning agents is prohibited

.6 Keep on site the minimum quantity of flammable or combustible spent liquids; if required, store them in approved containers stored in a safe and well-ventilated area. Send any request for evacuation of these products to the fire department.

1.9 HAZARDOUS SUBSTANCES

.1 Perform work involving the use of toxic or hazardous materials, chemicals or explosives, or otherwise creating hazard to life, safety or health, in accordance with National Fire Code of Canada.

.2 Obtain a "Hot Works" permit from Fire Chief for hot works in construction area (welding or burning operations or the use of torches or heat-generating equipment).

.3 For work requiring the use of a heat source in areas where there is a risk of fire or explosion, ensure the presence of fire-safety officers equipped with appropriate extinguishing equipment. The Fire Chief will identify areas where there is a risk of fire or explosion and the safety measures to be taken in each case. It is the Contractor’s responsibility to retain the services of fire safety officers on the site, in accordance with the procedures previously established with the Chief of the Fire Department.

.4 Provide ventilation where flammable liquids, such as lacquers or urethanes are used. Eliminate sources of ignition. Provide written notification to the Fire Chief prior to starting work and immediately at completion of work.

1.10 QUESTIONS OR CLARIFICATION

.1 Direct questions or clarification on Fire Safety to Fire Chief.

1.11 FIRE INSPECTION

.1 Site inspections by Fire Chief will be coordinated by Parks Canada Agency.

.2 Allow Fire Chief unrestricted access to work site.

.3 Cooperate with Fire Chief during routine fire safety inspection of work 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 Definitions

.1 Special Status Species: Wildlife or flora species which are legally protected by the Act Respecting the Conservation and Development of Wildlife (Quebec) and/or Species at Risk Act (Canada).

.2 Invasive Alien Species (IAS): Species that are alien to the current ecosystem, but capable of reproducing and having the potential to have harmful effects on economy, environment, biodiversity or health (ex.: Warbler). In addition to vegetation, IAS include certain animals, fungi and microorganisms.

.3 MEFACC: Ministry of Environment, and Fight against Climate Change.

.4 Environmental Pollution and Damage: Presence of chemical, physical or biological elements or agents that have a deleterious effect on the health and well-being of people, which alter ecological balances important for humans and which constitute an attack on species that play an important role for them or that degrade aesthetic traits, cultural or historical characteristics of the environment.

.5 Environmental Protection: Prevention / control of pollution and disturbance of habitat and environment during construction. Prevention of pollution and damage to the environment covers the protection of soil, water, air, biological and cultural resources; it also includes the management of visual aesthetics, noise and vibrations, solid, chemical, gaseous and liquid wastes, radiant energy, radioactive materials and other pollutants.

.2 References

.1 Government of Quebec, MEFACC

A. Environment Quality Act (LRQ, ch. Q-2)

.1 Clean Air Regulation (Q-2, section 4.1)

.2 Hazardous Materials Regulations (Q-2, r.32)

.3 Land Protection and Rehabilitation Regulation (Q-2, r 37)

.4 Solid Waste Regulations (Q-2, r.13)

.5 Regulation respecting the landfilling and incineration of residual materials (chapter Q-2, r. 19)

.6 Regulation respecting the burial of contaminated soils (Q-2, r.18)

.7 Storage and Transfer of Contaminated Soil Regulations (Q-2, r.46)

B. Quality Criteria for Surface Water (MEFACC, 2015)

C. Intervention Guide - Soil Protection and Contaminated Sites Remediation (MEFACC, 2019)

.2 Government of Quebec, Ministry of Forests, Wildlife and Parks.

A. Act respecting the conservation and development of wildlife (LRQ, ch. C-61.1)

B. Regulation respecting wildlife habitats (C-61.1, r.18)

.3 Government of Canada

A. Canadian Environmental Protection Act, 1999 (L.C. 1999, c.33)

B. Migratory Birds Convention Act, 1994 (L.C. 1994, ch.22)

C. Fisheries Act (RSC 1985, ch. F-15)

D. Transportation of Dangerous Goods Act (L.R.C. (1992), c.34)

E. Species at Risk Act (L.C. 2002, ch.29)

1.2 CONTRACTOR RESPONSIBILITIES

.1 The Parks Canada Agency is responsible for obtaining the required environmental authorisations before undertaking the planned construction activities. The Contractor must remain compliant with requirements associated with **each environmental autorisation and notice**.

.2 The work must be performed to the satisfaction of Parks Canada Agency or of their Representative (Parks Canada Agency) with respect to environmental protection standards and regulations. The Contractor is required to comply with the environmental guidelines and must anticipate costs associated with these requirements.

.3 The Contractor must ensure the work activities are compliant with:

.1 The requirements and conditions associated with each **environmental autorisation and notice**.

.2 The laws and regulations of municipal, provincial and federal environmental authorities.

.3 All other standards and guidelines that may be defined by Parks Canada Agency's designated supervisor.

.4 The requirements defined in the current construction specifications.

.4 In the event that unplanned work necessitates environmental authorizations, the Contractor must obtain the necessary authorizations and permits from the relevant organizations to carry out the works, in addition to notifying and obtaining the Ministry's Representative's approval. Costs and deadlines for compliance with and enforcement of the environmental requirements contained in these authorizations and permits must be anticipated and assumed entirely by the Contractor.

.5 The Contractor must ensure to keep all evidence demonstrating their compliance.

1.3 NOTICE OF NON-COMPLIANCE

.1 A written notice of non-compliance will be issued to the Contractor by Park Canada Agency's designated supervisor upon all observations that are non-compliant with a law, a regulation or a federal, provincial or municipal permit or any other component of the environmental protection plan that the Contractor is required to follow.

.2 After receiving the notice of non-compliance, the Contractor must submit corrective measures to the Ministry's Representative for approval and must implement them as soon as possible.

.3 The Contractor must first wait for the Ministry's Representative's written approval before proceeding with the implementation of the proposed measures.

.4 When needed, the Ministry's Representative may emit a stop work order to halt all work activities until satisfactory corrective measures have been put in place.

.5 No additional delays or schedule adjustments will be allowed following the stop-work order.

PART 2 PREPARATION

2.1 DOCUMENTS AND SAMPLES TO BE SUBMITTED FOR APPROVAL AND INFORMATION

.1 Safety Data Sheets (SDS):

.1 Safety Data Sheets (SDS) along with the manufacturer's instructions and documentation for the use of hazardous materials on the construction site must be submitted. The sheets must indicate the product's characteristics in accordance with the Workplace Hazardous Materials Information System (WHMIS 2015).

.2 Environmental Protection Plans and Environmental Emergency Plan:

.1 Before beginning construction activities or delivering materials and equipment to the site, the Contractor must first submit an environmental protection plan and an environmental emergency plan (including a communication protocol) to the Parks Canada Agency for review and approval.

Plans must provide a comprehensive overview of known or potential environmental issues to be addressed during construction.

.2 The emergency plan must at least include the following information:

1. Potential hazards.
2. Protection measures.
3. Procedures and measures to be implemented and anticipated actions in the event of an incident or spill.
4. Contact information of persons in charge.

.3 The environmental protection plan must include the following minimal requirements:

1. The names of persons to ensure compliance with the plan.
2. The name and skills of those responsible for manifesting the release of residual hazardous materials or toxic waste to be evacuated from the site.
3. Names and skills of those responsible for training site personnel.
4. A description of the training program for environmental protection personnel.
5. A cutting and / or plant protection plan. This plan must be approved by the Parks Canada Agency prior to the commencement of deforestation work.

6. An IAS Management Plan to outline the steps that will be taken to prevent their introduction and / or dispersal. This plan should include layout methods.
7. Plans showing the location of construction sites, access roads, supply areas, sanitary facilities and waste storage areas.
8. Development plans for site offices, parking lots, waste and storage areas (materials, soils) and other sites required for the work (including a description of projected material volumes, access roads, surface areas the quality of the underlying soils, earth moving, etc.) in accordance with Section 01 52 00 - Construction Facilities.
9. Traffic control plans in accordance with Section 01 35 00.06 - Traffic Control, including measures to reduce erosion of temporary roadside platforms by vehicular and machinery traffic, particularly during rainy weather. These plans must include measures to reduce the transportation of materials on public roads by vehicles or surface runoff.
10. A plan of the work area showing the activities planned in each part of the work area and indicating the restricted use areas as well as the prohibited areas of use. This plan must include measures to mark the limits of useable areas and methods of protecting the elements within authorized work areas.
11. A waste management and disposal plan (non-hazardous debris) including management methods and final disposal sites in accordance with Section 01 74 21 - Construction / Demolition Waste Management and Disposal.
12. Air pollution prevention plan, specifying measures to retain dust, debris, materials and residual materials inside the site.
13. A Contamination Prevention Plan to identify potentially hazardous substances that will be used on the site, the measures to prevent these substances from being suspended in the air or being introduced into the soil, as well as the details of the hazards, measures that will be taken to ensure that the storage and handling of these substances comply with federal, provincial and municipal laws and regulations.
14. A management plan for embankment materials. The materials imported to the site and put in place during the work must come from approved borrow pits and quarries, be clean and free of undesirable species or contaminants in accordance with sections 31 05 16 - Aggregates, 31 23 33.01 - Excavation, trenching and backfilling and 31 37 00 – Riprap.
15. The emergency measures in case of spill must include a communication protocol, the procedures to be followed, the instructions to be followed and the reports to be produced in the event of an unforeseen spill of a regulated substance.
16. A Contaminated Soil Management Plan should be present in the work area and must be submitted to the Parks Canda AGency for approval prior to excavation work.
17. The actions included in the environmental protection plan must be presented in a level of detail that is consistent with the environmental problems and the work to be performed.

2.2 LAND USE

.1 Site users must be kept informed of the work activities and work schedule.

.2 Coordinated efforts must be maintained with local authorities. Terrestrial and aquatic signposting suitable for all users within the work area must be installed.

.3 An alternate schedule must be planned and the required signposting installed at the extremities of the construction site to allow the circulation of personnel, pedestrians, cyclists and vehicles.

.4 The work schedule, elaborated in compliance with municipal regulations, must be respected.

.5 The circulation of boaters must not be interrupted and the protection of workers must be overseen.

.6 Equipment, material and rubble from the works must not be left in the navigable waterway and must not obstruct navigation. The circulation of machinery must be confined to the areas previously defined.

.7 The site must be returned to its initial state once the construction work is completed.

2.3 PROTECTION OF VEGETATION

.1 Works spaces must be established in previously disturbed areas so as to prevent further perturbations.

.2 Access roads and work spaces must be clearly delimited and identified so as to protect vulnerable areas and preserve the vegetative cover to thus prevent the drainage of contaminants towards vulnerable environments.

.3 No tree felling is planned during the work activities and all land clearning is forbidden. However, if inevitable, approved measures must be in place and the required authorizations must be obtained by the Ministry's Representative:

.1 Tree felling, pruning and clearing, required to perform work activities, must be kept to a minimum so as to preserve the vegetative cover as much as possible.

.2 The areas to be cleared must be identified using markings and tags beforehand.

.3 Land clearing outside of the PCA's property will not be authorized.

.4 Felling or pruning of ash trees must be avoided as much as possible between the beginning of April and the end of September, during which the emerald ash borer may be present in the wood in its nymph stage.

.5 Woody detritus from infested ash trees that have been cut or pruned must be sent to a transformation site or disposed of in a preauthorized treatment site.

.6 Vegetation debris must be removed the area as soon as possible and transported off-site for disposal.

.7 Clearing of vegetation along the riparian buffer, within 15m of the natural high-water line, is forbidden with the exception of planned work activities that have been approved with the required environmental authorisations.

.4 A protective area must be delineated around the trees and shrubs (e.g. fences, tapes, barriers, etc.) located near the storage areas and the circulation roads so as to avoid damaging or affecting the root

network. If impossible to do so, a protective system must be installed around the trunk and over the root network (wood planks, non-packed material with geotextile fabric, etc.). The trees and shrubs adjacent to work areas, storage areas and truck roads should be protected by creating a buffer zone with a 3m radius around the areas mentioned. If necessary, wrap the trees in a 2m high protective wood cage/fence from the ground-up.

.5 Trees outside the deforestation area cannot be used as a support. The use of all herbicides is forbidden.

.6 The site must be returned to its initial state after the work activities have been completed.

.7 The site must be restored and revegetated after all work activities have been completed. The site must be revegetated using a variety of fast-growing indigenous species, requiring little maintenance and that are adapted to the project site so as to enhance the local plant community. If the season is not conducive to an effective revegetation then the soil surface must be temporarily stabilised while ensuring erosion control measures are in place. Revegetation will then be performed in the following spring.

.8 While the site is being restored to its initial state, erosion and sediment control measures must be in place until the perturbed soils have been permanently stabilised.

2.4 PRESERVATION OF THE HISTORICAL AND ARCHAEOLOGICAL CHARACTERISTIC

.1 A plan must be provided defining the procedures used to identify and protect historical, archaeological and cultural resources known to exist within the construction area. The plan must also define the procedures to be followed in the event of an unexpected discovery of these resources during the work period.

.1 The Contractor must advise the Ministry's Representative 48h prior to establishing the mobilization area and repair sites on the west side of the dam so as to ensure an archaeological supervisor is present to assess the potential impact and ensure any existing or potential archaeological resources have been documented.

.2 If changes are made to the project, all additional information and excavation plans must be submitted by the Contractor to the Ministry's Representative to be revised.

.2 In the event that relics or artefacts are discovered by chance on Parks Canada Agency's property, the Contractor is required to suspend all work activities within the discovery's immediate area and notify the Ministry's Representative. Parks Canada Agency's archaeology team will then assess the resource and undertake the required measures to protect it.

2.5 PROTECTION OF FISH HABITAT

A project review request, under article 35(1) of the Fisheries Act is required. The conditions outlined in the answer to the review request or by the autorisation must be obtained by Parks Canada Agency and the Contractor must become aware of these conditions and requirements. Work activities must be conceived and planned in such a way as to keep to a minimum the loss or disruption of the aquatic habitat. The following specific measures must apply meticulously:

.1 The permanent encroachment on fish habitat is not permitted, except for what's been pre-approved by Fisheries and Oceans Canada.

.2 Temporary encroachments on fish habitat must be kept to a minimum to avoid the loss of fish habitat and must be pre-approved by Fisheries and Oceans Canada.

.3 The duration of temporary encroachment on fish habitat must be kept to a minimum while undertaking the work activities.

.4 The duration of work activities performed in waterbodies must be kept to a minimum.

.5 Work performed in water must be planned to avoid periods of high water, wind and rain that may contribute to increasing erosion and sedimentation.

.6 Work activities undertaken in the river must be conceived and planned in such a way as to disturb as little as possible the aquatic habitat and to avoid vulnerable spawning habitat. The installation of temporary structures must respect Fisheries and Oceans Canada's conditions.

.7 Construction materials used in a waterway must be handled and used in such a way as to prevent the leaching of substances harmful to fish.

.8 An intervention plan must be prepared and followed immediately in the event of a release of sediments or the spill of a harmful substance. An emergency spill kit must be kept on-site in case a spill were to occur.

.9 The work space must be clearly delimited from the waterbody.

.10 No machinery and/or equipment is allowed to circulate or used directly in the waterway without the Ministry's Representative's pre-autorisation. The method used to access the river banks must keep the displacement of machinery to a minimum and must include mitigation measures. The access method must be pre-approved by the Ministry's Representative.

.11 When draining the lock, the survival of fish must be ensured and the conditions prescribed by Fisheries and Oceans Canada followed. All trapped fish must be removed unless the remaining volume of water in the fish pass is sufficient to ensure their survival during the scheduled work period.

.12 If the lock is completely drained or if the survival of fish is threatened then the trapped fish must be relocated to the same downstream of the work area in the same waterway. The capture of fish must be performed by a qualified fish specialist, such as a biologist.

.13 A permit under the Species at Risk Act may be required before manipulating the following fish species: Copper redhorse, Channel Darter, Eastern Sand Darter.

.14 The drained area must be exempt of fish during the entire duration of work activities. If a fish is observed, all work and pumping must cease and the Ministry's Representative must be advised so as to identify and relocalise the fish species.

2.6 INVASIVE NONINDIGENOUS OR NON-NATIVE SPECIES

.1 Machinery must be clean and exempt of all invasive species and weeds upon its arrival on the work site and kept as such afterwards.

.2 The maintenance and cleaning of machinery and equipment used must be performed before and after the work to avoid the spread and establishment of terrestrial and aquatic invasive species.

.3 Equipment that's been in contact with invasive species must be cleaned at a distance greater than 30m from a waterbody and from areas prone to seed germination.

.4 River banks and aquatic plant habitats located within the different work spaces must be inspected before work commences to identify the presence of invasive species. To avoid the spread of invasive species, inspections must also be performed after the completion of the construction work (within a delay of 3 months or during the next growing season) to ensure that no such species have been introduced. Corrective measures may be required of the Contractor if it has been observed that invasive species have been introduced to the area.

PART 3 EXECUTION

3.1 ACCESS ROADS AND CONSTRUCTION SITE SET UP

.1 Access to the different work sites should be limited. Only authorized personnel may be able to access the sites.

.2 The circulation of machinery and the storage of materials must be confined to the areas previously identified.

.3 Vehicle access roads and circulation areas must be confined to the existing pathways and parking lots and other currently perturbed zones of Parks Canada. If the use of non-perturbed zones is required, then protection measures must be implemented such as the installation of a geotextile fabric layered with gravel.

.4 Cemented and asphalted areas must be prioritized for the storage of construction materials.

.5 Speed limits on the work site must be respected (15 km/h).

.6 All potentially contaminated material must be stored on an impervious surface area and covered so as to avoid wind erosion and/or the surface runoff of sediment/particles.

.7 Materials and machinery must not be stored on top of tree root networks within a minimum radius of 3 meters from the center of the tree's trunk or within the limit of the projection of the branches on the ground.

3.2 DRAINAGE

.1 The required temporary drainage and pumping must be in place to keep the excavations and the work site dry.

.2 Surface runoff within work spaces must be confined, sampled and treated when necessary before being discharged into the environment or into a sewage system.

.3 Surface runoff occurring within work areas may be pumped towards terrestrial areas with sufficient vegetative cover to allow the decantation of suspended matter, before being returned to the environment or to the sewer system.

.4 The water discharged from the work site towards a stream, a sewage system, an evacuation or drainage network must remain compliant with surface water quality requirements set out by MEFACC (for the protection of aquatic life – acute effects) regarding suspended matter, pH and the C10-C50. The Contractor

must obtain the Ministry's Representative's authorization before discharging any water into the environment.

.5 The evacuation or elimination of water containing suspended matter or harmful substances must be compliant with site-specific requirements.

3.3 PROTECTION OF WILDLIFE

.1 The Contractor must respect the requirements of the Environmental Quality Act (L.R.Q., c. Q-2), of the Act Respecting the Conservation and Development of Wildlife (L.R.Q., c. C-61.1) and the Fisheries Act (L.R.C. (1985), ch. F-14). The Contractor must also remain compliant with the requirements specified in each environmental authorisation in relation to the protection of essential habitats and wildlife species (SNC-Lavalin 2017).

.1 Period of restriction for fish habitat: work activities performed in water is forbidden between the 31st of March and the 1st of August. Note: the cemented section of the lock's canal inside the cofferdams is not considered a vulnerable area for fish.

.2 Removal of vegetation (grasses, shrubs and trees) must be performed outside the breeding seasons of bird and bat species, which generally extends from the 1st of April to the 31st of August for most species in the south of Quebec. Bird species at risk as well as migratory birds along with their nests are legally protected. The nesting period implies the protection of nests and chicks until they have left the nest.

.3 If work activities must be performed during the nesting period, then a survey must be completed before pursuing the planned activities that may have an impact on the nests (e.g. tree clearing). In the even that a nest is discovered, depending on the species listed and its legal protection status, an area of protection may need to be defined until the chicks have left.

.4 All work activity in the presence of bird nests is forbidden during the entire nesting period.

.1 If the Contractor needs to perform work activities during this period, they must first isolate the nesting areas before the annual nesting period (before the month of April) using nets, mesh or other appropriate systems. The protection system must be able to prevent the nesting in that area. It must be in place during the entire nesting period or until the demolition of the structure. The Contractor must seek the Ministry's Representative's approval for the type of protection system used. No work activity can commence before the system's installation.

.2 If birds are discovered nesting on the structure or near the work activities, despite the presence of the installed system, then the activities in those specific locations must cease until the end of the nesting period (or until the authorities authorise the pursuit of activities) given that the nest, birds and eggs are protected by federal and provincial regulations.

.2 Protection of wildlife

.1 The presence of herpetofauna, avifauna (nesting) and chiroptera must be verified and the Ministry's Representative notified before work activities commence.

.2 The nest and eggs of migratory birds must not be disturbed, destroyed or taken.

.3 If bats are observed during work activities, notify the Ministry's Representative as soon as possible.

.4 If Swallow or Peregrine Falcon nests are spotted within 20m of the structures targeted by the work activities, notify the Ministry's Representative as soon as possible.

.5 Any nest discovered in the work area should be protected using a buffer zone with a distance suitable to the species, identified by an ornithologist.

.6 An active nest (able to support a bird, eggs or chicks or that is more than 50% completed) must not be removed before the chicks have left the nest at the end of the nesting season (around the end of August).

.7 The presence of dens in the area must be verified before the tree felling and must not be perturbed.

.8 If wildlife is observed within or near the construction site, a safe and adequate exit from the area must be provided to distance them from potential accident areas and the Ministry's Representative must be notified of all observations to ensure compliance with relevant legislation.

.3 Extraction of water from the Richelieu River

.1 The extraction of water from the Richelieu River is authorized exclusively for the needs of the current project.

.2 The Contractor must respect the provisions relating to the pumping of water in the fish habitat described in the Regulation respecting wildlife habitats (C-61.1, r. 18). The Contractor must notify the Ministry's Representative at least 16 days before the date scheduled for pumping to commence.

.3 If the Contractor requires a water intake, they must respect the provisions outlined by Fisheries and Oceans Canada and install a grate to prevent the intake of fish. The measures relating to the conception and installation of the grate at the entrance of the freshwater intake are described on Fisheries and Oceans Canada's website.

.4 The Contractor must keep to a minimum the daily volume of water pumped into the Richelieu River.

3.4 WORK PERFORMED ADJACENT TO AND IN WATERWAYS

.1 Work adjacent to waterways

.1 Work activities performed adjacent to waterways must be planned and performed in such a way as to avoid the discharge of materials such as cement, paint, primers, stripping abrasives, antirust solvents, degreasing agents, cement slurry or all other chemical products into the river.

.2 Erosion and sediment control measures must remain in place until the perturbed soils have been permanently stabilized, the suspended particles have settled at the bottom of the decantation basin and the discharged water is clear. The standard for the maximum allowed loading of suspended matter is 25 mg/L or an increase of 10% in relation to the background concentration.

.3 Waterways must remain free of spoil, waste materials or debris. Any debris accidentally introduced into the aquatic environment must be removed immediately so as to ensure the waterbody is kept clean and exempt from all contamination.

.4 Harmful substances must not be submerged or discharged into an aquatic environment and must not be disposed of in an area that may contaminate the aquatic environment, consistent with article 36(3) of the Fisheries Act and article 5.1 of the Migratory Birds Convention Act of 1994.

.5 Measures to ensure the capture of debris must be provided for during the refurbishing and/or demolition of guard rails, dam anchorages, dam pillars, beams and beam plugs downstream of the dam, chambers and other structures (e.g. bridge, repair of the auxiliary system, replacement of the access hatch, application of sealant around doors and panels, etc.) so as to avoid the discharge of any debris into the waterway.

.6 Measures to confine and collect debris material must be in place to prevent their discharge into the waterway. Special attention should be granted to limit the displacement of particles in the waterbody during the removal of the installations.

.7 All storage of debris, materials and equipment in the aquatic environment and/or river banks is not allowed.

.2 Work in waterbodies

.1 Period of restrictions for fish habitat: work activities in waterbodies is forbidden between the 31st of March and the 1st of August. Note: the cemented section of the Canal inside the cofferdams is not considered as being a sensitive fish habitat.

.2 The Contractor may not undertake any work activity in the Richelieu River and it's protective riparian buffer, in compliance with the Guidelines for the protection of lakeshores, riverbanks, littoral zones and floodplains, with the exception of works planned as part of the current project and included in the environmental authorisations.

.3 If work activities are performed in the aquatic environment during the summer period, the measures used to drain a section of the waterway (e.g. temporary structures) must allow a sufficient free flow of water for aquatic wildlife, boating and the pursuit of aquatic sports.

.4 All work activities performed in waterways must be isolated from free-flowing water or water currents so as to avoid introducing sediments into the waterway.

.5 The duration of work activities in waterbodies must be kept to a minimum.

.6 No borrow material must be withdrawn from the waterway.

.7 Blasting in water is forbidden.

.8 Work performed underwater to repair the fishway must be respect the conditions outlined in the answer to the examination request or by Fisheries and Oceans Canada's authorisation.

3.5 WORK AND MANAGEMENT OF MATERIALS

.1 Management of soil and materials and erosion prevention

.1 All necessary measures must be in place to limit as much as possible the suspension and transport of fine particles in the Richelieu River.

.2 The Contractor must plan a drainage network in the work areas and plan the required measures to temporarily stabilise the storage piles so as to avoid surface runoff towards the Richelieu River.

.3 Surface runoff within the work and storage areas must be confined, sampled and treated if necessary.

.4 Sediment control barriers (equipped with geotextiles or wood fibers logs) must be installed, but not limited to, the following locations: at the base of the slope, the outskirts of a work space, parallel with the Canal as well as the perimeter of all piles of unconsolidated materials.

.5 All temporary accumulation of unconsolidated material located within 30m of an aquatic environment and stored for more than 24h must be protected using a sediment barrier and covered with a geotextile to avoid the transport of sediment into the waterbody.

.2 Management of sediments and contaminated soils

.1 The guidelines presented in the MEFACC Policy on the protection of soils and rehabilitation of contaminated sites as well as the requirements outlined in the Land Protection and Rehabilitation Regulation must be respected during the storage and disposal of soils.

.2 Any contaminated soil discovered (by sight or smell) must be signalled immediately before pursuing work activities. The Contractor must declare all accidental discoveries of potentially contaminated materials that haven't been characterized to the Ministry's Representative.

.3 If contaminated sites are present, a characterization of the soil must be performed prior to their reuse or disposal by the Contractor. All measures outlined in the current section must be respected.

When excavated sediments and soils are disposed of off-site, written proof (transport manifest or other indicating the composition and quantity of the materials) of their reception in an area authorized by the MEFACC must be submitted to the Ministry's Representative.

.3 Water management

.1 Work methods must be adapted accordingly if a sudden increase in suspended matter occurs (e. g. slower pace of work, smaller pumping discharge, increased use of decantation basins, etc.).

3.6 CONCRETING

.1 When required, concrete works must be performed so as to remain compliant with all requirements specific to the work site.

.2 Excess concrete and cement from the concrete mixer must be poured into moulds or any other impervious container to allow its reuse (e.g. stop block) or its disposal. All concrete waste must be managed along with the construction waste in an authorized area.

.3 All accidental spill of concrete in the work area must be cleaned immediately and disposed of, along with the construction waste, in an authorized area.

.4 Water used to wash the concrete mixers must be collected in an impervious basin built to prevent the flow of water into the environment. The wash site must be located at a distance greater than 30m from a waterbody, within the property lines and must be authorized by the Ministry's Representative. If unfeasible/impractical, the wash site must be impervious and have the capacity to withhold the entire

volume of washing water if a spill or leak were to occur. All washing activities must be constantly supervised by the Contractor.

.5 Washing water cannot be directly disposed of into a waterway, a waterbody or on the ground. The washing water can be collected by the concrete supplier and returned to the concrete factory to be disposed of. Otherwise, the water must be confined, sampled and treated so as to respect the surface water quality criteria outlined by MEFACC (protection of aquatic life – acute effects) before their disposal in the environment or a drainage network. If the water is disposed of in a stormwater sewer or a waterway, the concentration of suspended matter must not exceed 25 mg/L or must not be greater 10% of the background concentration.

3.7 EQUIPMENT, VEHICLES AND MACHINERY

.1 Circulation on the construction site

.1 The boundary of the access road and work spaces must be clearly identified on the ground. Machinery must only circulate within the designated access roads and work spaces and, where appropriate, within the dried up or dammed work spaces in the water medium, as intended in the environmental authorizations.

.2 It is forbidden to cross a waterway.

.3 Avoid the displacement of vehicles during heavy rainfall and where soils are water saturated.

.4 The circulation of machinery and mobile equipment is strictly forbidden within the 15m wide protective riparian buffer around all waterway or waterbody, unless it has been pre-approved in the conditions outlined by the environmental authorizations or in Fisheries and Oceans Canada's answer to the review request or otherwise previously authorized by the Ministry's Representative.

.5 The Contractor must not leave any equipment or machinery within 30m of a waterway or waterbody outside normal work hours or during the site's prolonged closure, unless it has been provided for in the environmental authorization or previously authorized by the Ministry's Representative. If authorized, measures must be in place to protect the soil beneath the equipment or machinery during the entire period previously mentioned (e. g.: confinement container with a capacity equivalent to at least 110% of the equipment or machinery's fuel reservoir volume).

.2 Machinery Maintenance and Refuelling

.1 The maintenance, refuelling and cleaning of machinery and the equipment containing petroleum products must be performed in an adapted site to avoid the risk of contaminating the soil as well as groundwater and surface water. The site must be located more than 30m away from all waterbodies. If the site is located less than 30m away from a waterbody, prior authorisation is required from the Ministry's Representative before performing the activity. The site's surface must be impervious and have the capacity to contain the entire volume of hydrocarbons in the event of a spill or a leak. All these activities must be performed under constant supervision by the Contractor.

.2 Oil changes for mobile equipment is forbidden on the construction site. Only oil changes from non-mobile equipment is authorized. When used oil is being drained from non-mobile equipment, the Contractor must install equipment for the collection of spills (e.g. retention tank) and ensure a sufficient protection of the soil (e.g. absorbing hydrophobic cushions).

.3 Used oil must be collected, transferred to an identified barrel and disposed of with the hazardous material by a recycler authorized by the MEFACC.

.4 Water used to wash equipment cannot be discharged directly into a waterway, waterbody or on the ground. The water must first be sampled and treated to remain compliant with surface water quality requirements defined by MEFACC (for the protection of aquatic life – acute effects), regarding suspended matter, pH and the C10-C50. The Contractor must obtain the Ministry's Representative's authorization before allowing the refusal into the environment.

.5 The equipment used must be in good working condition, clean and exempt from all fuel, oil or grease leak at all times. Otherwise they must be removed from the construction site immediately. The machinery must be inspected and cleaned before undertaking the works.

.6 Machinery used within 30m of a water body must use a biodegradable and vegetable-based hydraulic oil with a bio-sourced content of at least 80%. The oil must be certified as being biodegradable with respect to the OCDE B301 standard or its equivalent (≥ 60% biodegraded within 28 days). The Contractor must submit the technical sheet for the oil used along with proof demonstrating the replacement of hydraulic oil with the approved hydraulic oil before commencing work activities.

3.8 FIRES

.1 Fires and burning of rubbish or of woody detritus on site is not permitted.

.2 The necessary cautionary measures must be in place to supervise work activities to prevent the risk of fire.

3.9 PROTECTION OF AIR QUALITY

.1 The emission of particulate matter and dust on the construction site is not tolerated beyond the standards established by the Clean Air Regulation (Q-2, r. 4.1), which limits the radius of visible dust to less than 2m from its source.

.2 The Contractor is required to:

.1 Avoid the idling of all vehicles, equipment and machinery when they are not in use.

.2 Avoid leaving the engine on unnecessarily when machinery is not in use.

.3 Repair all equipment and machinery that generate excessive exhaust gas emissions as soon as possible.

.4 Ensure the antipollution system of equipment is kept in good working condition.

.3 Under the current contract, the temporary installations designed to prevent air pollution must be kept in good working condition.

.4 Atmospheric emissions generated by material, equipment and tools must be controlled to respect the requirements defined by the authorities.

.5 Sanding particles, emitted dust and other foreign matter must be prevented from contaminating the air and waterways beyond the application area. Adequate confinement and recuperation measures must be in place along with temporary shelters in areas as indicated in the Ministry's Representative's guidelines.

.6 The material must be covered by a tarp or geotextile fabric to avoid the spread of dust or debris.

.7 Dust produced from work spaces and temporary pathways must be suppressed.

.8 Regarding the surface preparation activities, if sandblasting is to be used:

.1 Sanding residu must be treated as a dangerous residual waste material, consistent with the Regulation respecting hazardous materials. Adequate measures be put in place to:

.1 Install a shelter and a collection tarp to retain the sandblasting and residual cement particles generated by the cleaning and demolition activities. The shelter should be sufficiently impervious to avoid the leaching of particles in case it rains, along with a ground capture mechanism to avoid the discharge of particles in the river;
.2 Collect all sanding residu;
.3 Store the residu in an airtight manner;
.4 Dispose of the residu in an area authorized by the MEFACC.

.2 The level of silica used as an abrasive must respect the maximum allowed concentrations as specified in the current regulations. Otherwise, an abrasive material with impacts less important than silica must be used.

3.10 PROTECTION AGAINST NOISE

.1 The Contractor must control the noise level emanating from the construction site using the following measures:

.1 Machinery, equipment as well as all vehicles must be equipped with functioning mufflers at all time.

.2 The slamming of back panels on dump trucks must be avoided at all times.

.3 The use of equipment emitting low noise levels must be prioritized.

.4 Noise barriers must be installed on equipment producing constant noise (e.g. Generators, etc.) in work spaces located near a sensitive receiver.

3.11 MANAGEMENT OF HYDROCARBONS AND HAZARDOUS MATERIALS

.1 Petroleum products as well as all other hazardous materials must be stored more than 30m from all waterbodies. These products must be stored and confined to the dedicated areas. The storage of hazardous materials must be compliant with the provisions of the Regulation respecting hazardous materials (Q-2, r. 32).

.2 Stationary equipment and machinery (generators, compressors, etc.) located less than 30m from any waterbody must be equipped with hydrocarbon collection basins in the event of a leak or spill (with a capacity of at least 110% of the equipment or machinery's fuel reservoir volume). The basins must be kept in good working condition at all times.

.3 The Contractor must supply the Ministry's Representative the information sheets for the products they intend to use, at least 48 hours before their arrival on the construction site.

.4 The disposal of new unused hazardous material is forbidden. At the end of the works, the Contractor must take all unused dangerous material with them so as to leave the site perfectly clean.

.5 Hazardous waste material must be disposed of at a site authorized by the MEFACC.

3.12 PREVENTION OF SPILLS AND ENVIRONMENTAL INCIDENTS

.1 The Contractor must supply the methods, measures and necessary resources to prevent the contamination of soil, water and air with harmful toxic substances and pollutants produced by construction activities.

.2 The Contractor must be prepared to confine, clean and remove the spills or discharged substances that are likely to occur in water and/or soil. They must keep on site and within easy access a spill kit containing all the equipment and materials needed to clean any spill or discharge.

.3 In the event of an environmental incident or spill, the Contractor must notify the Ministry's Representative as soon as possible and remain compliant with the following rules:

.1 Control the spill.

.2 Confine the spill substance.

.3 Remove the contaminant and contaminated materials.

.4 Prepare a detailed report of the event which includes the description and location of the incident, the substance and quantity spilled, the date and time of the incident along with the name and telephone number of the person who first witnessed the incident.

.5 If an environmental incident occurs, the Contractor is required to notify the relevant authorities upon awareness of the incident. The Contractor must contact the emergency services of Environment and Climate Change Canada (1-866-283-2333) and of MEFACC (1-866-694-5454).

.6 If a spill occurs originating from a source at sea (example: from a barge), then the Canadian Coast Guard must be contacted as well (1-800-363-4735).

.4 If a spill occurs, the contaminated soil, backfill material, sediment and/or water must be characterized. The Contractor is responsible for all costs incurred in relation to the characterization, decontamination and disposal of contaminated soils following the spill or leak of a contaminant as a direct or indirect result of their activities. The Contractor must dispose of the contaminated material at a site authorized by the MEFACC. Proof of disposal must be forwarded to the Ministry's Representative.

.5 Mixing contaminated soils with clean soils or with soils and materials less contaminated to dispose of them in a less restrictive way is forbidden.

.6 The Contractor must store on the construction site a sufficient number of emergency spill kits at all times to contain and remove petroleum substances. The spill kit must contain sufficient absorbing material to enable a quick and effective intervention within the aquatic environment, along the entire length of the waterway and in the terrestrial environment within the perimeter of the machinery in question. The kit must contain spill socks and related accessories (E.g. gloves, etc.) to counter a small scale spill and ensure the confinement, removal and storage of the soiled material as well as the management of contaminated material and soil.

.7 The spill kits must be easily accessible at all times to allow a timely intervention anywhere on the construction site. Personnel most likely to use the spill kit must be given adequate training. The location of the spill kits on the construction site must be submitted to the Ministry's Representative.

3.13 TEMPORARY SANITARY FACILITIES

.1 The Contractor must supply and maintain the necessary temporary sanitary facilities intended for the use of persons accessing the construction site and must remove them upon work completion.

.2 Wastewater produced from the temporary sanitary facilities must be disposed of in compliance with the regulations in place and in an area authorized by the MEFACC. Proof of disposal must be submitted to the Ministry's Representative.

3.14 DISPOSAL OF USED SNOW

.1 If necessary, snow resulting from the clearing the work areas must be disposed of by the Contractor in a previously identified area, approved by the Ministry's Representative. The disposal of snow in a waterway is forbidden.

3.15 CLEANING

.1 Cleaning during work activities

.1 Cleaning must be done in compliance with section 01 74 11 - Cleaning

A. The site must be kept clean at the end of each work day.

B. Public waterways as well as storm and sanitary sewers must kept exempt of all rubbish and eliminated volatile material.

.2 Final cleaning

.1 All surplus material, rubbish, tools and equipment must be removed from the site, in accordance with Section 017411 - Cleaning.

.3 Waste management

.1 Waste must be sorted in accordance with section 017421- Management and disposal of construction and demolition waste and section 025013– Management of toxic waste.

A. Bins and recycling containers must be removed from the construction site and materials must be disposed of using the appropriate installations. Proof of disposal in an area authorized by the MEFACC must be submitted to the Ministry's Representative.

PART 4 RESTORATION

4.1 SITE RESTORATION

.1 Once all work activities are completed, the riverbed must be restored to its original state with the same slope and composition. Requirements and recommendations prescribed in the environmental authorisations must be respected.

.2 All sediment barriers (sediment barrier, turbidity curtain, etc.) must be removed once the work activities completed.

.3 Grassed surfaces that have been damaged by the work activities must be restored using turf.

.4 Any surface susceptible to erosion must be covered with a riprap, peat, grass or coconut mats. Only topsoil collected and stored on-site or otherwise certified as being exempt of grains may be used.

.5 The site must be restored to its original state once all work activities are completed.

4.2 RESTORATION ACTIVITIES

.1 If exposed ground surfaces cannot be stabilised without delay, then additional temporary erosion control measures must be put in place at the base until the final stabilisation.

END OF SECTION

General Requirements – Quality Control
Section 01 45 00

PART 1 GENERAL

1.1 OBJECT

.1 This section provides information on the quality assurance program to be put in place by the Contractor, subcontractors and suppliers during the Work. This is not intended to replace the contractually requires a quality assurance program. It sets out the minimum quality activities to be performed by the Contractors, subcontractors and suppliers on site or at their facilities.

1.2 RESPONSIBILITIES

.1 Contractor is responsible for the application of the Quality Assurance Program.

.2 Contractor is responsible to ensure that subcontractors and suppliers implement the quality activities described in this section.

.3 Contractor, subcontractors and suppliers shall demonstrate the implementation of their quality assurance program and the conformity of their work with drawings and technical specifications during manufacture and construction.

.4 Allow Parks Canada Agency access to Work. If part of Work is taking place outside of the site, allow access to it during the whole length of Work.

.5 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Parks Canada Agency instructions, or law of Place of Work.

.6 If contractor covers or permits to be covered Work that has been designated for special inspections, approvals or tests before such is made, must uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.7 Parks Canada Agency can order part of Work to be examined if Work is suspected to not be in accordance with Contract Documents.

1.3 INDEPENDENT TESTING AND INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by the Contractor. Cost of such services will be borne by the Contractor.

1.4 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.

1.5 PROCEDURES

.1 Notify the appropriate agency and Parks Canada Agency, within 3 working days, 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 manpower and facilities required to obtain and handle samples and materials on site. Provide enough space to store and cure test samples.

1.6 DOCUMENTS RELATED TO QUALITY

.1 Quality Manual

.1 Submit a Quality Manual to Parks Canada Agency for review and approval.

.2 If the Contractor has a Quality Assurance Program registered with an approved registrar, he shall submit a copy of its certificate and a copy of the table of contents instead of its entire manual.

.2 Quality Plan

.1 Submit a project specific quality plan to Parks Canada Agency for review and approval. See section 1.9 for more information on the content of the Quality Plan.

.2 Contractor is responsible for ensuring that subcontractors and supplier implement and respect their own quality assurance program.

.3 Inspection and Testing Plan (ITP)

.1 Before starting the Work, submit its ITP and those of subcontractors and suppliers for review and approval by the Parks Canada Agency. Contractor is responsible for the review and approval of the ITP of subcontractors and suppliers.

.2 Contractor is responsible for the implementation and respect of all quality activities described in its ITP.

.3 Contractor is responsible for ensuring that subcontractors and suppliers implement and respect their respective ITP.

.4 See Section 1.10 for more information on the preparation of ITP.

.4 Welding Procedures

.1 Submit its specifications of welding procedures for review and approval. The procedures require prior approval of the Parks Canada Agency and shall include all tests requires by the contract specifications.

.5 Work Procedures

.1 Submit its work specific method and that of subcontractors and suppliers for review and approval. These procedures shall be in accordance with contractual specifications.

1.7 QUALITY ORGANIZATION

.1 Submit details for the quality organization intended to be set in place for the project.

.2 Don’t replace key workers without notifying the Parks Canada Agency.

.3 Submit the organization chart of subcontractors and suppliers assigned to the project.

.4 All organization charts shall be added into the Contractor's Quality Plan (See section 1.9).

1.8 MANUFACTURING

.1 General

.1 Maintain on Site the quality assurance program approved by the Parks Canada Agency in accordance with:

.1 Contractor's Quality Manual (described in Section 1.6.1) and/or;

.2 Project specific Quality Plan described in Section 1.9 and/or;

.3 Project specific inspections and testing plan (ITP) described in Section 1.10 and/or;

.4 Construction and manufacturing activities described in subsections 1.8.1 to 1.8.9.

.2 Materials Receipt

.1 Materials provided by the Parks Canada Agency

.1 If the Parks Canada Agency provides materials or equipment for the Work, contractor must verify their condition before taking possession.

.2 Receipt of Materials purchased by the Contractor

.1 Contractor shall be able to demonstrate the conformity of all materials and equipment. These quality files shall be complete and available at Contractor, subcontractors and suppliers' facilities.

.2 Perform a receiving inspection for each material received on Site.

.3 Contractor, subcontractor and suppliers' Quality files shall provide the evidence that a receiving inspection has been performed and that conformity documents has been reviewed by the Contractor, which is materials analysis certificate and inspection reports, etc.

.4 Materials supplied by the Contractor shall be new. Identify the origin and source of materials. Refurbished materials are not acceptable.

.3 Non-Compliant Materials

.1 Identify non-compliant materials (labeled « hold » or « do not use ») and/or separate in an area / quarantine zone.

.3 Document Control

.1 Implement a document control system that controls the following activities:

.1 Ensure that only the latest revision of specifications, plans and procedures is accessible to the Contractor, subcontractor and suppliers' facilities.

.2 Identify as ''Out-of-date'' kept obsolete revisions.

.3 Provide a functional distribution system for documents, drawings, procedures, reports, etc.

.4 Catalogue and store quality records in a controlled environment.

.4 Identification and Traceability

.1 Identification

.1 Contractor is responsible for ensuring that all materials and equipment incorporated in the works are identified and traceable until the completion of Work.

.2 Traceability

.1 It shall be possible to associate materials or equipment with documents establishing their conformity and their inspection status all time.

.5 Measuring Equipment Calibration

.1 Contractor, subcontractors and suppliers shall maintain a control and recall system for calibrated measurements and tests equipment.

.2 Contractor, subcontractor and suppliers shall keep their equipment calibration certificate on Site.

.3 Contractor, subcontractor and suppliers shall store their measuring and test equipment in a safe and controlled place.

.6 Tests and Inspections

.1 Contractor, subcontractors and suppliers shall maintain an up-to-date list of its workers assigned to special processes and inspections for each discipline involved and their qualifications.

.2 Inspections and tests shall be performed in accordance with the technical specifications and the approved ITP.

.3 Contractor, subcontractors and suppliers shall implement a notification system so that the Parks Canada Agency can attend the tests prescribed in the technical specifications and identified in the ITP.

.7 Inspections

.1 Contractor shall be able to demonstrate inspections performed at all time during the Work.

.2 Inspections performed shall be verifiable in the Contractor's quality records. Depending on the discipline, monitor inspection levels using annotated drawings, computerized lists or databases.

.3 It shall be possible to check the inspections and testing's progress with references to generated reports at all time during Work.

.4 It shall be possible to demonstrate that all the work, inspections, tests and reports have been completed no matter the monitoring system used by the Contractor, subcontractors and suppliers.

.8 Final Acceptance

.1 After each manufacturing and construction stages, declare the complete and conforming parts, submit quality records and request for final acceptance by the Parks Canada Agency.

.2 Notify within a reasonable period of time the Parks Canada Agency for the request of the final acceptance as requested in Contract Documents.

.3 Upon receipt of the final acceptance request, Parks Canada Agency shall perform final inspection of materials and equipment prior issued an Inspection certificate.

.9 Quality Recordings

.1 Contractor, subcontractors and suppliers' quality records shall include, but not limited, the following documents:

.1 Inspections and Testing Plan (ITP) approved by Parks Canada Agency;

.2 Checklists;

.3 Relevant inspections and testing reports;

.4 Inspections and testing procedures;

.5 Materials analysis certificates;

.6 Conformity certificates;

.7 Non-conformity closing reports;

.8 Authorities with jurisdiction' statement;

.9 As built drawings;

.10 Welding procedures;

.11 Welding procedures qualifications record;

.12 List of welders and their qualification;

.13 Welding repair procedures;

.14 Approved deviations, if applicable.

1.9 QUALITY PLAN

.1 Quality Plan shall describe the organization, workers, quality assurance staffs, activities, responsibilities, resources, used documents and applicable quality procedures used to implement elements of the quality assurance program in accordance with standards and regulations applicable.

.2 Quality Plan shall include:

.1 Terms and definitions, including acronyms and abbreviations;

.2 Contractor's project team's organizational chart and quality assurance staffs with their qualifications and subcontractor and suppliers' organizational chart;

.3 Contractor, subcontractors and suppliers' scope of Work.

.4 Procedures and sections' reference list of the Contractor's Quality Manual;

.5 Documents control;

.6 Measuring equipment calibration;

.7 Quality control records;

.8 Non-compliant materials control;

.9 Quality Manual reference's audit;

.10 Correctives actions applicable;

.11 Products' identification and traceability;

.12 Equipment's handling, storage, packaging, preservation and delivery;

.13 Specific exclusions not covered by the Quality Plan.

.3 « Quality Inspection Plan », « Inspections and Testing Plan (ITP) » and « Monitoring Plan » are synonymous and refer to the same type of documents.

1.10 INSPECTION AND TESTING PLAN (ITP)

.1 « Quality Inspection Plan », « Inspections and Testing Plan (ITP) » and « Monitoring Plan » are synonymous and refer to the same type of documents.

.2 This section defines the applicable instructions to Contractor for the preparation and issuance of inspection and testing plans for manufacturing, construction/installation or pre-operational verifications.

.3 This specification is intended for those who are responsible of quality on the project once applicable ITP have been submitted according to the contractual requirements.

.4 This specification includes a standard form that shall be used by quality control parties if their own ITP does not meet the requirements of these instructions.

.5 ITP review is based on the requirements of this document.

.6 Identification

.1 ITP code, including revision number and date.

.2 Identify the client, project, region and equipment tag number.

.3 Identify contract and component, work package, work, discipline or system where ITP applies.

.4 Identify the person in charge of Quality insurance and review in Contractor, subcontractors and suppliers' facilities and on Site.

.5 Obtain signatures of the ITP verification and approval's responsible.

.6 Identify each page of the ITP (99 of 99).

.7 Elements and Work Steps

.1 This is normally based on the detailed work program. Specific details may be requested.

.8 Quality Control

.1 Identify quality review elements with their description for each step of the Work.

.9 Responsibilities

.1 Identify responsibilities position for quality control activities.

.10 Frequency

.1 Specify percentage, frequency or sampling applicable for quality control activities.

.11 Specification Reference

.1 Describe quality control activities with specific references, i.e. drawings, technical specification sections and/or applicable codes and specification as appropriate.

.12 Parameters and Characteristics

.1 Identify and list parameters and/or characteristics to be considered at quality control activities.

.13 Criteria and Tolerances

.1 Identify and list criteria and/or tolerances to be used for quality control activities acceptance.

.14 Procedures

.1 Identify and list procedures or instructions developed to control work performance or quality control activities.

.15 Inspection Equipment

.1 Describe and identify equipment used to implement the measurement, inspection or testing. Provide a calibration proof.

.16 Checklists

.1 Information identified in paragraphs 1.10.3 to 1.10.10 above shall be incorporated into a list annexed to the ITP.

.17 Forms

.1 Identify forms to be used to record quality control results and joint forms to ITP. Results registered by Contractors include an inspection and test report.

.2 If the Contractor, subcontractors of supplier's forms and quality control procedures are not enough, the Parks Canada Agency can incorporate any required forms or quality control procedures in completion of the quality control program.

.18 Quality Recordings

.1 Identify type of inspections and tests reports to be submitted to Parks Canada Agency in batch or partial of the quality records in the ITP. Include the table of contents and the submission schedule for the quality register lots at the ITP.

.2 Contractor, subcontractors and suppliers shall keep records of all documents required to provide objective evidence, demonstrating and verifying compliance with the quality assurance requirements specified in the Contract Documents.

.3 Contractor is responsible for ensuring the security of these records throughout the contract period. Submit quality records to Parks Canada Agency within time and quantities specified in the Contract Documents.

.4 Unless otherwise agreed, original test certificates are required. If Contractor can't provide original test certificates for reasons accepted by Parks Canada Agency, certificates and reports copies will be accepted if they are individually certified as being copy of the original.

.5 No modifications or transcripts other than those authorized in this paragraph will be accepted. Certified photocopies quality shall be sufficiently clear to allow scanning and photocopying; otherwise, they shall be subjected to non-acceptance. Transposing original data is not acceptable.

.6 Tests and inspection documentation shall be provided with:

.1 Project number;

.2 Applicable tag number/part number;

.3 Project designation;

.19 Traceability

.1 General

.1 Complete definitions and contract compliance are detailed below.

.2 Total Traceability

.1 Full traceability is required for items requiring inspection certificate. Other items are to demonstrate the conformity of the Contract. For items required full traceability, Contractor, subcontractors and suppliers shall maintain a traceability system ensuring that all materials used can be identified towards manufacturer's original certificates. Contractor, subcontractors and suppliers shall take the following measures:

.1 Verify materials for compliance with specified requirements on receipt with manufacturer's original certificate.

.2 Identify (by permanent marking if possible) batches of materials, specification and grade details throughout the manufacturing.

.3 Keep equipment location record.

.4 Before applying the final treatment, compile an equipment location register to incorporate to into manufacturing data records:

- Construction records shall contain materials locations and manufacturer's original certificate.
- Maintain evidence record.

.3 Compliance with the Contract

.1 Maintain a traceability system so that the verification system can confirm compliance with the Contract requirements for items requiring compliance with Contract.

.2 Verify materials upon receipt in accordance with the Contract requirements. Maintain segregation and traceability of lots of all materials issued by batch (e.g. wires, welding consumables, etc.) until use.

.20 Quality Control Monitoring Activities

.1 Before starting the Work, quality control monitoring activities shall be identified during the ITP review and approval process.

.2 Choice of monitoring activities is based on the level of monitoring selected and requirements of the quality monitoring specifications.

.21 Review

.1 ITP and its appendices shall be reviewed and accepted by the Parks Canada Agency's quality control monitoring before starting the Work.

.2 Inspection and test reports and road maps shall be prepared and reviewed by the Parks Canada Agency's quality control monitoring on an ongoing basis as the work progresses so the quality registration lots can be assembled before provisional acceptance.

.22 Typical ITP Forms

.1 A typical ITP form example will be provided by Parks Canada Agency at the beginning of the Work. Contractor may provide its own ITP, but all the elements defined in this specification must be addressed.

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 WORKSITE LOCATION

.1 The contractor shall provide his site facilities plan including:

- .1 Areas available for work;
- .2 Accesses;
- .3 Authorized roadways;
- .4 Spaces reserved for site and materials storage facilities and for the prefabricated construction elements;
- .5 Authorized parking areas.

1.2 LIMIT OF RESPONSIBILITIES

.1 Contractor is responsible for :

- .1 Site office;
- .2 Premises for equipment storage;
- .3 Outdoor storage for materials and equipment;
- .4 Required access roads;
- .5 Site toilets;
- .6 Water for materials compaction and dust suppressant;
- .7 Workers transportation;
- .8 Workers and safety equipment on site;
- .9 All loading/unloading work;
- .10 Maintenance of access roads (summer cleaning, gravel road grading and dust removal, snow removal);
- .11 Debris disposal;
- .12 Internet and phone links;
- .13 Customs clearance if required;
- .14 Construction fencing;
- .15 Safe access for visitors to the National Historic Site;
- .16 Lightning for night work.

1.3 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed locations and dimensions of areas to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which must be graveled to prevent tracking of mud.

.3 Indicate required work areas or other staging areas.

.4 Clean, level and build the site facilities area.

.5 Provide construction facilities to execute work expeditiously.

.6 Remove and dispose from site all temporary material after use.

1.4 OFFICES

.1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of enough size to accommodate site meetings and furnished with drawing laydown table. Submit office location to Parks Canada Agency for approval.

.2 Provide marked and fully stocked first-aid case in a readily available location.

.3 Subcontractors to provide their own offices as necessary. Direct location of these offices.

.4 Parks Canada Agency's Site office.

.1 Provide separate temporary office for Parks Canada Agency.

.2 Inside dimensions minimum 3.6 m long x 3 m wide x 2.4 m high, with floor 0.3 m above grade, complete with 4 50% opening windows and one lockable door.

.3 Insulate building and provide heating and ventilating system to maintain 22 degrees C inside temperature.

.4 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint in selected colors. Finish floor with 19 mm thick plywood.

.5 Install electrical lighting system to provide min 750 lx using surface mounted, shielded commercial fixtures with 10% upward light component.

.6 Provide private washroom facilities adjacent to office complete with flush or chemical type toilet, lavatory and mirror and maintain supply of paper towels and toilet tissue.

.7 Equip office with 1 x 2 m table, 4 chairs, 6 m of shelving 300 mm wide, one 3 drawer filing cabinet, one plan rack and one coat rack and shelf.

.8 Provide an access to Internet.

.9 Maintain in clean condition.

1.5 SERVICES

.1 Provide sufficient chemical toilets.

.2 Parks Canada does not supply any services (water, electricity or other).

1.6 PARKING ON SITE

.1 Parking is permitted on certain areas only and limited. Contractor shall supply number of places required for his need to Parks Canada Agency for approval.

.2 Provide and maintain suitable access roads to the site.

.3 Clean roadways where construction equipment has been used.

1.7 STORAGE AREA

.1 Storage is permitted in areas indicated in the drawings.

.2 Provide adequate and closed areas for the storage of Contractor's equipment.

.3 Parks Canada Agency is not responsible for any theft of tools, equipment/materials. Contractor is responsible for securing its tools, equipment and materials.

1.8 CONSTRUCTION FENCING

.1 Provide construction fencing around work areas and site installation.

1.9 CONSTRUCTION SIGNAGE

.1 Construction signs are permitted on construction trailers only. Dimensions and position shall be approved by Parks Canada Agency.

1.10 LIGHTING SYSTEM FOR NIGHT WORK

.1 Provide and install lighting system for night works.

1.11 CONSTRUCTION SIGNAGE

.1 Install and maintain adequate and safe signage to indicate detours, bypasses and hazards caused by the Work.

.2 Maintain the signage in place throughout the Work according to safety codes in force and to the satisfaction of the Parks Canada Agency. If the signage is considered as inadequate or poorly maintained per Parks Canada Agency, costs to restore signage will be deducted directly from the amount owing to Contractor.

1.12 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Provide access and temporary relocated roads as necessary to maintain traffic.

.2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Parks Canada Agency.

.3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs

.4 Protect travelling public from damage to person and property.

.5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.7 Construct access and haul roads necessary.

.8 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

.9 Dust control: adequate to ensure safe operation at all times.

.10 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.

.11 Provide snow removal during period of Work.

.12 Remove, upon completion of work, haul roads designated by Parks Canada Agency.

1.13 PEDESTRIAN AND CYCLING PROTECTION

.1 Maintain and protect pedestrian and cycling traffic on affected tracks during construction unless otherwise specified by Parks Canada Agency.

1.14 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.

.5 Provide snow removal of haul and temporary roads if required.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

General Requirements – Temporary Barriers and Enclosures
Section 01 56 00

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.2 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)

.1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

.2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.

.2 CSA Group (CSA)

.1 CSA-O121-M1978 (R2003), Douglas Fir Plywood.

1.3 ACCESS TO SITE

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

1.4 PUBLIC TRAFFIC FLOW

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

.2 Provide a copy of the certificate of the Signal Flag Operator course for all signal flag operator.

1.5 FIRE ROUTES

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

1.6 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 For the bid, consider that paved areas (parking) and unpaved areas do not have the capacity to support construction loads (dump truck, wheel loaders, construction equipment, etc.).

.2 During the Work, protect all paved and unpaved areas. Return all paved and unpaved areas damaged by work in the same conditions it was at Contractor's cost. Traffic plans, protection and restoration methods shall be submitted to the Parks Canada Agency for approval before the beginning of the Work.

.3 Protect surrounding public and private areas from any damages resulting from the Work.

.4 Assume full responsibility for damages.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

PART 2 PRODUCTS

2.1 FENCES

.1 Erect a temporary fence composed of a new fence, type Omega 1.8m height, attached with wire to T shaped posts installed at 2.4m center to center. Provide at least one lockable access barrier for trucks. Install fences around trees and plants to protect them from damages that may be caused by equipment or materials.

PART 3 EXECUTION

3.1 MATERIAL INSTALLATION AND REMOVAL

.1 Provide and install all temporary protection and access work required to finish the work as quickly as possible.

.2 Dismantle and dispose equipment when no longer needed.

END OF SECTION

PART 1 GENERAL

1.1 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, provide 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 Parks Canada Agency based upon requirements of Contract Documents.

.5 Unless otherwise indicated in specifications, promote consistency by ensuring that materials or elements of the same type come from the same manufacturer.

1.2 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 Parks Canada Agency of such, in order that substitutions or other remedial action may be authorized in advance to prevent delay in performance of Work.

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

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

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

.6 Store sheet materials and lumber on flat solid supports so they do not rest directly on ground. Give a slight slope to encourage condensation water flow.

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

.8 Remove and replace damaged products at no additional cost to the satisfaction of Parks Canada Agency.

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

1.4 DELIVERY

.1 Pay delivery costs of products required.

.2 Unload, handle and store such products.

1.5 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 Parks Canada Agency in writing, of conflicts between specifications and manufacturer's instructions, so that Parks Canada Agency will establish course of action.

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

1.6 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 Parks Canada Agency if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Parks Canada Agency 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 Parks Canada Agency, whose decision is final.

1.7 COORDINATION

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.8 CONCEALMENT

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

1.9 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate 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 FIXTURES

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

.2 Inform Parks Canada Agency of conflicting installation. Install as directed.

1.11 PROGRESS WORK PROTECTION

.1 Do not overload any part of the structure.

1.12 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, pedestrians and vehicular traffic.

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

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 QUALIFICATION OF SURVEYOR

.1 Qualified registered land surveyor, licensed to practise in Place of Work, acceptable to Parks Canada Agency.

1.2 SURVEY REFERENCE POINTS

.1 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.

.2 Make no changes or relocations without prior written notice to Parks Canada Agency.

.3 Report to Parks Canada Agency when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.4 Require surveyor to replace control points in accordance with original survey control.

1.3 SURVEY REQUIREMENTS

.1 Establish two (2) permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.

.2 Establish lines and levels, locate and lay out, by instrumentation.

.3 Stake for grading, fill placement and landscaping features.

.4 Stake slopes and berms.

.5 Establish pipe invert elevations.

1.4 EXISTING SERVICES

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

.2 Remove abandoned service lines within [2] m of structures. Cap or otherwise seal lines at cut-off points as directed by Parks Canada Agency.

1.5 LOCATION OF EQUIPMENT AND FIXTURES

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

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

.3 Inform Parks Canada Agency of impending installation and obtain approval for actual location.

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

1.6 RECORDS

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

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

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

1.7 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit name and address of Surveyor to Parks Canada Agency.

.2 On request of Parks Canada Agency, submit documentation to verify accuracy of field engineering work.

.3 Submit certificate signed by surveyor certifying [and noting] that elevations and locations of completed Work are conform with Contract Documents.

1.8 SUBSOIL CONDITIONS

.1 Notify Parks Canada Agency in writing if physical properties of soil at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.

.2 After investigation, if Parks Canada Agency determines that physical properties of soil differ from these anticipated; 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

General Requirements – Project Document
Section 01 72 00

PART 1 GENERAL

1.1 DRAWINGS

.1 Parks Canada Agency will provide two (2) sets of drawings for the Project Files.

.2 Keep drawings and record any deviations from the Contract Document's requirements, changes imposed by the nature of the Site and changes requested by the Parks Canada Agency.

.3 Note changes in red.

.4 Record the following information:

.1 On-Site changes for dimensions and execution details.

.2 Changes made as per orders received, on-site or not.

.5 At the end of work and prior to final acceptance, transcribe corrections to the second set of drawings and return both complete set to Parks Canada Agency.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

General Requirements – Execution
Section 01 73 00

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. Take pictures and videos of the current situation before starting the work and give copy to the Parks Canada Agency on DVD or USB Driver.

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

1.4 EXECUTION

.1 Execute partial demolition, excavation and fill to complete Work

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

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

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

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

.6 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

General Requirements – Cleaning
Section 01 74 11

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 02 50 13 – Management of Waste

1.2 REFERENCE STANDARDS

.1 Environment Quality Act (Ch. Q-2)

.2 Regulation Respecting Hazardous Materials (Q-2, r. 32)

.3 Regulation Respecting the Landfilling and Incineration or Residual Materials (Q-2, r. 19)

1.3 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Parks Canada Agency or other Contractors.

.2 Remove waste materials from site at regularly scheduled times to keep Site free from waste, residual hazardous materials, materials, substances or equipment not required for the Work and dispose them in accordance with applicable regulations. Disposal evidence in an authorized area by the Ministry of Sustainable Development, Environment, and Fight against Climate Change (MSDEFACC) shall be given to Parks Canada Agency.

.3 Do not burn waste materials on site.

.4 It is strictly forbidden to dispose of any material, waste, debris or residues in the Lachine Canal. If so, they shall be quickly recovered.

.5 Clear snow and ice from access roads. Snow from the cleaning of working areas shall be disposed by Contractor in an area authorized by MSDEFACC in agreement with Parks Canada Agency. No snow can be thrown in the Lachine Canal.

.6 Keep public roads near the Site free from materials, waste, debris or residues and clean the roads quickly if required.

.7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.8 Provide on-site containers for waste materials and debris disposal.

.9 Provide and use marked separate bins for recycling. Refer to Section 01 74 21- Construction/Demolition Waste Management and Disposal.

.10 Dispose of waste materials and debris off site.

.11 Clean interior areas prior to start of finishing work and maintain areas free of dust and other contaminants during finishing operations.

.12 Store volatile waste in covered metal containers and remove from premises at end of each working day.

.13 Provide adequate ventilation during use of volatile or noxious substances.

.14 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.15 Concrete Mixers Wash Water

.1 Excess concrete and cement from concrete mixers shall be poured in a sealed container. Concrete residues shall be managed with construction waste.

.2 Wash water shall not be discharged directly into water or on the ground. The wash water can be taken care of by the concrete supplier and brought back to the concrete plant for disposal. Otherwise, these waters shall be contained, sampled and treated (if required) to meet surface water quality criteria of MSDEFACC (Aquatic Life Protection) for suspended solids, pH and C_{10}-C_{50}, before being released into environment. Contractor shall obtain permission from Parks Canada Agency or its Designated Representative before proceeding with any release to the environment.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 02 50 13 – Management of Waste

1.2 WASTE MANAGEMENT GOALS

.1 Prior to start the Work, meet with Parks Canada Agency to review Parks Canada Agency's waste management objectives and Contractor's proposed waste reduction plan for waste construction, renovation and demolition (CRD) generated by the Project.

.2 Parks Canada Agency's objective for waste management is to minimize flow of construction/demolition waste to landfills. Prior to end the Work, provide documentation certifying that comprehensive measures and procedures for waste management, recycling and reuse of recyclable materials have been implemented.

.3 Minimize the amount of non-hazardous solid waste generated by the Work; maximize source reduction, reuse and recycling of solid waste generated by CRD activities.

.4 Protect environment and prevent damage related to environment pollution.

1.3 REFERENCE

.1 Definitions

.1 Approved/Authorized Recycling Facility: Approved provincial recycler, or other material recyclers approved by the Parks Canada Agency.

.2 Class III Non-Hazardous Materials: Construction, Renovation and Demolition Waste.

.3 Construction, Renovation and/or Demolition Waste (CRD): Class III non-hazardous solid waste generated by construction, renovation and/or demolition activities.

.4 Discharge – inert waste: Bituminous and concrete materials.

.5 Source Waste Separation Program (SWSP): On-going implementation and coordination of activities to ensure that designated waste are sorted into pre-defines categories and routed for recycling and reuse, maximizing value and potential for reducing disposal costs.

.6 Recyclability: Characteristics of a product that can be recovered at the end of its life cycle and transformed into a new product for reuse.

.7 Recycle: Process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

.8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

.9 Reuse: Repeated use of a product/material in its original form in a different or similar way. Reuse include:

.1 The recovery of products/materials that can be reused generated by a modernization before their demolition, for resale, reuse or storage for later use.

.2 Return of products/materials that can be reused, such as pallets or unused products/materials to vendors.

.10 Recovery: Removal of load-bearing and non-load bearing components and materials during deconstruction or disassembly of industrial, commercial or institutional structures for reuse or recycling.

.11 Sorted waste: Type classified waste.

.12 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

.13 Waste Recovery Report: Detailed final results report, which quantifies cumulative weights and percentages of waste reused, recycled and landfilled throughout the Work. Measure achievement of the Waste Reduction Plan (WRP) objectives and note lessons learned.

.14 Waste Management Coordinator (WMC): Contractor's supervisor for waste management activities and coordinator for reporting requirements, documents and samples to be submitted.

.15 Waste Reduction Plan (WRP): Written document considering the opportunities for reduction, reuse and recycling of waste generated by the Project. Describe valuation goals, implementation and reporting procedures, expected results and responsibilities. Waste reduction plan is based on information acquired from the waste audit.

.2 Reference

.1 Environment Quality Act (LRQ, ch. Q-2)

.2 Regulation respecting hazardous materials (Q-2, r. 32)

.3 Regulation respecting the landfilling and incineration of residual materials (Q-2, r. 19)

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit, at intervals set by the Parks Canada Agency, the following:

.1 Receipts, weight tickets, waybills and/or waste disposal receipts produced as part of the Work (hazardous residual materials, waste, recyclables, construction debris, etc.) indicating quantities and reused, recycled or disposed material types.

1.5 FACILITIES USE

.1 Minimize disruption of normal use of the Site.

.2 Maintain safety measures established for the facilities. Implement temporary safety measures approved by the Parks Canada Agency.

1.6 WASTE TREATMENT SITE

.1 Contractor is responsible to provide resources for waste recovery and suppliers. Recovered waste materials shall be brought to approved and/or licensed recycling sites or equipment recyclers.

1.7 MATERIALS STORAGE, HANDLING AND PROTECTION

.1 Store waste materials recovered for reuse or recycling at zones indicated by the Parks Canada Agency.

.2 Unless otherwise indicated, waste materials to be disposed shall become Contractor's property.

.3 Protect, stockpile, store and catalogue recovered items.

.4 Hazardous Residual Materials (HRM) shall be sorted and managed in accordance with regulations in force, including Regulation Respecting Hazardous Material (Q-2, r.32).

.5 Separate non-recoverable from recoverable items. Deliver non-recoverable items to authorized disposal facility.

.6 Protect left in place structural members and recovered waste materials from movements and damages.

.7 Support structures affected by the Work. If the building safety is compromised, stop the Work and notify Parks Canada Agency immediately.

.8 Protect drainage work from surface water to prevent damage or obstruction; protect electrical and mechanical facilities.

.9 Provide on-site facilities and containers to collect and store reusable and recyclable materials.

.10 Sort and store waste materials generated by the Project in designated areas.

.11 Prevent contamination of waste materials destined for recovery and recycling in accordance with the acceptance conditions of designated treatment facilities.

.1 It is recommended to sort waste materials at source.

.2 Dispose of mixed waste materials collected to a treatment site outside worksite for sorting.

.3 Obtain waybills, receipts and/or weight tickets for sorted and removed from site waste materials and submit them to the Parks Canada Agency.

.4 On-site reused materials are valued and shall be included in any reports.

1.8 WASTE DISPOSAL

.1 Do not bury rubbish or waste.

.2 Do not dispose of materials, waste, hazardous residual materials (HRM), debris or residues in waterway or storm/sanitary sewer.

.3 Keep a construction waste register indicating the following:

.1 Bins size and quantities.

.2 Waste type of each bin.

.3 Generated waste's total tonnage.

.4 Reuse/recycled waste's total tonnage.

.5 Reuse/recycled waste's destination.

.4 Collect waste from site as work progresses.

.5 Collect HRM produced. HRM shall be sorted and managed in accordance with regulation in force, including the Regulation Respecting Hazardous Materials (Q-2, r. 32).

.6 Dispose of HRM in a site authorized by the MEFACC. Provide disposition evidence to Parks Canada Agency.

.7 Collect residual materials produced during the Work (waste, recyclable materials, construction debris, etc.) Sort and manage residual material according to the regulation in force.

.8 Dispose of residual materials in a site authorized by MEFACC. Provide disposition evidence to Parks Canada Agency.

1.9 WORK SCHEDULE

.1 Co-ordinate waste management with other activities to ensure an orderly work progress.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

General Requirements – Closeout Procedures
Section 01 77 00

PART 1 GENERAL

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures.

.2 Parks Canada Agency's Inspection:

- .1 Parks Canada Agency and Contractor to inspect Work and identify defects and deficiencies.
- .2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates in French that tasks have been performed as follows:

- .1 Work: completed and inspected for compliance with Contract Documents.
- .2 Defects: corrected and deficiencies completed.
- .3 Equipment and systems: tested and fully operational.
- .4 Operation of systems: demonstrated to Parks Canada Agency's personnel.
- .5 Work: complete and ready for final inspection.

.4 Final Inspection

- .1 When completion tasks are done, request final inspection of Work by Parks Canada Agency and Contractor.
- .2 When Work incomplete according to Parks Canada Agency, complete outstanding items and request re-inspection.

1.2 FINAL CLEANING

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Waste Management: separate waste materials in accordance with Section 01 74 21 – Construction / Demolition Waste Management and Disposal

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

General Requirements – Closeout Submittals
Section 01 78 00

PART 1 GENERAL

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Two (2) weeks prior to Substantial Performance of the Work, submit to the Parks Canada Agency one (1) final copy of operating and maintenance manuals in English and French.

.2 Provide evidence, if requested, for type, source and quality of products supplied.

1.2 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.

.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.

.9 Provide CAD files in DWG format on CD.

1.3 CONTENTS – PROJECT RECORD DOCUMENTS

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

.1 Date of submission.

.2 Names, addresses and telephone numbers of Consultant 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.

1.4 EQUIPMENT AND SYSTEMS

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

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

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

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

.3 Provide cabling schematics of installed material.

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

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

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

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

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

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

.8 Include sequence of operation by controls manufacturer.

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

.10 Provide installed control diagrams by controls manufacturer.

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

.12 Include test reports.

1.5 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Parks Canada Agency approval.

.3 Warranty management plan to include required actions and documents to assure that Parks Canada Agency receives warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

.6 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.

.2 Provide list for each warranted equipment, item, and feature of construction or system indicating.

.1 Name of item.

.2 Model and serial numbers.

.3 Location where installed.

.4 Name and phone numbers of manufacturers and suppliers.

.5 Names, addresses and telephone numbers of sources of spare parts.

.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

.9 Summary of maintenance procedures required to continue warranty in force.

.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.11 Organization, names and phone numbers of persons to call for warranty service.

.12 Typical response time and repair time expected for warranted equipment.

.7 Respond in timely manner to oral or written notification of required construction warranty repair work.

.8 Written verification to follow oral instructions.

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 General requirements relating to commissioning of project's components and systems.

.2 Acronyms:

.1 AFD - Alternate Forms of Delivery, service provider.

.2 MM - Management Manual.

.3 Cx - Commissioning.

.4 EMCS - Energy Monitoring and Control Systems.

.5 O&M - Operation and Maintenance.

.6 PI - Product Information.

.7 PV - Performance Verification.

.8 TAB - Testing, Adjusting and Balancing.

1.2 GENERAL

.1 Commissioning is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Commissioning is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:

.1 Verify installed equipment and systems operate in accordance with Contract Documents and design criteria and final design.

.2 Ensure appropriate documentation is compiled into the MM.

.3 Effectively train O&M staff.

.2 Contractor assists in Commissioning process, operating equipment and systems, troubleshooting and adjusting as required.

.1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.

.2 During these checks, adjustments to be made to enhance performance to meet user requirements.

.3 Design Criteria: as per client's requirements or determined by designer. To meet Project functional and operational requirements.

1.3 COMMISSIONING OVERVIEW

.1 Commissioning to be a line item of Contractor's cost breakdown.

.2 Commissioning activities supplement field quality and testing procedures described in relevant technical sections.

.3 Commissioning is closely associated with the activities carried out during the project. It identifies issues in Planning and Design stages which are addressed during Construction and Commissioning stages to ensure the project to meet functional and operational requirements. Commissioning activities includes transfer of critical knowledge to facility operational personnel.

.4 Parks Canada Agency will issue Interim Acceptance Certificate when:

.1 Completed Commissioning documentation has been received, reviewed for suitability and approved by Parks Canada Agency.

.2 Equipment, components and systems have been commissioned.

.3 O&M training has been completed.

1.4 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

.1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Commissioning, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by Parks Canada Agency, to ensure effective performance.

1.5 PRE-COMMISSIONING REVIEW

.1 Before start of Commissioning:

.1 Have completed Commissioning Plan up-to-date.

.2 Ensure installation of related components, equipment, sub-systems, systems is complete.

.3 Fully understand Commissioning requirements and procedures.

.4 Have Commissioning documentation shelf-ready.

.5 Understand completely design criteria and intent and special features.

.6 Submit complete start-up documentation to Parks Canada Agency.

.7 Have Commissioning schedules up-to-date.

.8 Ensure systems have been cleaned thoroughly.

.9 Complete TAB procedures on systems; submit TAB reports to Parks Canada Agency for review and approval.

.10 Ensure "As-Built" system schematics are available.

.2 Inform Parks Canada Agency in writing of discrepancies and deficiencies on finished works.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

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

.1 Submit no later than four (4) weeks after award of Contract:

.1 Name of Contractor's Commissioning agent.

.2 Draft Commissioning documentation.

.3 Preliminary Commissioning schedule.

.2 Request in writing to Parks Canada Agency for changes to submittals and obtain written approval at least [8] weeks prior to start Commissioning.

.3 Submit proposed Commissioning procedures to Parks Canada Agency where not specified and obtain written approval at least [8] weeks prior to start Commissioning.

.4 Provide additional documentation relating to Commissioning process required by Parks Canada Agency.

.2 Provide completed and approved Commissioning documentation to Parks Canada Agency.

1.7 COMMISSIONING SCHEDULE

.1 Provide detailed Commissioning schedule as part of construction schedule in accordance with Section 01 32 16.07- Construction Progress Schedule - Bar Chart (GANTT).

.2 Provide adequate time for Commissioning activities prescribed in technical sections and commissioning sections including:

.1 Approval of Commissioning reports.

.2 Verification of reported results.

.3 Repairs, retesting, re-commissioning, re-verification.

.4 Training.

1.8 STARTING AND TESTING

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

1.9 WITNESSING OF STARTING AND TESTING

.1 Provide fourteen (14) days' notice prior to start-up and testing.

.2 Parks Canada Agency to witness of start-up and testing.

1.10 PROCEDURES

.1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing and Commissioning.

.2 Conduct start-up and testing in following distinct phases:

.1 Included in delivery and installation:

.1 Verification of conformity to specification, approved shop drawings and completion of PI report forms.

.2 Visual inspection of quality of installation.

.2 Start-up: follow accepted start-up procedures.

.3 Operational testing: document equipment performance.

.4 Performance verification (PV): if applicable, include repetition of tests after correcting deficiencies.

.5 Post-substantial performance verification: to include fine-tuning.

.3 Correct deficiencies and obtain approval from Parks Canada Agency after distinct phases have been completed and before commencing next phase.

.4 Document required tests on approved PV forms.

1.11 START-UP DOCUMENTATION

.1 Assemble start-up documentation and submit to Parks Canada Agency for approval before start commissioning.

.2 Start-up documentation to include:

.1 Factory and on-site test certificates for specified equipment.

.2 Pre-start-up inspection reports.

.3 Signed installation/start-up check lists.

.4 Start-up reports,

.5 Step-by-step description of complete start-up procedures, to permit Parks Canada Agency to resume start-up at any time.

1.12 TEST RESULTS

.1 If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.

.2 Provide manpower and materials and assume costs for re-commissioning.

1.13 START OF COMMISSIONING

.1 Notify Parks Canada Agency at least [21] days prior to start of Commissioning.

.2 Start Commissioning only after elements of facility affecting start-up and performance verification of systems have been completed.

1.14 INSTRUMENTS/EQUIPMENT

.1 Provide a complete list of instruments proposed to be used.

.2 Provide listed data including, serial number, current calibration certificate, calibration date, calibration expiry date and calibration accuracy.

.3 Provide the following equipment as required:

.1 2-way radios.

.2 Ladders.

.3 Equipment as required to complete work

1.15 COMMISSIONING PERFORMANCE VERIFICATION

.1 Carry out Commissioning:

.1 Under actual operating conditions, over entire operating range, in all modes.

.2 On independent systems and interacting systems.

.2 Commissioning procedures to be repeatable and reported results are to be verifiable.

.3 Follow equipment manufacturer's operating instructions.

.4 EMCS trending to be available as supporting documentation for performance verification.

1.16 WITNESSING COMMISSIONING

.1 Parks Canada Agency to witness activities and verify results.

1.17 SUNDRY CHECKS AND ADJUSTMENTS

.1 Make adjustments and changes which become apparent as Commissioning proceeds.

.2 Perform static and operational checks as applicable and as required.

1.18 DEFICIENCIES, FAULTS, DEFECTS

.1 Correct deficiencies found during start-up and Commissioning to satisfaction of Parks Canada Agency.

.2 Report problems, faults or defects affecting Commissioning to Parks Canada Agency in writing. Stop Commissioning until problems are rectified. Continue after written approval from Parks Canada Agency.

1.19 COMPLETION OF COMMISSIONING

.1 Upon completion of Commissioning leave systems in normal operating mode.

.2 Commissioning to be considered complete when contract Commissioning deliverables have been submitted and accepted by Parks Canada Agency.

1.20 ACTIVITIES UPON COMPLETION OF COMMISSIONING

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

1.21 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

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

1.22 OCCUPATION

.1 Cooperate with Parks Canada Agency during stages of acceptance and occupancy of facility.

1.23 PERFORMANCE VERIFICATION TOLERANCES

.1 Application tolerances:

.1 Specified range of acceptable deviations of measured values from specified values or specified design criteria. Except for certain components, equipment and systems, to be within +/- [10] % of specified values.

.2 Instrument accuracy tolerances:

.1 To be of higher order of magnitude than equipment or system being tested.

.3 Measurement tolerances during verification:

.4 Unless otherwise specified, actual values to be within +/- [2] % of recorded values

1.24 OWNER'S PERFORMANCE TESTING

.1 Performances testing of equipment or system by Parks Canada Agency

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 REFERENCE STANDARDS

.1 CSA International: CSA S350-FM1980 (R2003), Code of Practice for Safety in Demolition of Structures.

.2 U.S. Environmental Protection Agency (EPA)/Office of Water: EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit demolition procedures

.2 Submit shoring and bracing drawings, as required, to Parks Canada Agency for approval and review at least seven (7) days before starting the work. Drawings shall be sealed and signed by an engineer registered and licensed to practice in Quebec, Canada.

.3 Submit demolition procedures, which shall meet the requirements for environmental protection, to Parks Canada Agency for approval and review at least seven (7) days before starting the Work. These procedures shall include material handling method and storage location.

PART 2 PRODUCTS

2.1 EQUIPMENT

.1 Contractor shall provide equipment in good condition and in sufficient quantity to remove the concrete within the deadline specified in Contract Documents.

.2 All equipment must be in perfect working condition and suitable for the required work.

.3 Hydraulic hammer:

.1 All hydraulic hammers must be approved by Parks Canada Agency. Approval will be made according to the impact energy per blow that the equipment can transmit. Unless otherwise indicated on drawings, impact energy per blow must not exceed 1100 joules at the tip. Contractor shall provide data sheets to Parks Canada Agency before the commencement of the work.

.4 Saw cutting:

.1 Saw cutting method must be appropriate to perform the work within the prescribed time in accordance with the specifications and drawings. All planned equipment must be able to obtain the requested profiles.

.5 Drilling equipment:

.1 Drilling equipment must be rotary percussive or diamond-rim type capable of drilling, in concrete and rock, hole with diameters and depths as indicated on the drawings.

.6 Air compressor:

.1 Air compressors must be capable of producing an air flow volume and pressure sufficient to discharge, out of the hole, concrete or rock debris produced by drilling operations.

.7 Water compressor:

.1 Water compressors must be capable of producing a water flow rate that is at least equal to the pressure required to perform hydro-demolition work.

.8 Other methods:

.1 Contractor may propose any other method of demolition to respect the desired profile with the tolerances indicated in the drawings. In all cases, the Contractor must excavate the minimum required on drawings.

PART 3 EXECUTION

3.1 INSPECTION

.1 Inspect Site with Parks Canada Agency and verify location and extent of items to be removed, disposed of, salvaged and those to remain in place.

.2 Identify and protect utility lines and ensure good condition for the lines in operation.

.3 Notify utility companies and relevant departments and obtain necessary approvals from them before starting the demolition.

.4 If required, disconnect, shut off or re-route existing service lines located on Site, which interfere with the performance of the work, in accordance with the requirements of authorities with jurisdiction. Identify the location of these pipelines and those previously left in the field and indicate (on horizontal and vertical plans) on the as-built drawings. Support, counteract and maintain in place the pipes and conduits encountered.

.1 Notify Parks Canada Agency and applicable utility immediately of any damage to service line to be retained.

.2 Immediately notify Parks Canada Agency of discovery of any unregistered utility lines and wait for written instructions to proceed.

3.2 PREPARATION

.1 Protection of in-place conditions:

.1 Take necessary measures to prevent movement, settlement or other damage to existing structures. Provide shoring and structures bracing as required.

.2 Minimize amount of dust and noise produced by the work as well as the inconvenience to site users.

.3 Locate and protect electrical equipment, systems and installations, and service lines.

.4 Provide dust screens, tarpaulins, railings, support elements and other required protective devices.

.5 Perform work in accordance with health and safety requirements.

.2 Demolition/Removal Work

.1 Remove elements as indicated in drawings.

3.3 CLEANING

.1 Cleaning during work: Carry out cleaning work so that the Site is clean at the end of each working day.

.2 Final cleaning: Dispose of materials/equipment, tools, waste off site to the satisfaction of Parks Canada Agency.

.3 Refer to drawings for materials to be recovered for reuse or recycling.

.4 Waste Management: separate waste materials for reuse or recycling.

.5 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCE STANDARDS

.1 Canadian Environmental Protection Act, 1999 (CEPA).

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

.1 Safety Data Sheets (SDS).

.3 National Fire Code of Canada, 2010.

.4 Transportation of Dangerous Goods Act (TDGA), [1999] c. 34.

.5 Transportation of Dangerous Goods Regulations (TDGR), T-19.01-SOR/2003-400.

.6 Ozone-Depleting Substances Regulations, SOR/99-07.

.7 Environmental Code of Practice on Halons, July 1996.

.8 Environmental Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems, March 1996.

.9 Environment Quality Act (LRQ, c. Q-2)

.10 Regulation Respecting Hazardous Materials (Q-2, r.23).

1.2 DEFINITIONS

.1 Toxic: substance is considered toxic if it is listed on Toxic Substances List found in Schedule 1 of CEPA.

.2 List of Toxic Substances: found in Schedule 1 of CEPA, lists substances that have been assessed as toxic. Federal Government can make regulations with respect to a substance specified on List of Toxic Substances. Column II of this list identifies type of regulation applicable to each substance.

.3 PCB: includes chlorobiphenyls referred to in Column I of item 1 of the List of Toxic Substances in Schedule I of Canadian Environmental Protection Act.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit WHMIS Safety Data Sheets (SDS) in accordance with Section 01 35 29.06 – Health and Safety.

.2 Submit photocopy of shipping documents to Parks Canada Agency when shipping toxic wastes or Hazardous Materials off site.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Store and handle toxic wastes and Hazardous Materials in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.2 Store and handle flammable and combustible wastes in accordance with current National Fire Code of Canada requirements.

.3 Coordinate storage of toxic wastes with Parks Canada Agency and follow internal requirements for labelling and storage of wastes.

.4 Observe smoking regulations. Smoking is prohibited in area where toxic wastes are stored, used, or handled.

.5 Only certified persons who have successfully completed Environment Canada Environmental Awareness Course for Environmentally Safe Handling of Refrigerants are permitted to work on refrigeration and air conditioning systems.

.6 Report spills or accidents involving toxic wastes immediately to Parks Canada Agency and to appropriate regulatory authorities. Take reasonable measures to contain the release while ensuring health and safety is protected.

.7 Transport toxic wastes and Hazardous Materials in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations

.8 Use authorized/licensed carrier to transport toxic waste.

.9 Coordinate transportation and disposal of toxic wastes and Hazardous Materials with Parks Canada Agency.

.10 Notify appropriate regulatory authorities and obtain required permits and approvals prior to exporting toxic waste and Hazardous Materials.

.11 Dispose of toxic wastes and Hazardous Materials generated on site in accordance with applicable federal and provincial acts, regulations, and guidelines.

.12 Ensure toxic waste and Hazardous Materials are shipped to authorized/licensed treatment or disposal facility and that the liability insurance requirements are met. Submit disposal evidence to Parks Canada Agency.

.13 Minimize generation of toxic waste and Hazardous Materials to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 03 20 00 – Concrete Reinforcing

.2 Section 03 30 00 – Cast-in-Place Concrete

1.2 REFERENCES

.1 Unless otherwise indicated, refer to latest edition and amendments of following standards prevailing at effective date of Contract.

.2 Canadian Standards Association (CSA)/CSA Group

.1 CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CAN/CSA O86S1 Supplement No. 1 to CAN/CSA O86, Engineering Design in Wood.

.3 CSA O121, Douglas Fir Plywood.

.4 CSA O151, Canadian Softwood Plywood.

.5 CSA O153, Poplar Plywood.

.6 CAN/CSA O325.0, Construction Sheathing.

.7 CSA O437 F93 Series, Standards for OSB and Waferboard.

.8 CSA S269.1, Falsework and Formwork.

.3 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S701, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.3 DELIVERABLE SUBMITTAL FOR APPROVAL/INFORMATION

.1 Submit deliverables, which could be documents and samples, in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit shop drawings for formwork and falsework.

.1 Drawings shall be stamped and signed by professional engineer registered or licensed in Quebec, Canada.

.3 Submit Safety Data Sheets (MSDS) as per WHMIS regulation.

.4 Issue and coordinate deliverables in accordance with specified submittal requirements.

.5 Shop drawings shall indicate, show or include construction method, work schedule, procedures for shoring, stripping and re-shoring, materials, special architectural characteristics of exposed finishes, arrangement of joints, ties and liners, and locations of temporary embedded parts. Falsework and Formwork drawings shall be in conformance with CSA S269.1.

.6 Shop drawings shall indicate, show or include formwork design data, such as the permissible speed and temperature for the placement of concrete in formworks.

.7 Indicate the erection and removal sequence of formwork/falsework as directed by Parks Canada Agency.

.8 If slip forming is used, submit materials and procedures details to Parks Canada Agency.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Waste management and disposal

.1 Sort waste for reuse or recycle in accordance with Section 01 74 21 – Construction / Demolition Waste Management and Disposal.

.2 Place materials defined as hazardous or toxic in designated containers.

.3 Transport unused wood materials to a facility approved by Parks Canada Agency for recycling or reuse.

.4 Transport unused plastic materials to a facility approved by Parks Canada Agency for recycling or reuse.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Formwork materials

.1 For concrete without special architectural features, use formwork made of wood or wood-derived materials in accordance with CAN/CSA-O86. Steel formwork is also acceptable.

.2 For concrete with special architectural features, use formwork materials in conformance with CSA-A23.1/A23.2.

.3 Rigid insulation board: in conformance with CAN/ULC-S701.

.2 Formworks for ribbed surfaces: removable, permanent, steel, reinforced plastic, as per instructions.

.3 Form ties

.1 For concrete without special architectural features, use removable or snap-off metal ties with fixed or adjustable length and free of devices that can leave holes larger than 25 mm diameter on concrete surface.

.2 For architectural concrete, use snap ties in conjunction with plastic cones and light grey concrete plugs.

.4 Form liner

.1 Plywood: Douglas Fir in conformance with CSA O121, Canadian Softwood Plywood in conformance with CSA O151, or Poplar in conformance with CSA O153.

.2 Waferboard: in conformance with CSA-O325.0.

.5 Form release agent: non-toxic, low VOC.

.6 Form stripping agent: colourless mineral oil, non-toxic, low VOC, free of kerosene.

.7 Falsework materials: in conformance with CSA-S269.1.

.8 Sealant: as recommended by Parks Canada Agency or noted on drawings.

PART 3 EXECUTION

3.1 FABRICATION AND ERECTION

.1 Verify lines, levels and distances before fabricating formwork/falsework and ensure that dimensions are as specified on drawings.

.2 Obtain Parks Canada Agency's approval before pouring concrete directly in earth formworks or planning formwork openings not specified on drawings.

.3 Hand trim sides and bottoms and remove loose earth from earth formworks before pouring concrete.

.4 Fabricate and erect falsework in accordance with CSA S269.1.

.5 Do not place shores and mud sills on frozen ground.

.6 Provide site drainage to prevent washout of soil supporting mud sills and shores.

.7 Fabricate and erect formwork in accordance with CSA-S269.1 to produce finished concrete with shape, dimensions, locations and levels as per specifications and drawings and within tolerances specified in CSA-A23.1/A23.2.

.8 Align form joints and make them watertight.

.1 Minimize the number of form joints.

.9 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners of joints, unless specified otherwise.

.10 Form chases, slots, openings, drips, recesses, expansion and control joints shall be as per specifications and drawings.

.11 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.

.1 Ensure that anchors and inserts will not protrude beyond surfaces requiring applied finishes (e.g. paint).

.12 Clean formwork in accordance with CSA-A23.1/A23.2, before pouring concrete.

.13 Following the installation of falsework and its inspection by an engineer licensed in Quebec, Canada, and before pouring concrete, submits to Parks Canada Agency a written notice, signed by the same engineer, informing them that the inspected falsework is in compliance with the design requirements. The notice shall include date and time of the inspection.

.14 When slip forming is used, submit details as per section 1.3.

3.2 REMOVAL AND RESHORING

.1 Leave formwork in place for following minimum periods of time after placing concrete.

.1 3 days for walls and sides of beams.

.2 3 days for columns.

.3 28 days for beams, slabs, decks and other structural members, or 7 days when formworks are replaced immediately with adequate shoring in accordance with specified requirements for falsework.

.4 3 days for footings and abutments.

.2 Remove formworks when concrete has reached 80% of its design strength or minimum period noted above, whichever comes first, and replace them immediately with adequate reshoring.

.3 Provide necessary reshoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.

.4 Space reshoring in each principal direction at not more than 3000 mm apart.

.5 Re-use formwork and falsework, subject to the requirements of CSA-A23.1/A23.2.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 03 10 00 – Concrete Forming and Accessories

.3 Section 03 30 00 – Cast-in-Place Concrete

1.2 REFERENCES

.1 Unless otherwise indicated, refer to latest edition and amendments of following standards prevailing at effective date of Contract.

.2 American Concrete Institute (ACI)

.3 ASTM International

.1 ASTM A82/A82M, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

.2 ASTM A143/A143M, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.

.3 ASTM A185/A185M, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

.4 CSA Group

.1 CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

.2 CAN/CSA A23.3, Design of Concrete Structures.

.3 CSA G30.18, Carbon Steel Bars for Concrete Reinforcement.

.4 CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.5 CAN/CSA-G164, Hot dip galvanizing of irregularly shaped articles.

.6 CSA W186, Welding of Reinforcing Bars in Reinforced Concrete Construction.

.5 Reinforcing Steel Institute of Canada (RSIC)

.1 RSIC, Reinforcing Steel Manual of Standard Practice.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit deliverables, which could be documents and samples, in accordance with Section 01 33 00 – Submittal Procedures.

.2 Prepare reinforcement drawings in accordance with the Reinforcing Steel Manual of Standard Practice.

.3 Shop Drawings

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Quebec, Canada.

.1 Drawings shall indicate installation details of reinforcement and the following:

.1 Bar bending details.

.2 List of reinforcement.

.3 Quantities of reinforcement.

.4 Sizes, spacings, locations of reinforcement and required mechanical splices, if approved by Parks Canada Agency, the required reinforcement shall be identified according to an identification code allowing the determination of its location without referencing to structural drawings.

.5 Drawings shall indicate sizes, spacings and locations of chairs, spacers and hangers.

.2 Detail lap lengths and bar development lengths shall be in conformance with CAN/CSA A23.3, unless specified otherwise.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements: deliver materials to site in their original factory packaging, labelled with manufacturer's name and address.

.2 Storage and Handling Requirements

.1 Store materials off ground, in clean areas and in accordance with manufacturer's recommendations.

.2 Replace defective or damaged materials with new materials.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Substitute different size bars only if permitted in writing by Parks Canada Agency.

.2 Reinforcing steel: deformed bars made of high-bond billet steel, grade 400 or 500, in accordance with CSA-G30.18, unless specified otherwise. Weldable steel is also acceptable.

.3 Reinforcing steel: deformed bars made of weldable low alloy steel in accordance with CSA G30.18.

.4 Steel welded wire Reinforcement: in accordance with ASTM A185/A185M.

.1 Provide in flat sheets only.

.5 Welded steel wire fabric: in accordance with ASTM A82/A82M.

.1 Provide in flat sheets only.

.6 Galvanizing of non-prestressed reinforcement: minimum zinc coating 610 g/m2 conform to CAN/CSA-G164. Provide only if indicated in drawings.

.1 Protect galvanized reinforcing steel with chromate treatment to prevent reaction with Portland cement paste.

.2 If chromate treatment carried out immediately after galvanizing, soak steel in aqueous solution containing minimum 0.2% by weight sodium dichromate or 0.2% chromic acid.

.1 Temperature of solution minimum 32 degrees and galvanized steels immersed for minimum 20 seconds.

.3 If galvanized steels at ambient temperature, add sulfuric acid as bonding agent at concentration of 0.5% to 1%.

.1 No restriction applies to temperature of solution.

.4 Chromate solution sold for this purpose may replace solution described above, provided if of equivalent effectiveness.

.1 Provide product description as per Section 1.3.

.7 Chairs, bolsters, bar supports and spacers: to CSA-A23.1/A23.2.

.8 Mechanical splices: subject to approval of Parks Canada Agency.

.9 Plain round bars: to CSA-G40.20/G40.21.

2.2 FABRICATION

.1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2 or Reinforcing Steel Manual of Standard Practice from Reinforcing Steel Institute of Canada (RSIC).

.2 Obtain Park Canada Agency's written approval for the locations of reinforcement splices other than those shown on installation drawings.

.3 Upon approval by Park Canada Agency, reinforcement shall be welded in accordance with CSA W186.

.4 Shipped lot of reinforcement bars, shall be clearly identified as per the identification code, which is in accordance with the list of required reinforcement bars and associated bending details.

2.3 SOURCE QUALITY CONTROL

.1 Provide Park Canada Agency with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis as well as reinforcement galvanization reports (if required), minimum 2 weeks prior to beginning of work.

PART 3 EXECUTION

3.1 PREPARATION

.1 The Galvanization of reinforcement steel shall include a chromate treatment.

.1 Duration of treatment to be 1 hour per 25 mm of bar diameter.

.2 Conduct bending tests to verify the strength of galvanized bar in accordance with ASTM A143/A143M.

3.2 FIELD BENDING

.1 Do not field bend or field weld reinforcement, unless specified otherwise or authorized by Park Canada Agency.

.2 When field bending is authorized, bend by applying a slow and steady pressure without heating.

.3 Replace bars with cracks or splits.

3.3 PLACING REINFORCEMENT

.1 Install reinforcing steel as per installation drawings and in accordance with CSA-A23.1/A23.2.

.2 Prior to pouring of concrete, request Parks Canada Agency's acceptance of reinforcing material and associated installation works.

.3 Ensure coating of reinforcement is maintained during concrete pour.

3.4 FIELD TOUCH-UP

.1 Touch up damaged and cut ends of galvanized reinforcing steel with two (2) layers of zinc-rich coating to provide continuous coating.

3.5 CLEANING

.1 Progress Cleaning: carry out cleaning work.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion, remove surplus materials, rubbish, tools and equipment from Work site.

.3 Waste Management: separate waste materials for reuse or recycling.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 01 45 00 – Quality Control

.2 Section 03 10 00 – Concrete Forming and Accessories

.3 Section 03 20 00 – Concrete Reinforcing

1.2 REFERENCE STANDARDS

.1 ASTM International

.1 ASTM C260/C260M, Standard Specification for Air-Entraining Admixtures for Concrete.

.2 ASTM C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

.3 ASTM C494/C494M, Standard Specification for Chemical Admixtures for Concrete.

.4 ASTM C1017/C1017M, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.

.2 Canadian Standard Association (CSA)/CSA Group

.1 CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA A283, Qualification Code for Concrete Testing Laboratories.

.3 CSA A3000, Cementations Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

1.3 DEFINITIONS

.1 Cement: hydraulic cement or blended hydraulic cement (the suffix XXb – b denotes blended).

.1 Type GU, GUb and GUL – General use cement.

.2 Type MS and MSb – Moderate sulphate-resistant cement.

.3 Type MH, MHb and MHL – Moderate heat of hydration cement.

.4 Type HE, HEb and HEL – High early-strength cement.

.5 Type LH, LHb and LHL – Low heat of hydration cement.

.6 Type HS and HSb – High sulphate-resistant cement

.2 Fly ash:

.1 Type F – with CaO content less than 8 %.

.2 Type CI – with CaO content ranging from 15 % to 20%.

.3 Type CH – with CaO greater than 20%.

.4 Type S – Ground, granulated blast-furnace slag.

1.4 DELIVERABLE SUBMITTALS FOR APPROVAL/INFORMATION

.1 At least four (4) weeks before the commencement of work, submit to Parks Canada Agency samples of the following materials, which are proposed for the work:

.1 five (5) liters of curing compound;

.2 Three (3) kg of each type of cement addition;

.3 Ten (10) kg of each type of hydraulic cement;

.4 Five (5) kg of each adjuvant;

.5 Ten (10) kg of each type of fine aggregate and coarse aggregate.

.2 Submit results and test reports to Parks Canada Agency for review, and in case of any differences or deviations from the formula or dosing parameters prescribed for the concrete mixture, do not continue the work without a prior written permission.

.3 Concrete batches: submit accurate records of concrete batch set up, including the date and location of each batch, concrete quality, air temperature and specimens taken as directed by Article 3.4 - Field Quality Control.

.4 Concrete delivery time: Submit to Parks Canada Agency, for review, any deviation greater than the maximum allowable duration of 105 minutes for the delivery of concrete to the construction site and pouring of the batch.

.5 Provide two copies of WHMIS Safety Data Sheets (SDS).

1.5 QUALITY ASSURANCE

.1 Submit valid and recognized certificate from concrete supplying plant to Parks Canada Agency, minimum four (4) weeks prior to the commencement of concrete work.

.1 Provide test data, compliance certificates, technical data sheets, and certification by qualified independent inspection and testing laboratory confirming that materials used in the preparation of concrete and the dosing formula meet the specified requirements. The conformance of each mixture with the requirements of this specification shall be demonstrated by laboratory tests.

.2 Minimum four (4) weeks prior to commencement of concrete work, submit proposed quality control procedures for review by Parks Canada Agency on following items:

.1 Erection of falsework.

.2 Concreting work in hot weather.

.3 Concreting work in cold weather.

.4 Curing.

.5 Finishes.

.6 Formwork removal.

.7 Installation of joints.

.3 Quality Control Plan: submit a written report to Parks Canada Agency, certifying compliance of the fabricated concrete with the performance requirements set out in Article 2.2 – Performance Criteria.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Concrete delivery time: deliver to site of Work and discharged within a maximum of 105 minutes after batching.

.1 By default, any changes to the maximum transport time must be accepted in writing by Parks Canada Agency and the concrete producer as per CSA A23.1 / A23.2.

.2 Deviations must be submitted to Parks Canada Agency for review.

.2 Concrete delivery: ensure continuous concrete delivery from plant in accordance with CSA A23.1/A23.2.

PART 2 PRODUCTS

2.1 DESIGN CRITERIA

.1 Alternative 1 - Performance: in accordance with CSA A23.1/A23.2 and the requirements of Article 2.4 Mixes.

2.2 PERFORMANCE CRITERIA

.1 Quality Control Plan: ensure concrete supplier can provide concrete that satisfy the performance criteria from Parks Canada Agency and provide compliance monitoring of the material in accordance with the requirements of Article 1.5 Quality Assurance.

2.3 MATERIALS

.1 Cement: in conformance with CSA A3001, Type GU.

.2 Supplementary cementing materials: with a minimum of 8% silica fume, in conformance with CSA A3001.

.3 Water: in conformance with CSA A23.1.

.4 Aggregates: in conformance with CSA A23.1/A23.2.

.5 Admixtures:

.1 Air entraining admixture: in conformance with ASTM C260.

.2 Chemical admixture: in conformance with ASTM C494. Parks Canada Agency shall approve set accelerating or set retarding admixtures for concreting works during cold and hot weather.

.6 Cure Product: white, as per CSA A23.1/A23.2 and ASTM C309 Type 1, chlorinated rubber.

2.4 MIXES

.1 Performance Method for concrete specification: to meet Parks Canada Agency performance criteria and in accordance with CSA A23.1/A23.2.

.1 Ensure concrete supplier meets the performance criteria established below and perform a compliance check as per the Quality Control Plan.

.2 Characteristics of fresh concrete:

.1 Slump: 80 mm ± 20 mm

.2 Air Content: 5% to 8%

.3 Maximum water/binder ratio: 0.50

.3 Once hardened, concrete mix shall meet the following requirements:

.1 Durability and class of exposure: F-1.

.2 Compressive strength: 30 MPa minimum at 28 days.

.3 Aggregate size: 19 mm.

.4 L max (µm): 230

.4 Provide quality management plan to ensure verification of concrete quality to specified performance.

.5 Concrete supplier's certification: both batch plant and materials shall meet the requirements of CSA A23.1.

.6 All aggregates proposed for exterior concrete shall be tested in accordance with CAN3-A23.2 for their alkali reactivity.

PART 3 EXECUTION

3.1 PREPARATION

.1 Obtain Parks Canada Agency's written approval before placing concrete.

.1 Provide notice at least 24 hours prior to the placing of concrete.

.2 Place concrete reinforcement in accordance with Section 03 20 00 – Concrete Reinforcing.

.3 During concreting operations, the following instructions shall be followed:

.1 Development of cold joints is not allowed.

.2 Ensure concrete is delivered and handled with minimum intervention during the installation and without any damage to existing structures or Work.

.4 Pumping of concrete is permitted only after approval of materials and mix.

.5 Ensure reinforcement and inserts are not disturbed during concrete placement.

.6 Prior to pouring of concrete, obtain Parks Canada Agency's approval for the proposed method of concrete protection during placing and curing in adverse weather.

.7 Protect previous Work from stains.

.8 Clean and remove stains from concrete surfaces prior to application of finishes.

.9 Maintain accurate records of concreting works including the precise date, location of each pour, quality, air temperature and test samples taken.

.10 Do not apply any load on new concrete items until authorized by Parks Canada Agency.

3.2 INSTALLATION / APPLICATION

.1 Carry out all cast-in-place concrete work in conformance with CSA A23.1/A23.2.

.2 Sleeves and inserts:

.1 Do not allow penetrations, sleeves, ducts, pipes or other openings to pass through any element, except where indicated or approved by Parks Canada Agency.

.2 Where approved by Parks Canada Agency, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere.

.3 Sleeves and openings greater than 100 mm x 100 mm that are not specified must be reviewed by Parks Canada Agency.

.4 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval from Parks Canada Agency for any modifications and before pouring of concrete.

.5 Confirm locations and sizes of sleeves and openings as shown on drawings.

.6 Set special inserts for strength testing as indicated and as required by non-destructive method of concrete testing.

.3 Anchor bolts:

.1 Set anchor bolts to templates in coordination with appropriate trade prior to pouring of concrete.

.2 Only after receipt of written approval from Parks Canada Agency, grout anchor bolts in preformed holes or holes drilled after concrete has set.

.3 Protect anchor bolt holes from water, snow and ice accumulations.

.4 Set bolts and fill holes with epoxy grout as per manufacturer's recommendations.

.4 Apply non-shrink grout under the railing post bearing plates in accordance with manufacturer's recommendations to obtain a contact surface equal to 100% of the grouted area.

.5 Finishing and curing:

.1 Finish concrete surfaces in accordance with CSA A23.1/A23.2.

.2 Use procedures reviewed and approved Parks Canada Agency or those specified in CSA A23.1/A23.2 to remove excess bleed water. Ensure concrete surface is not damaged.

.3 Unless otherwise indicated, use a broom to do the finishing.

.4 Rub exposed sharp edges of concrete with carborundum to produce 3 mm minimum radius edges unless otherwise indicated.

.5 Take the necessary precautions to eliminate the source of concrete deterioration arising from shocks or vibrations. The demolition of continuous concrete items using hammers and the compaction of materials (soil, granular, coated material) are prohibited within 30 m of fresh concrete, right after pouring and until it reaches a compressive strength of at least 70% of f'c that is verified by tests on samples under the same conditions as the concrete used.

.6 Ensure damp cure of the concrete for seven (7) days following its placing.

.7 Obtain approval from Parks Canada Agency, with at least 24 hours' notice, for the proposed curing method.

3.3 SURFACE TOLERANCE

.1 Concrete surface tolerances must comply with CSA A23.1, and the straight-edge method.

3.4 FIELD QUALITY CONTROL

.1 Site tests: conduct the following tests in accordance with section 01 45 00 – Quality control and submit report as specified in clause 1.4:

.1 Slump.

.2 Air content.

.3 Compressive strength: 7 day and 28 day.

.2 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by Contractor. Tests shall be carried out in accordance with CSA A23.1/A23.2.

.3 Ensure that test results are transmitted to Parks Canada Agency and to the Test Laboratory Representative for them to review during the meeting prior to the concrete casting.

.4 Test laboratory representative will take additional test cylinders for cold weather concreting. The cure of these cylinders shall be performed on job site under the same conditions as the concrete, from which they are extracted.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

.1 ASTM International

.1 ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for Generalities Service.

.3 ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.4 ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

.2 CSA Group

.1 CSA G40.20/G40.21- General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CAN/CSA G164 - Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CSA S16 – Design of Steel Structures

.4 CSA W48 - Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).

.5 CSA W59 - Welded Steel Construction (Metal Arc Welding) [Metric].

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

.1 WHMIS Safety Data Sheets (SDS)

.4 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual – latest edition.

1.2 DELIVERABLE SUBMITTAL FOR APPROVAL/INFORMATION

.1 Technical Data Sheet:

.1 Submit technical data sheets and associated manufacturer's instructions and printed product literature for tubing, pipe, sections, plates and bolts. These technical data sheets shall include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two (2) copies of the SDS data sheets as per WHMIS regulation.

.1 In case of paint, primers and other finishing products applied on site, indicate VOC content (g/L).

.2 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered and licensed in Quebec, Canada.

.2 Shop drawings must indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.3 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports showing compliance of materials with specified performance criteria and physical characteristics.

.2 Certifications: submit product certificates signed by manufacturer, showing compliance of materials with specified performance criteria and physical characteristics.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in their original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials in an off-ground location that is clean, dry and well-ventilated in accordance with manufacturer's recommendations.

.2 Replace defective or damaged materials with new materials.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Steel sections and plates: to CSA G40.20/G40.21, Grade 350W or 300W.

.2 Steel pipe: to ASTM A53/A53M, Class B.

.3 Welding materials: to CSA W59.

.4 Welding electrodes: to CSA W48 Series.

.5 Bolts and anchor bolts: to ASTM F593, unless specified otherwise on drawings.

.6 Structural bolts: to ASTM A-325, galvanized.

.7 Grout: non-shrink, non-metallic, flowable, and a resistance of 25 MPa at 24 hours.

.8 Grating: to ASTM A36/A36M

2.2 METAL FABRICATION

.1 Work shall be square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws, unless specified otherwise. Screws shall be made of stainless steel.

.3 Where possible, work shall be delivered assembled and ready for erection.

.4 Exposed welds shall be continuous on the entire joint length. File or grind exposed welds to have a smooth and flush surface.

2.3 SHOP PAINTING AND GALVANIZING

.1 All structural components shall be galvanized to CAN/CSA-G164 (600g/m^2). Provide design arrangements to allow the galvanization of the entire structure.

.2 Bollards and beacons shall be painted in black.

.3 Painting of galvanized steel for bollards and beacons:

.1 Preparation of SSPC-SP16 steel with a minimum profile of 1.5 mils.

.2 Shop painting of galvanized steel:

.1 Paint weld joints and sharp edges with a brush before applying the intermediate and finishing layers using spray gun.

.2 One layer of primer: hot dip galvanization.

.3 One intermediate layer: Amerlock 2, 6 to 7 mils dry.

.4 One finishing layer (epoxy polysiloxane coating): Amercoat PSX 700 4 to 6 mils dry.

.3 Color

.1 Intermediate: middle grey

.2 Finish: black

.4 Contractor shall select a paint system equivalent to the system described above. It will be subject to approval by Parks Canada Agency.

2.4 BOLTS

.1 Bolts shall be made of stainless steel as specified on drawings.

PART 3 EXECUTION

3.1 INSPECTION

.1 Condition assessment: before the installation of metal works, ensure that the condition of substrates/supports, which were previously installed under other Sections or Contracts, are acceptable for the implementation of the work in accordance with manufacturer's written instructions.

.1 Visually inspect substrates/supports in the presence of Parks Canada Agency.

.2 Immediately inform Parks Canada Agency of any unacceptable conditions upon discovery.

.3 Proceed with installation only after unacceptable conditions are remedied and a written approval to proceed is received from Parks Canada Agency.

3.2 ERECTION

.1 Carry out welding work in accordance with CSA W59, unless specified otherwise.

.2 Erect metalwork square, plumb, straight, true and accurately aligned and fitted with tight joints and intersections.

.3 Provide suitable means of anchorage accepted by Parks Canada Agency such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Exposed fastening devices shall match finish and be compatible with material through which they pass.

.5 Provide required inputs to work by other trades in accordance with supplied nomenclature and shop drawings.

.6 Make field connections with bolts in conformance with CSA S16 or by welding, as specified.

.7 Deliver setting templates and items to be buried in concrete and casted in masonry to their correct locations.

3.3 GALVANIZING

.1 Galvanizing

.1 Certificate of Compliance

.1 For each delivery of galvanized steel, Contractor shall provide to Parks Canada Agency a certificate of compliance containing the following information:

.1 Galvanizing company;

.2 Galvanizing date and place;

.3 Coating thickness;

.4 Coating adhesion;

.5 Coating quality.

.2 Reception check

.1 The reception check carried out by Parks Canada Agency consists of performing tests for thickness, adhesion and coating quality in accordance with ASTM A123/ A123M “Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products”.

.3 Surfaces preparation

.1 Surfaces to be galvanized shall be clean, free of paint, grease, rust, etc. Deposits and residues from welding work, mill scale and paint or thick rust deposits shall be removed by appropriate methods. Final stripping shall be done by submerging in a caustic solution followed by rinsing with clean water and submerged in dilute sulfuric or hydrochloric acid. After stripping, the parts shall be submerged in an aqueous solution of zinc chloride and ammonium.

.4 Galvanizing process

.1 Galvanization shall be performed in accordance with ASTM A123 / A123M "Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products".

.2 Bottom flange steel surfaces of the girders and bearings that are in contact with the welds to secure beam supports shall be ground after galvanizing.

.3 The minimum thickness of galvanization is 100 µm, except for HSS steel tubes, where the minimum thickness is 75 µm.

.5 Protection of galvanized elements

.1 Protect galvanized elements from damage during handling and storage.

.2 Protect adequately elements that are in contact with the lifting equipment, such as cables and chains.

.3 Galvanized elements, except for reinforcement, shall be properly stored to ensure that air is circulating between the parts, water is not accumulating and drip freely, and there is no metal-to-metal contact of the galvanized parts. During the installation of the galvanized retainers, Contractor is fully responsible for ensuring that there is no white rust on these parts.

.6 Repair after galvanizing

.1 Damaged surfaces less than 2.5 cm wide shall be repaired by adding 2 coats of zinc-rich plaster with a minimum of 87% zinc metal in the dry film. Plus, on a same piece, total surface to be repaired by Zinc-rich coating shall be less than 0.5% of the total surface of the piece. Damaged surfaces shall first be cleaned in accordance with SSPC-SP 11 "Power Tool Cleaning to Bare Metal". The minimum total thickness of the dry film coating shall be 130 µm.

.2 Damaged surfaces with a width greater than 2.5 cm and a part with a damaged surface greater than 0.5% of its total area shall be re-galvanized or repaired by metallization. To do so, damaged surfaces shall first be cleaned in accordance with SSPC-SP 5 / NACE N° 1 "White Metal Blast Cleaning" or SSPC-SP 11 "Power Tool Cleaning to Bare Metal". The minimum thickness of the metallized coating is 130 µm.

3.4 CLEANING

.1 Final Cleaning: remove and dispose surplus materials, rubbish, tools and equipment from site in accordance with Parks Canada Agency's requirements.

3.5 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to material caused by the installation of metal works.

END OF SECTION

Wood Treatment
Section 06 05 73

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 11 90 00 – Mechanical systems – Valves, Doors and mechanism

1.2 REFERENCES

.1 American Wood-Preservers' Association (AWPA)

.1 AWPA M2, Standard for Inspection of Treated Wood Products.

.2 AWPA M4, Standard for the Care of Preservative – Treated Wood Products.

.3 AWPA A3, Standard Methods for Determining Penetration of Preservatives and Fire Retardants

.2 Canadian Standards Association (CSA International)

.1 CSA O80 Serie-08, Wood preservation.

1.3 ACTIONS AND INFORMATIONAL SUBMITTALS

.1 Submit Submittal submissions : in accordance with Section 013300 – Submittal Procedure.

.2 Quality assurance submittals.

.1 For products treated with preservative by pressure impregnation submit following information certified by authorized signing officer of treatment plant :

.1 Information listed in AWPA M2 and revisions specified in CSA O80 Series, Supplementary Requirement to AWPA M2 applicable to specified treatment.

.2 Moisture content after drying following treatment with water-borne preservative.

1.4 QUALITY ASSURANCE

.1 Plant inspection of products treated with preservative by pressure impregnation will be carried out by designated testing laboratory to AWPA M2, and revisions specified in CSA O80 Series, Supplementary Requirements to AWPA M2.

.2 As required by standard CSA O80, lumber treated with CCA must be subjected to a chromotropic acid test to verify fixation of the product. This test must be done as per standard AWPA A3 and the additional requirements stated in CSA 080.

.3 Plant inspection of products treated with preservative must be done by a third party at the cost of Contractor or treatment plant.

PART 2 PRODUCTS

2.1 MATERIALS

.1 CCA preservative (Chromated Copper Arsenate), conform to standard CSA 080.08.

PART 3 EXECUTION

3.1 PRESERVATION TREATMENT

.1 After drying, lumber shall be incised and treated in plant by pressure impregnation with CCA preservative. Treatment shall be done over a minimum of 24-hour period at 700 kPa. Lumber must be treated on four faces after it has been shaped to its final dimension.

.2 Provide a certificate conforming that lumber has been treated in plant in accordance with technical specification and standard CSA 080.

.3 Works shall be done by a specialized Contractor certified by the « Canadian Wood Preservation Certification Authority ».

.4 In field or in workshop, all cuts and holes done after initial treatment shall be treated with concentrated CCA.

3.2 FIELD TREATMENT

.1 CCA must be manipulated and stored carefully since it is a hazardous material.

.2 Inform workers to take safety precautions.

.3 Comply with AWPA M4 and revisions specified in CSA O80 Series, Supplementary Requirements to AWPA M2.

.4 Ensure wood is dried in the application zone.

.5 Do not apply preservative when it’s raining.

.6 Fit out work zones in order to prevent rejects in the environment.

.7 Work over protective canvas to prevent spills or drops that could be spilled into environment.

.8 Containers shall be well identified, watertight and correctly closed. For temporary storage, containers shall be placed over stable ground, away from vehicles and protected from bad weather.

.9 Adopt good practices in order to minimize quantity used.

.10 Mop up excessive products and dispose absorbents correctly.

.11 Recuperate spills, even small quantities. Contain contaminated area, clean and remove all contaminated materials and manage in accordance with regulation force.

3.3 WOOD CUT IN FIELD

.1 Cut wood over protective canvas or similar dispositive in order to recuperate debris.

.2 Store sawdust, wood chips or other treated wood debris in watertight containers or by using equivalent measures to prevent contact with rain water.

.3 Make sure that cleaning and elimination of debris are done adequately and promptly.

3.4 ELIMINATION OF TREATED WOOD DEBRIS AND PRESERVATIVES

.1 Workers shall be informed of precautions to take in order to manage wood cuts and debris of treated wood and preservatives applied in field.

.2 Make sure that residual matters are placed into appropriate containers and carried to authorized sites.

.3 Never burn treated wood, debris or waste contaminated with wood preservative.

.4 Eliminate debris, saw dust and treated wood chips in a waste burial site that manage its lixiviation waters or a burial site that has the authorizations for this specific materials.

.5 Make sure that all hazardous matters destined for elimination are managed with regulations in force (wood preservative, empty containers, saw dust and wood chips, wet soils, etc.)

FIN DE LA SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 06 05 73 – Wood Treatment

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit required documents and samples in accordance with section 01 33 00 - Submittal Procedures.

.2 Data Sheet.

.1 Submit technical data sheets as well as specifications and manufacturer's documentation for the applicable gates. The data sheets must indicate the characteristics of the products, the performance criteria, the dimensions, the constraints and the finish.

.3 Shop Drawings.

.1 Submitted shop drawings must have the seal and signature of a qualified engineer recognized or licensed to practice in the Province of Quebec, Canada.

.4 Design Briefs

.1 Submit design brief (calculation notes) of the specified equipments.

1.3 DOCUMENTS/CLOSEOUT SUBMITTALS

.1 Submit the required maintenance sheets and attach them to the manual mentioned in section 01 78 00 – Closeout submittals.

1.4 DESCRIPTION

.1 Saint-Ours lock allows the passage of boats at the East side of Darvard Island. The lock hydromechanical equipments are subject to a refurbishment as described in the herein section.

1.5 WORKS INCLUDED

.1 Saint-Ours lock

.1 The supply, design, fabrication, transport and installation of new wooden top beams on the upstream doors only. The reference drawings of the downstream doors are provided in annex. The replacement methodology shall be provided for review and approval by the Parks Canada Agency.

.2 The supply, fabrication, transport and installation of eight door upper pivot retaining blocks as shown on drawings.

.3 The supply of the shop drawings of the new wooden top beams of the upstream doors and doors upper pivot retaining blocks for review and approval by the Parks Canada Agency.

.4 The removal and disposal of the butterfly valves hydraulic power units.

.5 The removal and the disposal of the existing butterfly valves.

.6 The supply, fabrication, transport and installation of eight bronze bushings for the new butterfly valves.

.7 The design, supply, fabrication, transport and installation of new butterfly valves.

.8 The design, supply, fabrication, transport and installation of new butterfly valves operating systems.

.9 The supply of design briefs (calculation notes) and fabrication drawings for the new butterfly valves and their operating systems for review and approval by the Parks Canada Agency.

.10 The supply, transport and installation of new gear motors and couplings for the door opening mechanisms and the removal/disposal of the existing gearboxes. The existing motors shall be handed over to Parks Canada Agency.

.11 The supply, fabrication, transport and installation of new gear motor steel bases.

.12 The supply of shop drawings of the new gear motors steel bases for review and approval by the Parks Canada Agency.

.13 The supply and installation of new anchors for the trash racks.

.14 The supply and installation and new rack stainless steel bolts on all lock doors.

.15 The commissioning of the mechanical equipments.

1.6 HYDRAULIC DATA AND GENERAL DIMENSIONS

.1 Operating conditions of the Saint-Ours Lock :

.1	Normal upstream level :	6,86 m (22’-6’’)
.2	Maximum headwater of butterfly valves :	5,0 m
.3	Maximum opening/closing time of the butterfly valves :	80 seconds
.4	Minimum opening/closing time of the butterfly valves :	20 seconds
.5	Opening/closing time of lock doors :	90 seconds

1.7 CONTRACTOR’S RESPONSABILITIES

.1 The Contractor is responsible to carry out surveys and validate all dimensions that can impact the design and installation of new gates and stoplogs. If the Contractor notices disparities between measured values and the ones in drawings, the Contractor shall inform the Parks Canada Agency.

.2 The Contractor shall perform the design and provide engineering services for manufacturing, assembly and testing follow-up, until final acceptance of the equipment. The design, manufacture and assembly shall be in conformity with basic criteria, codes and standards as stated in this specification.

.3 Drawings annexed to this specification give a fair overview of the installation; however, the final detailed design is the sole responsibility of the Contractor. Dimensions shown on drawings and not marked as “Reference” cannot be modified under any circumstances.

.4 The valves and operational system and all mechanical equipments shall be supplied with all parts and accessories as described in the specification and drawings as well as all connections, accessories or devices not mentioned but required for the equipment's proper operation.

1.8 BUTTERFLY VALVES – DESCRIPTION OF SUPPLY

.1 General

.1 The butterfly valves are used to fill and empty the lock during lockage manoeuvres. Hydraulic passages located in the lock walls allows the water to flow downstream. The valves are installed in cast iron embedded parts. Each valve is equipped with a central shaft which pivots in bronze bushings located in the embedded parts.

.2 Each valve is operated by an electric servomotor located in the valve pit. The lifting effort is transmitted to the gate lifting point by lifting rods and a slider plate.

.3 The valves dimensions shall adapt to the existing embedded parts arrangement as shown in the original drawings.

.4 The hydraulic profile of the new valves shall be identical to the original valves.

.2 Structure

.1 The valves shall be made of a stainless-steel welded assembly.

.2 Each valve is made from two skin plates (upstream and downstream) welded to internal stiffeners. The structure shall be consolidated, if necessary, by stiffeners, bracings and diaphragms.

.3 The hydrostatic and hydrodynamic loads are transmitted to the embedded parts by a central shaft.

.3 Valve Seals

.1 Each valve shall be provided with rubber seals at the sill, lintel and on each side.

.2 Sealing shall be achieved by flat rubber seals.

.3 Lateral seals shall be adjustable to fill the gap between the embedded parts and the new valves. The Contractor shall measure the exact distance between the embedded parts at site to be able to adjust the lateral seals with shims before valve installation.

.4 A special attention shall be given to the design of the seals at the intersection between the horizontal and lateral seals to make sure that there's a sealing continuity between the two seal types.

.5 The seals shall be fastened with socket head countersunk bolts, nuts and rubber and stainless-steel washers to ensure sealing between the seals.

.4 Bushings and Shafts

.1 The existing bushings, located in the cast iron embedded parts, shall be replaced by new bushings as shown in the drawings.

.2 Each bushing is made of two halves to allow the valve installation. The installation sequence consists of installing the first bushing half, followed by the valve, the second bushing half and finally the bushing retaining block which is bolted on the cast iron embedded part.

.3 New bushing retaining blocks shall be provided as shown on drawings.

.5 Operating system

.1 General

.1 Each butterfly valve lifting system is made of one IVEA electric cylinder (or equivalent approved) equipped with a waterproof AUMA servomotor (IP68) (or equivalent approved), an upper lifting rod, a slider plate and a lower lifting rod.

.2 The lifespan of the operating systems shall be 35 years based on 500 operation cycles per year from may to October.

.2 Operation principles :

.1 Servomotors shall be equipped with the following sensors :

.1 2 limit switch sensors (opened and closed position).

.2 2 intermediate position sensors (to switch from high speed to low speed).

.3 1 position encoder with a 4-20 mA analogic ouput.

.2 Closing of butterfly valves shall be as follow:

.1 Start of the closing movement at low speed.

.2 Switching to high speed when the intermediate position sensor #1 is reached.

.3 Switching to low speed when the intermediate position sensor #2 is reached.

.4 End of closing sequence when the limit switch sensor (valve closed) is reached.

.3 Opening of butterfly valves shall be as follow:

.1 Start of the opening movement at low speed.

.2 Switching to high speed when the intermediate position sensor #2 is reached.

.3 Switching to low speed when the intermediate position sensor #1 is reached.

.4 End of opening sequence when the limit switch sensor (valve opened) is reached.

.3 Electric cylinders

.1 Electric cylinders shall be submersible and environment proof. Exterior aspect shall be identical to hydraulic cylinders.

.2 Required lifting force is 40 kN per cylinder.

.3 The transformation screw shall be located in the cylinder hollow shaft which is blocked in rotation.

.4 The screw shall be driven by a waterproof AUMA servomotor (or equivalent approved) with an IP68 level of protection.

.5 The travel of the electric cylinders shall be at least equal to the travel of the existing hydraulic cylinders which is 1016 mm (40 inch). Contractor shall confirm the travel of existing cylinders on site.

.6 The shaft of the electric cylinders shall be made of stainless steel with a hard chrome coating.

.7 The cylinder outer body shall be epoxy coated.

.8 The servomotor shall be equipped torque limiting contacts, analogic position transducer, limit switches and intermediate position sensors.

.9 The cylinder shall maintain its position when it's stopped.

.10 The operating temperature range is 0°C to 50°C.

.11 The servomotors will be powered from variable frequency drives installed in the motor control center located in the Lockhouse. The servomotor voltage is 600V. It shall be possible to adjust the opening and closing time of the valve between 20 to 80 seconds.

.12 The servomotors shall be equipped with a lockable manual steering to allow operation of the butterfly valves in case of power failure.

.13 Each electric cylinder assembly shall be anchored in concrete with stainless steel chemical anchors sized by the Contractor. Contractor shall submit anchor calculation for review and approval by the Parks Canada Agency

.4 Slides Depart

.1 The slide assemblies (with the slider part) shall be made of stainless steel.

.2 The sliding surfaces shall be of UHMW-PE.

.5 Lifting rods

.1 The upper and lower lifting rods shall be in stainless steel.

.2 Litfing rods eyes shall be provided with Orkot self-lubricating bushings or equivalent.

1.9 DOOR OPENING SYSTEMS – DESCRIPTION OF SUPPLY

.1 General

.1 Existing door opening systems are made of a 3 hp motor driving a belt and a Radicon worm gearbox. The gearbox is connected through a chain coupling to a rack and pinion system which opens the doors.

.2 The works consist of removing the gearbox, motor, chain coupling and steel base and replace those with new equipment.

.3 A new limit switch system shall also be provided and installed on the existing rack. The existing system driven by a chain shall be dismantled afterward.

.2 Gear motors

.1 New 3 hp gear motors shall be of the helical type, Nord model SK 9052.1 (or equivalent approved).

.2 Left bank gear motors shall be symetric with the right bank gearmotors.

.3 Motor Data :

.1 Voltage : 600 V

.2 Frequency : 60 Hz

.3 Input speed : 1800 RPM

.4 Gear ratio : 145:1.

.5 Squirrel cage motor with a load factor of 1.15.

.6 Class H insulation for a maximum overheating of class B

.7 Epoxy winding (humid environment)

.8 Construction: TEFC, NEMA class B design, « Inverter Duty »

.9 Grease lubricated ball bearings.

.10 Junction box with grounding terminal.

.11 Shall be able to start at full load with a terminal voltage equal to 90% of nominal voltage.

.4 Motors shall be equipped with an integrated IP66 brake. Brake must be applied at all time when the motor is not powered. The brake must be provided with a manual brake release handle allowing to release the brake manually when required. The release handle must be lockable. The brake torque must be 40 Nm minimum.

.3 Coupling

.1 Gear motors shall be coupled to the existing driveshaft with a new coupling as shown on drawings. Contractor shall confirm the exact dimensions of the shaft and keyways before purchasing the couplings.

.4 Steel bases

.1 New steel bases for the gear motors shall be supplied as shown in the drawings. Bases shall be anchored on the concrete pit walls.

.2 Anchors shall be of the chemical type and material shall be stainless steel.

.5 Operation principles:

.1 Each gear moto is connected to a starter with a variable frequency drive.

.2 Three « proximity » type sensors, installed on the rack, detect the positions «Door open», «Door closed at 80 %» and ««Door closed».

.3 When the doors are closed at 80 %, a first proximity sensor allows to go at a reduced closing speed. A second detector allows the door stopping when they are completely closed. Adjustments shall be done to locate the sensors. Only one sensor allows the stopping of doors in the completely open position.

.4 No interlocks avoid door operations if the water levels in the locks are not adequate.

1.10 LOCK DOORS – DESCRIPTION OF SUPPLY

.1 Upper wooden beam of upstream doors.

.1 The plans of the upstream doors are not available. Upstream doors are old recuperated doors that were installed in 1999. However, the plans of the downstream doors are provided on information basis. Contractor shall survey the upstream door to make sure that the design of the new upper beams is identical to the old one.

.2 Fabrication plan of the new beams shall be submitted for review and approval by the Parks Canada Agency.

.3 Wood for the new beams shall be of Douglas Fir : « Select Structural » as per the National Lumber Grades Rules NLGA, 2003, article 131.

.4 Wood to be treated with CCA (Chromated Copper Arsenate), conform to CSA 080.08.

.5 Contractor is responsible to determine the beam replacement methodology. Prior the works, the methodology shall be submitted for review and approval by the Parks Canada Agency.

.2 Door upper pivots retaining blocks

.1 Eight door upper pivots retaining blocks shall be provided as per indications shown on drawings.

.3 Door rack holder detail

.1 New bolts for the rack holder shall be installed on all doors as per indications shown on drawings.

.2 Bolts shall be in stainless steel.

PART 2 DESIGN CRITERIA AND STANDARD

2.1 CODES AND STANDARDS

.1 The design of the equipment listed in this specification must be in accordance with the requirements of the most recent edition of the following codes and standards:

.1	AGMA	Gearing
.2	ANSI/ASME B106-1M	Shafts
.3	CSA S16-1969 and/or AISC 360	Steel structure
.4	CSA W59, AWS D1.6 or ASME VIII	Welding
.5	CSA C22.2 no 100	Motors and Generators
.6	CSA C390	Energy Efficiency Test Methods for Three-Phase Induction Motors
.7	NEMA MG 1	Motors and Generators
.8	National Building Code	Articles not covered by other standards

.2 The meaning of the abbreviations used is:

.1	AGMA	American Gear Manufacturers Association
.2	AISE	Association of Iron and Steel Engineers

.3	ANSI	American National Standards Institute
.4	ASME	American Society of Mechanical Engineers
.5	AWWA	American Water Works Association
.6	AWS	American Welding Society
.7	AISC	American Institute of Steel Construction
.8	CSA	Agence canadienne de normalisation
.9	NEMA	National Electrical Manufacturers Association

2.2 ALLOWABLE STRESS DESIGN

.1 Steel structure

.1 For all operational conditions, stresses resulting from mechanical equipment and supporting structures cannot exceed 100% of the stresses allowed by standards.

.2 Welded Joints

.1 In general, the stresses in the welded joints cannot not exceed values stated in the standards. For full penetration butt weld joints, stresses calculated cannot exceed the percentage allowed:

.1 100% of stresses allowed for less resistant material, when the joint undergoes a stress-relieving treatment and 100% radiographed.

.2 95% of stresses allowed for less resistant material, when the joint is only 100% radiographed.

.3 90% of stresses allowed for less resistant material, when the joint only undergoes a stress-relieving treatment.

.4 85% of stresses allowed for less resistant material, when the joint is not radiographed and does not undergo a stress-relieving treatment

.3 Other components

.1 For components not regulated by a specific standard, the allowed stresses cannot exceed the lesser of 1/3 of the elastic limit or 1/5 of the ultimate limit of the material.

.4 Deflexion

.1 At normal load conditions, the deflexions in the components shall not exceed the following values:

.1 Butterfly valves : 1/360 de la portée

.5 Material minimum thickness :

.1 Thickness of the materials shall be enough to resist loads in regard to allowable stresses. However, all components shall respect the minimum following values:

.1 Structural and non-structural components : 6 mm

.6 General design rules

.1 Load diagrams, reactions, stress calculations and deflexions for all equipments shall be submitted for review and approval by the Parks Canada Agency.

PART 3 MATERIALS, PAINT, FABRICATION AND QUALITY CONTROL

.1 Material

.2 General

.1 Materials used to manufacture all permanent items shall be new.

.2 All materials shall be in conformity with standards stated in this specification or equivalent standards proposed by the Contractor and submitted to the Parks Canada Agency for approval.

.3 Materials for manufacturing each component shall be indicated in the drawings as well as identification of the standard and its number, grade or class used, alloy or relevant chemical analysis as well as all other special requirement pertaining to thermal treatment and testing.

.4 Prior to production start of each item, the Contractor shall submit to the Parks Canada Agency steel works certificates demonstrating the materials' mechanical and chemical characteristics before they are used. Failure to produce these certificates, the Contractor shall perform testing by a laboratory previously approved by the Parks Canada Agency.

.5 The Contractor shall provide, at no extra costs, all material specimen requested by the Parks Canada Agency before or during the manufacture or during the assembly on site.

.6 Approval by the Parks Canada Agency of equipment manufacturing materials does not relieve the Contractor from its duties to meet all requirements stated in this specification and cannot prevent dismissals of deviant materials.

.3 Standards

.1 All materials used in different items shall be in conformity with the latest version of the Canadian Standards Association (CSA), Society of Automotive Engineers (SAE), American Society for Testing and Materials (ASTM), and American Iron and Steel Institute (AISI) standards and all other specified standard.

.2 All substitution of a material stated in these standards shall be submitted for the Parks Canada Agency's approval and demonstrate the equivalence or superiority of the proposed material. Failure to provide a suitable certificate, this material shall be put under a round of tests to prove to the Parks Canada Agency that its quality is equal or superior to the original material.

.4 Specific Requirements

.1 Components shall be consistent with the following standards:

Description	International System
Butterfly valves, Slides	Stainless Steel ASTM A-240 Type 304L ou 316L

Description	International System
Upper and lower lifting rods Butterfly valve bushing retainers	Stainless Steel ASTM A-276 Type 304L ou 316L
Shafts and pins of the lifting rods and butterfly valves	Stainless Steel ASTM A564 Type 630, AISI 304, AISI 431, ASTM A473 type 410
Hardware for butterfly valves, slides and butterfly valves operating system	Stainless Steel
High Strength Bolts	ASTM F3125
Butterfly valves Bushings	ASTM B584
Stainless Steel Bolts	AISI 304, ASTM A193 Gr B6
Gear Motor Bases (Steel Shapes)	CSA G40.21, grade W
Surface Preparation	SSPC

3.2 PAINT

.1 General

.1 Stainless steel components must not be painted.

.2 Gear motor bases, upper pivot retaining blocks, electric cylinder and other steel components.

.1 Sandblast SSPC-SP 10 Near-White Blast Cleaning.

.2 One coat of epoxy, AMERCOAT 240LT or equivalent approved by Parks Canada Agency, 8 to 10 mils total DFT.

.3 An epoxy interlayer, AMERCOAT 240LT or equivalent approved by the Parks Canada Agency, 8 to 10 mils total DFT.

3.3 FABRICATION

.1 General Requirements

.1 The production of all parts supplied by the Contractor shall be in conformity with manufacturing drawings submitted to the Parks Canada Agency for approval.

.2 Manufacturing drawings shall identify the class and/or important dimensions certifying that contractual requirements were met and the equipment's proper operation, reliability and durability. For classes and/or dimensions, tolerances shall be clearly indicated in drawings. All these classes and/or dimensions shall be controlled, registered and submitted to the Parks Canada Agency by the Contractor.

.3 All class and/or dimension non-essential to meet contractual requirements or the equipment's proper operation, reliability or durability shall respect general tolerances mentioned in drawings.

They shall be at least in accordance with CSA S16, CSA W59 standards or any other standard applicable and submitted to the Parks Canada Agency for approval.

.4 Non-destructive testing to be performed on welded parts and tests specific to welding types shall be identified in the manufacture drawings using welding symbols; they shall also respect written requirements in this specification. Inspections of all welds can be registered is the drawings as a general note.

.2 Welding

.1 All welding shall be in compliance with one of the following standards: CSA W59, AWS D1.6 or ASME section VIII. Welding on members withstanding loads shall be performed in shop. In general, only the sealing welds are allowed on site. Any welding performed at the site must first be submitted to the Parks Canada Agency for approval.

.2 Welding procedures and welders shall be approved and qualified according to AWS, CSA or ASME standards.

.3 The Contractor shall submit its welding procedures including proof of qualification tests for each joint type. Welding procedures submitted to the Parks Canada Agency for approval become contractual documents.

.4 No work can start prior to the Parks Canada Agency's approval of welding procedures, welding machine operators and welders.

.5 All welding electrodes shall respect at least one of the following standards: CAN/CSAW48, ASME II or AWS.

.6 Low hydrogen type electrodes shall be used; electrodes having absorbed humidity shall be rejected.

.7 Sheets and plates to be welded shall carefully be cut at the right measure. The dimension and shape of the fusion shall allow a deep fusion and complete penetration.

.8 The Contractor shall perform the following inspections:

Welding Type	Inspection Type	Minimum Inspection Level
Full penetration butt weld in tension	Radiographic	100%
Full penetration butt weld in flanges (tension) and skin plate acting as a flange in tension	Radiographic	20% of each weld
Full penetration butt weld in flanges (compression) and skin plate acting as a flange in compression	Radiographic	5% of each weld
Web full penetration butt weld	Magnetic particle inspection or liquid penetrant testing	10% of the length of each element
Fillet weld	Magnetic particle inspection or liquid penetrant testing	10% of the length of each element

Welding Type	Inspection Type	Minimum Inspection Level
T or L joints full penetration weld in tension	Ultrasonic	100%
T or L joints full penetration weld in compression or shear	Ultrasonic	10% of the length of each weld and each element
All welding types	Visual	100%

.9 Critical welding locations, hard to carry out or questionable shall be inspected in priority.

.10 All inacceptable discontinuities shall be chiseled up to bright metal.

.11 If a defect is noticed, testing shall be performed on 100% throughout the weld's length. Additional testing is payable by the Contractor.

.12 All welding repairs shall be inspected at 100% by the original method. The integrity of the repaired welding's integrity might be tested by another type of non-destructive test, if required; expenses are payable by the Contractor.

.3 High Strength Bolts

.1 Information concerning the tension in bolts and tightening limits shall clearly be indicated in the manufacture drawings. Nuts, bolts and studs shall be in compliance with Canadian standards; threading shall respect ASME/ANSI B1.1 standards.

3.4 QUALITY CONTROL

.1 Non-destructive Testing, Standards

.1 Unless a valid justification is provided by the Contractor and approved by the Parks Canada Agency, all non-destructive testing on materials shall be in compliance with the latest version of the standards.

.2 All testing methods shall be submitted to the Parks Canada Agency and preliminary tests shall prove the efficiency and validate the method. All inspections and non-destructive testing requirements shall be clearly specified in the Contractor's manufacture drawings.

.3 Welded parts

.1 By radiography

.1 Procedure according to CSA W59-M or equivalent

.2 Acceptance criteria according to CSA W59-M and ASTM E390 or equivalent

.2 By ultrasound

.1 Procedure according to CSA W59-M or equivalent

.2 Acceptance criteria according to CSA W59-M or equivalent

.3 By magnetic particle inspection

.1 Procedure according to ASTM E709

.2 Acceptance criteria according to CSA W59-M or equivalent

.4 By liquid penetrant testing

.1 Procedure according to ASTM E165

.2 Acceptance criteria according to CSA W59-M or equivalent

.5 By visual inspection

.1 Acceptance criteria according to CSA W59-M or equivalent

.2 Verification of Welded Components

.1 All welds shall be inspected according to requirements stated in this specification. If a radiographic examination is impossible due to difficult access, an ultrasonic inspection shall be submitted to the Parks Canada Agency for approval.

.2 No penetration imperfection or incomplete fusing will be tolerated. Porosity or inclusion shall not exceed limits stated in CSA W59, AWS or ASME standards or “level 4”, according to the E390 standard from ASTM for thickness.

.3 The welding inspector shall be qualified according to the CSA W178.2 standard “Welding Inspector Certification” and at the appropriate level to carry out the inspection.

.3 Verification of Purchased Components

.1 All finished components shall be verified and correspond to the purchase order and specifications in drawings as well as characteristics stated in the supply catalogue.

PART 4 ASSEMBLY AND SHOP TESTING

.1 General

.1 Before shipping, all equipment shall be assembled in shop to demonstrate to Parks Canada Agency that all design and fabrication requirements indicated on the drawings approved by the Parks Canada Agency have been met.

PART 5 ASSEMBLY AND ON-SITE TESTING

.1 General

.1 The Contractor shall provide the hoisting equipment, hoisting slings, jacks, welding equipment, structures, wind braces, temporary shelters, formwork, and all other material required for complete assembly and testing.

.2 The Contractor shall prepare and supply assembly drawings, assembly and testing procedures illustrating specific information for the installation and testing of all its supplies.

.3 The Contractor shall perform adjustments, commissioning and contractual tests.

.4 These tests shall be performed to prove that all contractual warranties are met and that equipment is properly installed and adjusted. All defects shall be immediately rectified by the Contractor, at its expense and to the Parks Canada Agency. Tests shall continue until approval.

.2 Dry test

.1 After the gate's installation, the Contractor shall perform a dry test in the presence of the Parks Canada Agency. Testing shall include, among other things, the following:

.1 Opening and closing of the butterfly valves in manual mode.

.2 Opening and closing of butterfly valves with the servomotor.

.3 Opening and closing of the lock doors with the new gear motors.

.3 Wet test

.1 In water acceptance tests shall be carried out by the Contractor in presence of the Parks Canada Agency. Tests comprise:

.1 Opening and closing of the butterfly valves in manual mode.

.2 Opening and closing of butterfly valves with the servomotor.

.3 Opening and closing of the lock doors with the new gear motors.

END OF THE SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 26 05 03 – Commissioning

.2 Section 26 05 20 – Wire and Box Connectors (0-1000 V)

.3 Section 26 05 21 – Wires and Cables (0-1000 V)

.4 Section 26 05 22 – Connectors and Terminations

.5 Section 26 05 31 – Splitters, junction, pull boxes and cabinets

.6 Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings

.7 Section 26 12 16.01 – Dry type transformers, primary up to 600 V

.8 Section 26 24 16.01 – Panelboards Breaker

.9 Section 26 24 19 – Motor Control Centers

.10 Section 26 27 16 – Electrical Cabinets and Enclosures

.11 Section 26 27 26 – Wiring Devices

.12 Section 26 29 03 – Control Components

1.2 REFERENCE STANDARDS

.1 CSA C22.10, Québec Construction Code, Chapter V – Electricity.

.2 CAN3-C235, Preferred Voltage Levels for AC Systems, 0 to 50,000 V.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, operation limits, finish and contact information of Supplier or Distributor.

.3 Shop drawings.

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Quebec, Canada.

.2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, electrical conduit, ductwork, and other items that must be shown to ensure coordinated installation.

.3 The cable termination drawings shall show the terminal blocks, the internal wiring of the equipment and the interconnection between the various components within the cabinet.

.4 Drawings must indicate clearances for operation, maintenance, and replacement of operating equipment devices.

.5 If changes are required, notify Parks Canada Agency of these changes before they are made.

.4 Certificates.

.1 Provide CSA certified equipment and material.

.2 Where CSA certified equipment or material is not available, obtain the corresponding approval from approved certification agency and submit the certificates to the Parks Canada Agency for approval before delivery to site.

.3 Submit test results of installed electrical systems and instrumentation.

.4 Permits and fees: in accordance with General Conditions of contract.

1.4 CLOSEOUT SUBMITTALS

.1 Submit documents in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance information for incorporation into manual.

.1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel of Parks Canada.

.2 Operating and maintenance instructions to include following:

.1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment;

.2 Start up, settings, operating, lubrication, and shutdown procedures;

.3 Safety precautions;

.4 Procedures to be followed in event of equipment failure;

.5 Other instruction as recommended by manufacturer of each system or item of equipment.

.3 Operating and maintenance instructions shall be provided in a manual. It shall have the following sections:

.1 Control and distribution electrical equipment.

.2 Electrical equipment associated with valves.

.3 Electrical equipment associated with door opening systems

.4 Other electrical equipment

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground in dry, clean and well-ventilated area and in accordance with manufacturer's recommendations.

.2 Store and protect materials and equipment from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new materials.

PART 2 PRODUCTS

2.1 DESIGN REQUIREMENTS

.1 Operating voltages conform to CAN3-C235.

.2 Motors, electric heating, command/control/regulation and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.

.1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

.3 Language operating requirements: provide identification nameplates and labels for control items in French.

2.2 MATERIALS AND EQUIPMENT

.1 Provide material and equipment in accordance with Section 01 61 00 - Common Product Requirements.

.2 Assemble control panels and component assemblies in factory.

2.3 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with labels and/or nameplates as follows.

.1 Nameplates: lamicoid 3 mm, matt white finish face, black core, lettering accurately aligned and engraved into core, mechanically attached with self-tapping screws

.2 Sizes as follows :

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

.3 Labels: embossed plastic labels with 6 mm high letters unless specified otherwise.

.4 Wording on labels and nameplates to be approved by Parks Canada Agency prior to manufacture.

.5 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.

2.4 WIRING IDENTIFICATION

.1 Identify wiring with permanent indelible identifying numbered markings, on both ends of phase conductors of power and control cables.

.2 Maintain phase sequence and color coding throughout.

.3 Color coding: to CSA C22.10.

2.5 FINISHES

.1 Indoor electrical equipment:

.1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel, color light gray to ANSI 61.

.2 Outdoor electrical equipment

.1 Outdoor equipment shall be in stainless steel.

PART 3 EXECUTION

3.1 PROTECTION AND PRECAUTIONS

.1 Perform the work in such a way as not to interfere with the normal operations of the facility. Cooperate with the site administrator and ensure that the arrangements are acceptable to Parks Canada Agency.

.2 Execute the work in a manner that is the least likely to inconvenience the operation and users of government property and adjacent properties.

.3 Perform all necessary work to ensure continuity of existing services at all times.

3.2 EXAMINATION

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

.1 Visually inspect surfaces and supports.

.2 Inform Parks Canada Agency of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Parks Canada Agency.

3.3 INSTALLATION

.1 Carry out complete installation in accordance with CSA C22.10 unless specified otherwise.

.2 The location of the electrical equipment may be changed without additional charge or credit, provided that the displacement does not exceed 5000 mm and notice is given before installation.

.3 Note that drawings indicate the approximate location of the equipment, material, accessories and conduits. exact location shall be determined on site; furthermore, check on site the space available before installing the equipment, material, accessories and conduits.

.4 Note that the dimensions and external distances of the site are approximate and not the result of a survey. The Contractor shall verify all distances and dimensions used for estimating, purchasing equipment, construction or any other reason.

.5 The Contractor is responsible for performing all necessary coordination of subcontractors and trades.

3.4 NAMEPLATE AND LABELS

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

3.5 MOUNTING HEIGHTS

.1 Mounting height of equipment is from finished floor to centerline of equipment unless specified or indicated otherwise.

.2 If mounting height of equipment is not specified or indicated, get acceptance from competent person before proceeding with installation.

.3 Unless indicated otherwise, top of equipment shall be at the height indicated on drawings.

3.6 CO-ORDINATION OF PROTECTION DEVICES

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

.2 Write inside the equipment the capacity of fuses and other equipment when they are withdrawable.

3.7 FIELD QUALITY CONTROL

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

.1 Power distribution system including phasing, voltage, grounding and load balancing;

.2 Circuits originating from branch distribution panels;

.3 Valve actuators and door opening systems;

.4 Insulation resistance testing:

.1 Megger circuits, feeders and equipment with rated voltage up to 350 V with a 500 V instrument.

.2 Check resistance to ground before energizing.

.2 Carry out tests in presence of Parks Canada Agency.

.3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

.4 Provide calibration certificates for measurement instruments used (1 minimum).

3.8 SYSTEM STARTUP

.1 Instruct the operating personnel and the Parks Canada Agency in operation, care and maintenance of systems, system equipment and components.

.2 Provide training for operations and maintenance personnel in all aspects of their maintenance and operation.

3.9 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at the end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Not used.

1.2 GENERAL

.1 Obtain written permission from Parks Canada to start commissioning, at least ten (10) days prior to scheduled start-up date. The application for authorization shall be accompanied with the following information:

.1 The list of equipment to be commissioned;

.2 Commissioning procedures, including lockout and work permits;

.3 The names of the persons who will participate in the commissioning.

.2 Systems subject to commissioning are:

.1 Motor Control Centers including distribution panels;

.2 Manual Transfer Switch and associated 600 V receptacle;

.3 Valves actuators and door opening system;

.4 All reconnected equipment.

.3 Commission each system using, if necessary, procedures prescribed by suppliers.

1.3 GOAL

.1 Commissioning is intended to ensure that the facility is ready for full operation. It must include guarantees that the system will meet the intent of the concept and the requirements of the Parks Canada.

1.4 COORDINATION

.1 Coordinate the commissioning procedures with the disciplines and trades involved as well as the personnel responsible of lock operations.

1.5 SUPERVISION

.1 Commissioning shall be done under the supervision of qualified personnel and the Parks Canada Agency.

.2 Follow the progress of the commissioning work. Establish and maintain detailed records of activities and results.

1.6 DEMONSTRATION

.1 Demonstrate to Parks Canada and the Parks Canada Agency the operation of each system, including the sequence of operations in both normal and manual modes, under all possible conditions.

1.7 FINAL SETTINGS

.1 Upon completion of commissioning to the satisfaction of the Parks Canada Agency, place all equipment and instruments in their final positions and settings.

.2 Mark all settings permanently.

1.8 COMMISSIONING REPORT

.1 Submit a final commissioning report to the Parks Canada Agency; this report shall:

.1 Indicate final measurements and adjustments and certify test results.

.2 Be signed by the person responsible of the commissioning.

.2 The format of the report shall be approved by the Parks Canada Agency prior to system commissioning.

END OF SECTION

Electrical – Wire and Box Connectors (0-1000 V)
Section 26 05 20

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 26 05 00 – Electricity - Common Work Results for Electrical.

.2 Section 26 05 21 – Wires and Cables

.3 Section 26 05 22 – Connectors and Terminations

1.2 REFERENCE STANDARDS

.1 CSA International

.1 CAN/CSA-C22.2 no.18.1 – Metallic outlet boxes (Tri-National Standard with ANCE NMX-J-023/1 and UL-514A).

.2 CAN/CSA-C22.2 no.18.3 – Conduit, tubing and Cable Fittings (Tri-National Standard with ANCE NMX- J-017 and UL-514B).

.3 CAN/CSA-C22.2 no. 65 – Wire Connectors (Tri-National Standard with UL 486A-486B and NMX-J-543-ANCE).

.2 National Electrical Manufacturers Association (NEMA).

PART 2 PRODUCTS

.1 Materials.

.1 Compression type connectors for copper conductors conforming to CAN/CSA-C22.2 No.65.

.2 The terminal blocks must have 600 V isolation.

.3 Accepted manufactures are:

.1 Weidmuller

.2 Entrelec

.3 Wieland

PART 3 EXECUTION

3.1 EXAMEN

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

.1 Visually inspect substrate in presence of Parks Canada Agency.

.2 Inform Parks Canada Agency of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

.1 Remove insulation carefully from ends of conductors and cables and, as applicable, as follow:

.1 Install mechanical compression type connectors and tighten screws with appropriate compression tool recommended by manufacturer.

.2 Installation shall meet secureness tests in accordance with CAN/CSA-C22.2 No.65.

END OF SECTION

Electrical – Wires and Cables (0-1000 V)
Section 26 05 21

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 26 05 00 – Electrical – Common Work Results for Electrical.

.2 Section 26 05 20 – Wire and Box Connectors.

.3 Section 26 05 22 – Connectors and Termination.

1.2 REFERENCE STANDARDS

.1 CSA International

.1 CSA C22.2 N° 0.3 - Test Method for Electrical Wires and Cables.

.2 CAN/CSA-C22.2 N° 131 – Type Teck 90 Cable.

.3 CSA C22.2 N° 239 – Control and instrumentation Cables

1.3 ACTION AND INFORMATION SUBMITTALS

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

.2 Product Data.

.1 Submit manufacturer's instructions, printed product literature and data sheets; the data sheets shall include product characteristics, performance criteria, physical size, operation limits and finishing.

PART 2 PRODUCTS

2.1 TECK 90 CABLE

.1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Conductors.

.1 Grounding conductor: copper.

.2 Circuit conductors: copper, size as indicated.

.3 Insulation.

.1 Cross-linked polyethylene (XLPE).

.2 Rating: 600 V for power cables, control and 300 V for instrumentation cables.

.4 Inner jacket: polyvinyl chloride material.

.5 Metallic armour.

.6 Overall covering: thermoplastic polyvinyl chloride, FT4 fire-resistance rating.

.7 Connectors.

.1 Watertight, approved for TECK cable.

2.2 RW90 CABLES (WIRES)

.1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Conductors shall be copper, minimum temperature -40 °C.

.3 Size, as indicated on drawings.

.4 Insulation.

.1 Cross-linked polyethylene (XLPE).

.2 Rating: 1000 V

2.3 CONTROL CABLES

.1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Cables type ACIC, conform to CSA C22.2 no 239.

.3 Conductors shall be copper, minimum temperature -40 °C.

.4 Armour cables, FT4 fire-resistance rating.

.5 Insulation.

.1 Cross-linked polyethylene (XLPE).

.2 Rating: 600 V

.6 Cables type Teck are allowed.

2.4 INSTRUMENTATION CABLES

.1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Cables type ACIC, conform to CSA C22.2 no 239.

.3 Minimum temperature -40 °C

.4 Conductors shall be soft, stranded and tinned copper;

.5 Chaque paire ou triade doit avoir son propre blindage en cuivre ou un ruban en Mylar (aluminium) avec un conducteur de drain étamé et torsadé.

.6 Cables for analog shall be 18 AWG minimum size. All other instrumentation cables shall be 14 AWG minimum size.

.7 Armour cables, FT4 fire-resistance rating.

.8 Insulation.

.1 Cross-linked polyethylene (XLPE).

.2 Rating: 300 V

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

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

.2 Perform tests before energizing electrical system.

3.2 GENERAL CABLE INSTALLATION

.1 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - (0-1000 V).

.2 Cable color coding shall be according to electrical code and standards.

3.3 INSTALLATION OF TECK90 (0 - 600 V) AND CONTROL CABLES

.1 Majority of Teck90 and control cables are installed in trenches up to the pits.

.2 Group cables wherever possible on U-Shape supports.

.3 Install cable, securely supported by straps.

.4 Unless otherwise indicated, cables splices are prohibited.

3.4 INSTALLATION OF RW90 CABLE (1000 V)

.1 If used, RW90 cables shall be installed in conduits.

3.5 INSTALLATION OF CABLES IN CONDUITS

.1 Install cables in conduits according the manufacturer recommendations.

.2 It is not permitted to pull spliced cables in conduits

.3 Install simultaneously all cables in the same canalization.

.4 To reduce the pull stress, use lubricants CSA approved and compatible with the exterior cable covering.

.5 After cable installation, seal all conduits openings with approved cable sealing product.

3.6 QUALITY CONTROL

.1 Tests as part of Quality Control shall be performed by qualified personnel.

.1 Provide the required test equipment

.2 Check the phase sequence; identify each phase conductor of each circuit.

.3 Check the continuity of each phase of each circuit; check that there is no short-circuit between cables of the same circuit.

.4 Tests during the reception of cables.

.1 After completed the installation of cables and before the cable termination, measure the resistance of insulation of each phase conductor of each circuit; use a Megho-meter of adequate voltage.

.2 After completed the cable terminations, measure the resistance of insulation to ensure readiness of cables for commissioning.

.5 Essais de réception

.1 Ensure that all cable terminations are not connected and auxiliary circuits disconnected.

.2 Ground cable shielding, grounding wires, shielding wires, armor grounding, etc..

.6 Dielectric Withstand Test

.1 Perform dielectric withstand test in accordance with applicable standards.

.7 Provide the Park Canada Agency the test results, identifying each cable tested, indicating the test circuit used and the results of the tests.

.8 Remove and replace cables that did not pass the tests.

END OF SECTION

Electricity – Connectors and Terminations
Section 26 05 22

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Not used.

1.2 REFERENCE STANDARDS

.1 CSA Group

.2 CSA C22.10, Code de construction du Québec, Chapitre V – Électricité.

.3 CSA C22.2 no. 41, Grounding and Bonding (Tri-National Standard with NMX-J-590-ANCE and UL 467).

.4 CSA C22.2 no. 65, Wire Connectors (Tri-National Standard with UL 486A-486B and NMX-J-543-ANCE).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for connectors and terminations and include product characteristics, performance criteria, physical size, finish and limitations.

PART 2 PRODUCTS

2.1 CONNECTORS AND TERMINATIONS

.1 Copper compression connectors to CSA C22.2 No.65 as required sized for conductors.

.2 «KS» type connectors are not acceptable. Use compression connectors at all times.

.3 Junction boxes for humid areas, in accordance with Section 26 05 33 - Raceway and Boxes for Electrical Systems.

2.2 INSTALLATION

.1 As required, grounding and bonding shall be in accordance with CSA C22.2 no 41.

PART 3 EXECUTION

.1 Not used.

END OF SECTION

Electrical –Junction and pull boxes and cabinets
Section 26 05 31

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 260500- Electricity - Common work results for electrical

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA C22.10 Quebec construction code – chapter V electricity latest edition

PART 2 PRODUCTS

2.1 JUNCTION AND PULL BOXES

.1 For installation in dry locations:

.1 Construction: welded steel enclosure, NEMA 1 certified.

.2 Covers surface mounted: screw-on flat covers.

.2 For installation in wet locations or outside:

.1 Construction: soft steel boxes colored gray, weather resistant, certified NEMA 3R.

.2 Covers surface mounted: cover with bended ends, with water seal joint, fastening with screw.

.3 For boxes with more than 3 incoming or outgoing cables

.1 Suitable box for the location equipped with terminal blocks of appropriate gage and quantity

2.2 CABINET

.1 The cabinet shall include the manual transfer switch and the 600 V, 200 A receptacle.

.2 Construction: welded sheet steel, hinged door, handle, lock and catch, certified NEMA 4X.

.3 The bottom of the cabinet shall have an opening to permit the entrance of the generator cable.

PART 3 EXECUTION

3.1 JUNCTION, AND PULL BOXES INSTALLATION

.1 Install pull boxes at locations indicated on drawings.

.2 If possible, mount boxes with top not higher than 2 m above finished.

.3 Install terminal block in the junction boxes.

.4 Only main junction and pull boxes are indicated. Install additional pull boxes as required by CSA C22.10.

3.2 GENERATOR CONNECTION CABINET INSTALLATION

.1 Install the cabinet on the exterior wall.

.2 Mount cabinets with top not higher than 2 m above finished floor.

3.3 IDENTIFICATION

.1 Equipment Identification: to Section 260500 - Common Work Results for Electrical.

FIN DE LA SECTION

Electrical – Conduits, Conduit Fastening and Conduit Fittings
Section 26 05 34

PART 1 GENERAL

1.1 REFERENCE STANDARDS

.1 Canadian Standards Association (CSA International).

.1 CAN/CSA C22.2 No. 18, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.

.2 CSA C22.2 No. 45.1 - Rigid Metal Conduit - Steel.

.3 CSA C22.2 No. 45.2 - Rigid Metal Conduit - Aluminium.

1.2 DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/INFORMATION

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

.2 Product data: submit manufacturer's printed product literature, specifications and datasheets.

PART 2 PRODUCTS

2.1 CONDUITS

.1 Rigid metal conduit: to CSA C22.2 No. 45.1,

.2 In the lock: aluminium threaded conduits, in accordance to CSA C22.2 No 45.2

2.2 CONDUIT FASTENINGS

.1 One-hole steel strap to secure surface conduits 52 mm and smaller. Two-hole steel straps for conduits larger than 52 mm.

2.3 CONDUIT FITTINGS

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

.2 Ensure factory "ells" where 90 degrees bends for 25 mm and larger conduits.

.3 Set-screws are not acceptable.

2.4 FISH CORD

.1 Industrial type polypropylene, diameter equal or superior to 6 mm.

PART 3 EXECUTION

3.1 EXAMINATION

.1 As per manufacturer’s instructions

.2 Check for conformity to manufacturer's requirements, recommendations and specification including all technical bulletins available and applicable related to storage and installation and to product data sheets.

3.2 INSTALLATION

.1 Use galvanized steel rigid conduits except for the lock where rigid aluminium conduits are required

.2 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.3 Unless otherwise indicated, use rigid galvanized steel threaded conduits and not EMT.

.4 Minimum conduit size for lighting and power circuits: 19 mm.

.5 Steel conduits shall be cold-bended.

.1 Replace conduits if deformation during bending has reduce its diameter by at least 10 %.

.6 Mechanically bend steel conduits of 19 mm diameter.

.7 Field threads on rigid conduit done at site, must be of enough length to draw conduits up tight.

.8 Seal adequately the conduit joints on the bottom of the lock to avoid any water infiltration.

.9 Install fish cord in empty conduits.

.10 Remove and replace blocked conduit sections; do not use liquids to clean out conduits.

.11 Dry conduits out before installing wire.

.12 Seal conduit ends after installing cables.

3.3 LOCK DOWNSTREAM CONDUIT CLEANING AND VERIFICATION

.1 Use a mandrel to clean the empty conduits.

.2 Verification the conduit condition. They shall permit the cable installation without any risk of damages.

.3 Install a fish cord in each conduit.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 26 05 00 – Electrical – Common Work Results for Electrical.

.2 Section 26 24 19 – Electrical – Motor Control Centers

1.2 REFERENCE STANDARDS

.1 CSA International

.1 CSA n° C9 – Dry Type Transformers

.2 CSA n° C22.2 n° 47 – Air Cooled Transformers (Dry Type)

1.3 ACTION AND INFORMATION SUBMITTALS

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

.2 Product Data.

.1 Submit transformer manufacturer's instructions, printed product literature and data sheets. Data sheets shall include product characteristics, performance criteria, physical size, operation limits and finishing

.2 Indicate the following information on the data sheet :

.1 Type (ANN).

.2 Size.

.3 Off-load taps.

.4 Insulation class.

.5 Average sound level.

.6 Impedance at 17 °C.

.7 Winding materail (copper)

PART 2 PRODUCTS

2.1 DRY-TYPE TRANSFORMERS

.1 Characteristics:

.1 Transformers in accordance with CSA C9 et C22.2 n° 47 standards.

.2 Cooling type : ANN.

.3 Windings : copper and vacuum pressure impregnated

.4 Voltage ratings : 600 – 240/120 V, 1-phase

.5 Size : 37,5 kVA

.6 Off-load taps: Four 2 ½ % (± 2 X 2 ½ %)

.7 Average winding temperature rise : 150 °C

.8 Insulation class : 220 °C

.9 Impedance : standard

.10 BIL : standard

.11 Dielectric withstand: standard

.12 Sound level : standard

.2 Other requirements

.1 Anti-vibration mounts shall be used between the transformer core and coils assembly and the MCC section.

2.2 MATERIAL IDENTIFICATION

.1 In accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Nameplate size 4 for each transformer.

2.3 APPROVED MANUFACTURERS

.1 Transformers shall be manufactured by Delta Transformers, Hammond or equivalent approved.

PART 3 EXECUTION

3.1 INSTALLATION

.1 Transformer are installed in the motor control center.

.2 Primary and secondary connections shall be done.

3.2 GENERAL CABLE INSTALLATION

.1 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - (0-1000 V).

.2 Cable color coding shall be according to Canadian Electrical Code.

END OF SECTION

Electrical – Distribution Panels
Section 26 24 16.01

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 26 05 00 – Electricity – Common Work Results for Electrical.

.2 Section 26 24 19 – Electricity – Motor Control Centers

1.2 REFERENCE STANDARDS

.1 CSA International

.1 CSA n° C9 – Dry Type Transformers

.2 CSA n° C22.2 n° 29 – Panelboards and enclosed panelboards

1.3 ACTION AND INFORMATION SUBMITTALS

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

.2 Product Data.

.1 Submit transformer manufacturer's instructions, printed product literature and data sheets. Data sheets shall include product characteristics, performance criteria, physical size, operation limits and finishing

.2 Indicate the following information on the data sheet :

.1 Distribution panel electrical characteristics.

.2 The number, type and size of the feeder breakers.

PART 2 PRODUCTS

2.1 DISTRIBUTION PANELS

.1 Distribution panels shall be in accordance with CSA C22.2 n° 29 standards.

.1 Breakers shall be mounted in the panel before the site shipping.

.2 The manufacturer nameplate shall indicate in addition of the CSA data requirements the short circuit current of the panel and breakers

.2 Distribution panel 120/240 V, 200 A, 1-phase, 3-wires, 10 kA

.3 Main breaker :no applicable

.4 Enclosure : no applicable

.5 Nominal ampacity, feeder breaker numbers and sizes as indicated on drawings.

.6 Copper busbar

.7 Copper neutral busbar : same size of the phase busbars

.8 Insulated grounding busbar.

.9 Bolded type molded case circuit breaker.

.10 Connections shall be done so that odd number circuit shall be supplied by the left busbar and the even number by the right busbar. Each breaker shall have the permanent identification of the circuit number and phase.

.11 Door frame with hidden bolts and hinges

2.2 MOLDED CASE CIRCUIT BREAKER

.1 Unless otherwise noted, all breakers shall be thermal-magnetic type.

.2 All breakers shall have a padlock device.

2.3 MATERIAL IDENTIFICATION

.1 All material shall be in accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Nameplate size 4 for each distribution panel with the inscription indicated in the single line diagram.

.3 Nameplate size 2 for each distribution panel circuit with the inscription indicated in the single line diagram.

.4 Complete panel schedule with typed legend indicating the location and the load of each circuit in a plastic envelop on the interior side of the panel door.

2.4 APPROVED MANUFACTURERS

.1 Distribution panels shall be manufactured by Eaton, Square D or equivalent approved.

PART 3 EXECUTION

3.1 INSTALLATION

.1 Distribution panels are installed in the motor control center.

.2 Connect all loads to the panel circuits.

.3 Connect neutral conductors to the common neutral busbar.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 26 05 03 – Mise en service

.2 Section 26 05 00 – Electrical - Common Work Results for Electrical.

.3 Section 26 05 21 – Electrical – Wires and Cables

.4 Section 26 12 16.01 – Electrical – Dry-Type Transformer up to 600 V

.5 Section 26 24 16.01 – Electrical – Distribution Panels

1.2 REFERENCES

.1 Canadian Standard Association (CSA)

.1 CSA C22.2 No 14 – Industrial Control Equipment

.2 Electrical Equipment Manufacturers Association of Canada (EEMAC)

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for [motor control centers] and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Quebec.

.2 Indicate on drawings:

.1 Outline dimensions.

.2 Configuration of identified compartments.

.3 Floor anchoring method and dimensioned foundation template.

.4 Cable entry and exit locations.

.5 Dimensioned position and size of busbars and details of provision for future extension.

.6 Schematic and wiring diagrams.

.4 Manufacturer's Instruction Manual including instructions about handling, installation, operation, maintenance etc.

1.4 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance manual including instructions of main components

.3 “As built” drawings and documents

.4 Submit information about each type of starter.

1.5 EXTRA STOCK MATERIALS

.1 Submit spare parts in accordance with Section 01 78 00 - Closeout Submittals.

.2 Supply spare parts recommended by manufacturer/supplier to ensure five (5) years operation.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's instruction manual.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect the equipment from nicks, scratches, and blemishes.

.3 Replace defective or damaged components with new.

PART 2 PRODUCTS

2.1 ASSEMBLY CHARACTERISTICS

.1 Rating: 600 V, 60 Hz, wye connected, 3 phase 3 wire, 22 kA grounded neutral.

.2 Construction NEMA 1

.3 Compartmentalized vertical sections with common power busbars.

.4 Floor mounting, free standing, enclosed dead front.

.5 Indoor free-standing front access, suitable to be installed against the wall.

.6 Class I, Type A.

.7 The dimensions should not exceed the dimensions shown on drawings

.8 Approved manufacturers: Eaton, Square D (Schneider) or equivalent approved.

2.2 VERTICAL SECTION CONSTRUCTION

.1 Independent vertical sections fabricated from rolled flat steel sheets bolted together to form rigid, completely enclosed assembly.

.2 Each vertical section divided into compartment units, minimum 305 high, as per manufacturer's design.

.3 Each unit to have complete top and bottom steel plate for isolation between units.

.4 Vertical wireways c/w doors for load and control conductors extending full height of vertical sections and equipped with cable tie supports. Installation wiring to units accessible with doors open and units in place.

.5 Horizontal wireways, equipped with cable supports, across top and bottom, extending full width of motor control centre, isolated from busbars by steel barriers.

.6 Incoming to enter at bottom of the MCC with position of terminals as shown on drawings

.7 Removable lifting means.

.8 Divide assembly for shipment to site, complete with hardware and instructions for re-assembly.

.9 Continuous "U" channel iron floor sills for mounting bases with 19 mm diameter holes for bolts.

2.3 BUSBARS

.1 Main horizontal busbar and branch vertical busbar, three phase high conductivity copper busbars self-cooled, extending entire width and height of motor control centre, supported on insulators and rated:

.1 Main busbars: 600 A

.2 Secondary or branch busbar: 300 A

.2 No other cables, wires, equipment in main and branch busbar compartments.

.3 Brace buswork to withstand effects of short-circuit current of 22 kA rms symmetrical.

.4 Bus supports: with high dielectric strength, low moisture absorption, high impact material and long creepage surface designed to discourage collection of dust.

2.4 GROUND BUS

.1 Copper ground bus extending entire width of MCC.

2.5 STARTER UNIT COMPARTMENTS

.1 Starters shall be protected by a self-trip circuit protector

.2 Unit mounting:

.1 Engaged position - unit stabbed into vertical bus.

.2 Withdrawn position - unit isolated from vertical bus but supported by structure; terminal block accessible for electrical testing of starter.

.3 Provision for positive latching in either engaged or withdrawn position and padlocking in withdrawn position.

.4 Stab-on connectors free-floating tin-plated clips, self-aligning, backed up with steel springs.

.3 External operating handle of circuit switch interlocked with door to prevent door opening with switch in "on" position. Provision for padlocks to lock operating handle in "off" position and lock door closed.

.4 Hinge unit doors on same side.

.5 Pushbuttons and indicating lights mounted on door front.

.6 Plug-in terminal blocks for power and control to allow removal of starter units without removal of field wiring.

2.6 BREAKER COMPARTMENT

.1 Breakers shall be moulded-case circuit breaker (MCCB) type.

.2 Dual configuration (two breakers with a single withdrawable connection to bus) is allowed.

2.7 VARIABLE FREQUENCY DRIVE (VFD)

.1 Variable frequency drive for induction motors up to 10 HP; the functional units shall be of modular design; with interchangeable functional units.

.2 The VFD control panel shall be installed on the door, accessible from outside when the door is in closed position; the control panel shall allow the settings of the VFD and the display of the motor operation parameters.

.3 VFD Rating:

.1 Input rated voltage: range of -10% to +10% of rated voltage;

.2 Input rated frequency: ± 5%

.3 The VFD shall be able to supply 350% of rated current during the starting period and during 20 seconds at ambient temperature;

.4 All components of the starter shall be designed to perform three starting sequences par hour, starting current shall be 300% rated current during the 20 seconds starting period.

.4 Accessories

.1 Locking device in “Stop” position;

.5 Protection

.1 The VFD controller shall incorporate a microprocessor-based protection functions:

.1 Pre-alarm: motor overload with a relay contact for motor current exceeding 110% of its rated current;

.2 Alarm and trip: motor overload with a relay contact for VFD trip for motor current exceeding 125% of its rating current;

.3 Thermal model of the motor; motor cooling time constant shall be settable for temperature monitoring and motor protection;

.2 Other protection function to be incorporated: loss of phase, reverse of phase sequence, overload, motor stall, motor blocked condition.

.3 Diagnosis and status and display of any fault of the starter and motor should be available in the VFD control panel;

.4 The motor shall be protected for any failure of the VFD control.

.6 VFD Settings

.1 Contractor is responsible of the setting and programming of the VFD

.2 The following information shall be displayed in the VFD control display;

.1 VFD Status : Ready, starting in progress, stop, execution

.2 Motor Status: current, torque, motor temperature, power factor, working time, power, kW;

.3 Faults: Thermal overload, thermal overload of VFD, loss of phase, abnormal frequency, low voltage, locked rotor, underload motor, too long starting sequence, external fault, communication fault,

.7 VFD control panel shall have the following features

.1 Pushbutton “START FWD – STOP – START REVERSE”;

.2 Three position control switch “MANUAL – STOP-AUTO”;

.3 Starting control contact to be supplied by user;

.4 Indicating lamp “ON” red to indicate the VFD has received an external starting signal;

.5 Indicating lamp “OFF” green to indicate the VFD has received an external starting signal;

2.8 DISTRIBUTION PANELS

.1 Distribution panels integrated in the MCC shall comply with section 26 24 16.01.

.2 Dry transformers installed in the MCC shall comply with section 26 12 16.01.

2.9 WIRING IDENTIFICATION

.1 Cable and wiring shall be identified in accordance with section 26 05 00 - Electrical – Common work results for electrical.

2.10 MATERIAL IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results for Electrical.

.1 Motor control centre main nameplate: size No. 7, engraved as indicated in the single line diagram.

.2 Individual compartment nameplates: size No. 5, engraved as indicated in the single line diagram and as per manufacturer standard.

2.11 FINISHES

.1 Apply finishes in accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Paint motor control centre exterior light gray and interiors white.

2.12 SOURCE QUALITY CONTROL

.1 Provide manufacturer's type test certificates including short circuit fault damage certification up to short circuit values specified under bus bracing.

.2 Parks Canada representative to witness standard factory testing of complete motor control centre including operation of switches, circuit breakers, starters and controls.

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 motor control centres installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Parks Canada representative.

.2 Inform Parks Canada representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Parks Canada representative.

3.2 INSTALLATION

.1 Set and secure motor control centre in place on channel bases, rigid, plumb and square to building floor and wall.

.2 Make field power and control connections as indicated.

.3 Ensure correct overload heater elements are installed.

3.3 FIELD QUALITY CONTROL

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

.2 Ensure moving and working parts are lubricated where required.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Electrical – Wiring Devices
Section 26 27 26

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 26 05 00 – Electrical – Common Work Results for Electrical

.2 Section 26 05 20 – Wire and Box Connectors

.3 Section 26 05 21 – Wire and Box Connectors (0-1000 V)

.4 Section 26 05 22 – Connectors and Terminations

1.2 REFERENCE STANDARDS

.1 CSA Group

.1 CSA-C22.2 No.111, General-Use Snap Switches (Bi-national standard, with UL 20, twelfth edition).

1.3 DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/INFORMATION

.1 Data Sheets

.1 Submit manufacturer's instructions, printed product literature and data sheets for panelboards. The data sheets shall include product characteristics, performance criteria, dimensions, finish and operation limits.

PART 2 PRODUCT

2.1 GENERAL

.1 Ensure that all wiring products are from the same manufacturer.

2.1 600 VAC POWER RECEPTACLES

.1 600 V, 200 A receptacle shall be outdoor type, NEMA 4X stainless steel, installed in an enclosure combining a safety switch and receptacle.

.2 The 600 V receptacles shall comply with CSA C22.2 No. 182.1

.3 The 600 V receptacle is supply in an enclosure containing also a manual transfert switch.

2.2 SAFETY SWITCHES

.1 Provide safety switches as shown on drawings, with the following ratings

.1 30A, 60 and 100 A

.2 600 Vac

.3 3 poles

.4 Non-fusible

.5 Mechanical lugs suitable for copper conductors

.2 Construction

.1 Stainless steel NEMA 4X enclosure for outdoor installation.

.2 Switch blades shall be readily visible in the ON and OFF position, switch contacts shall be plated copper

.3 Switches shall have a red handle that is easily padlockable with three 3/8-inch shank locks in the OFF position

.4 Switches shall have defeatable door interlocks that prevent the door from opening when the handle is in the ON position. Defeater mechanism shall be front accessible

.5 Switches shall have deionizing arc chutes

.6 Switch assembly and operating handle shall be an integral part of the enclosure base.

.7 Switches shall have line terminal shields to avoid accidental contact between two poles.

.8 Embossed or engraved ON-OFF indication shall be provided

.9 When indicated on drawings, receptacles shall be supplied with Twist Lock connector.

PART 3 EXECUTION

3.1 SAFETY SWITCHES AND 600 V RECEPTACLES

.1 Install safety switches with handle in "UP" position when switch closed.

.2 Install safety switches as indicated on drawings.

3.1 QUALITY CONTROL

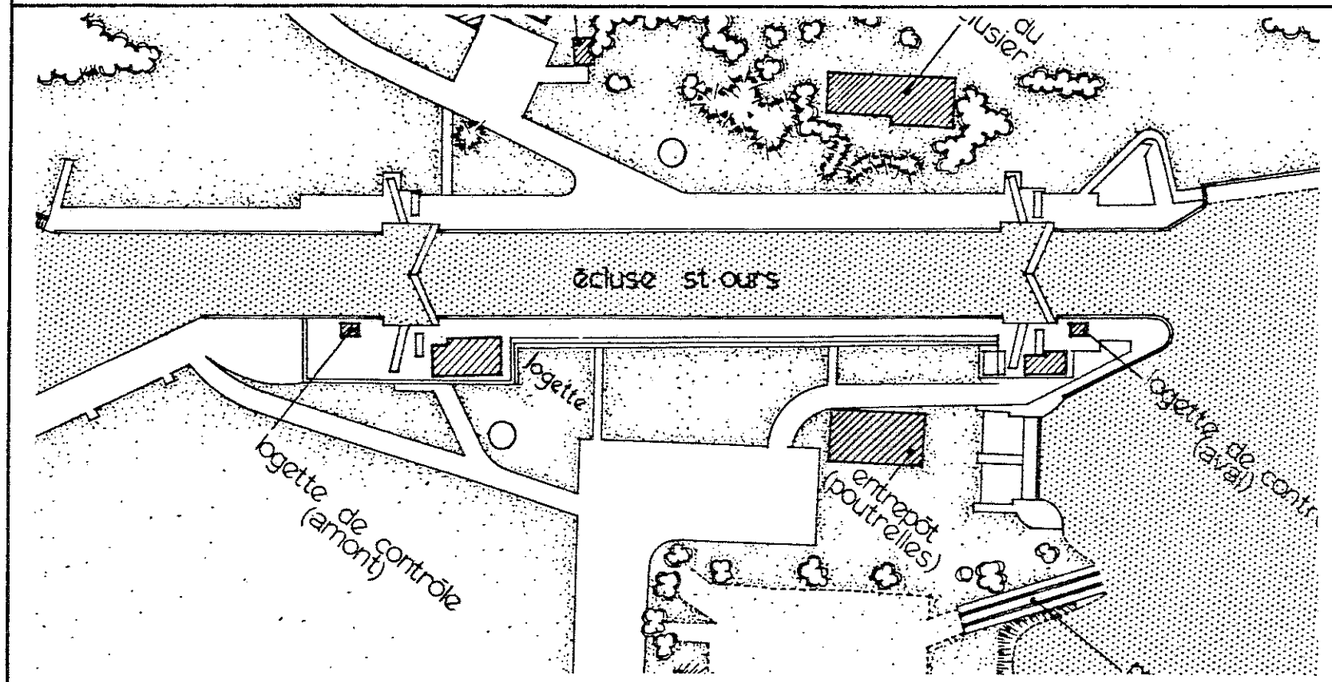
.1 Quality control shall conform to Section 26 05 00 – Electrical – Common Work Results for Electrical.

.2 Check working condition of receptacles and switches.

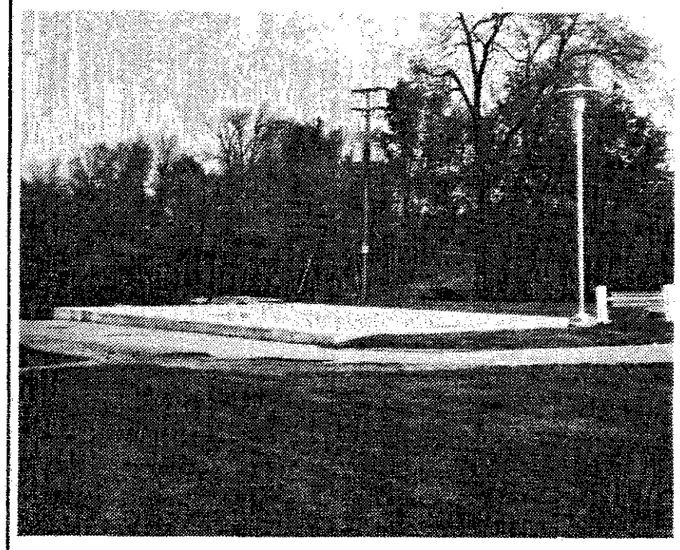
END OF SECTION

Appendix A – Documentation related to stoplogs installation

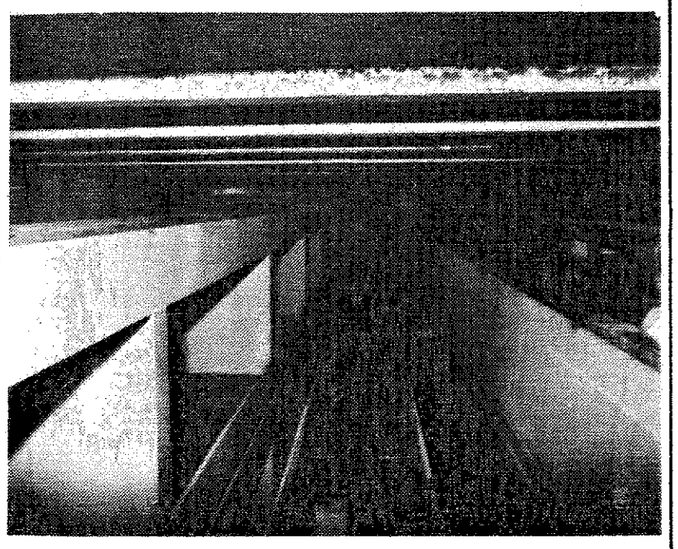
Documentation related to installation of stoplogs



PLAN DE LOCALISATION



Extérieur



Intérieur

FICHE TECHNIQUE

EQUIPEMENT: **Puits d'entreposage**

CARACTERISTIQUES: Mur en béton armé de 12" à 18" d'épaisseur.
Dalle de fond en béton de 6" d'épaisseur.
Dessus amovible composé de poutrelles d'acier et de plaque d'acier de ¼" d'épaisseur.
Dimensions intérieures:
longueur: 52'
largeur: 27'
hauteur: 10'
1 Poutrelle maitresse (Master log)
9 Poutrelles (stoplogs) inférieures
7 Poutrelles (stoplogs) supérieures

ROLE: Les poutrelles sont les éléments constituants de la vanne temporaire qu'on utilise pour isoler l'écluse du cours d'eau amont ou aval. Le puits sert à les entreposer.

CONCU PAR: Ministère des Transports
Canaux du Québec.

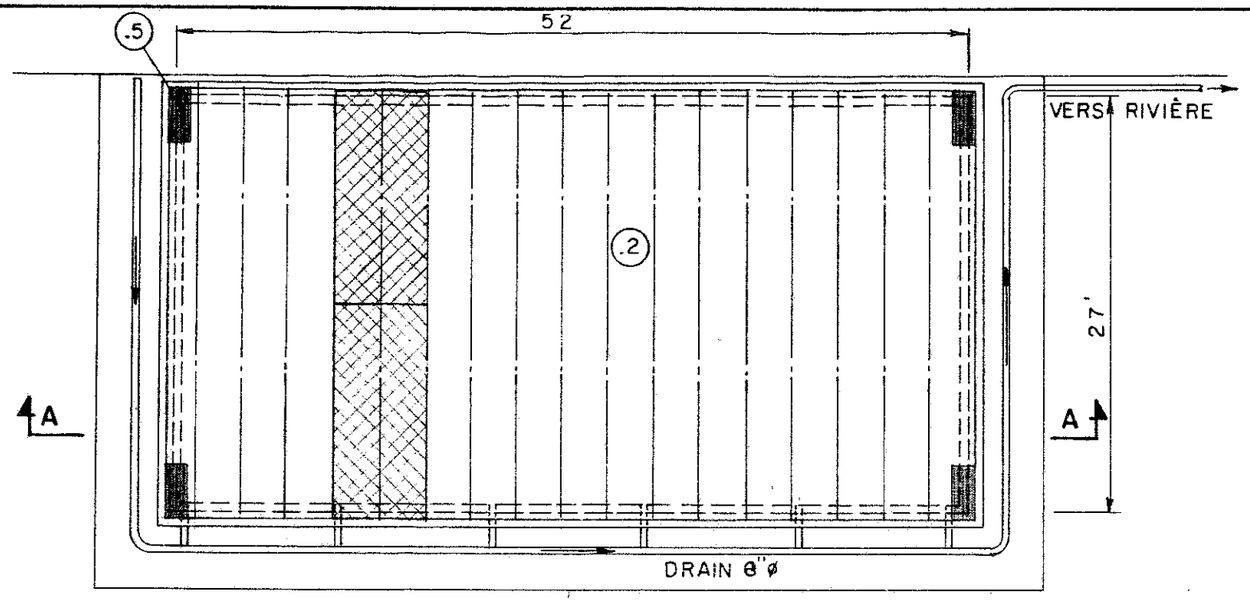
ANNEE DE CONSTRUCTION : 1968

ENTREPRENEURS: Ministère des Transports
Canaux du Québec,

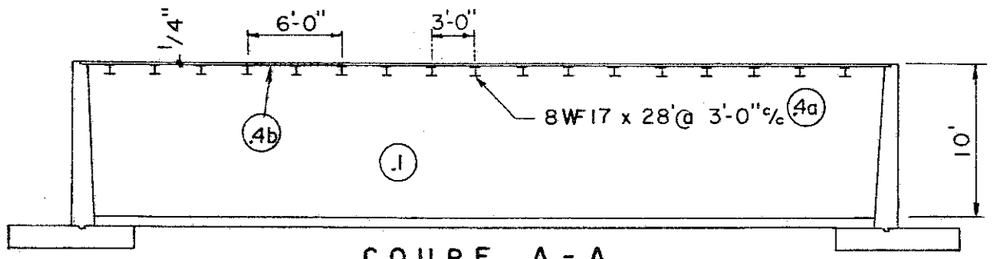
PLANS DE REFERENCES:

Numéros		Titres	Date
RUO-08-101.1	2768	Puits pour emmagasiner les poutrelles de vannage	10-7-67
RUO-08-101.4	2768-3	Nouvel arrangement du couvercle pour aération du puits	18 oct-67
R-16-105.2		Master log - Détails	4 oct-65
R-16-105.2		Upper and Lower Stoplogs	4 oct-65

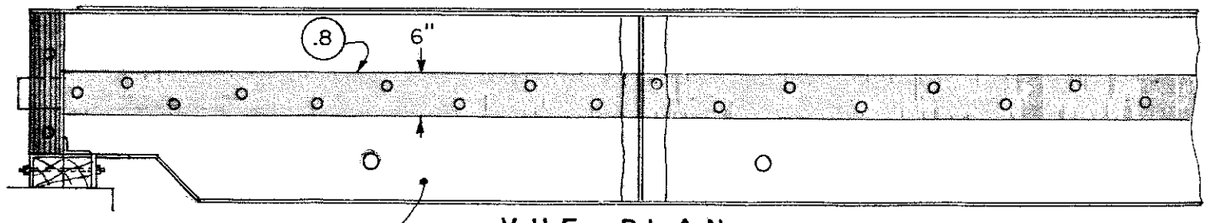
POUTRELLES ET PUITS D'ENTREPOSAGE



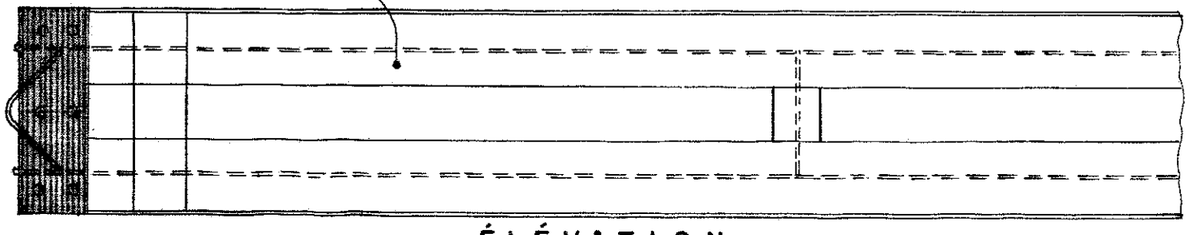
VUE PLAN



COUPE A-A
PUITS D'ENTREPOSAGE



VUE PLAN
POUTRELLES



ÉLÉVATION

Poutrelles de vannage et puits d'entreposage

(.1) Puits en béton armé recouvert d'un toit amovible
Plan de référence RUO-08-101.1

(.2) Toit amovible constitué de plaques d'acier reposant sur des poutres d'acier.

(.3) Drains français 8" diamètre.

(.4a) Poutres d'acier WF 17 x 28' à 3' centre en centre.

(.4b) Plaques d'acier de 6' x 28' par 1/4" d'épaisseur.

(.5) 4 Grilles d'aération de 1'-6" x 3'-6" formées d'un treillis métallique (FLOWFORGE): type 21 Barres
2" c/c transversale
1 3/16" c/c membrure portante.

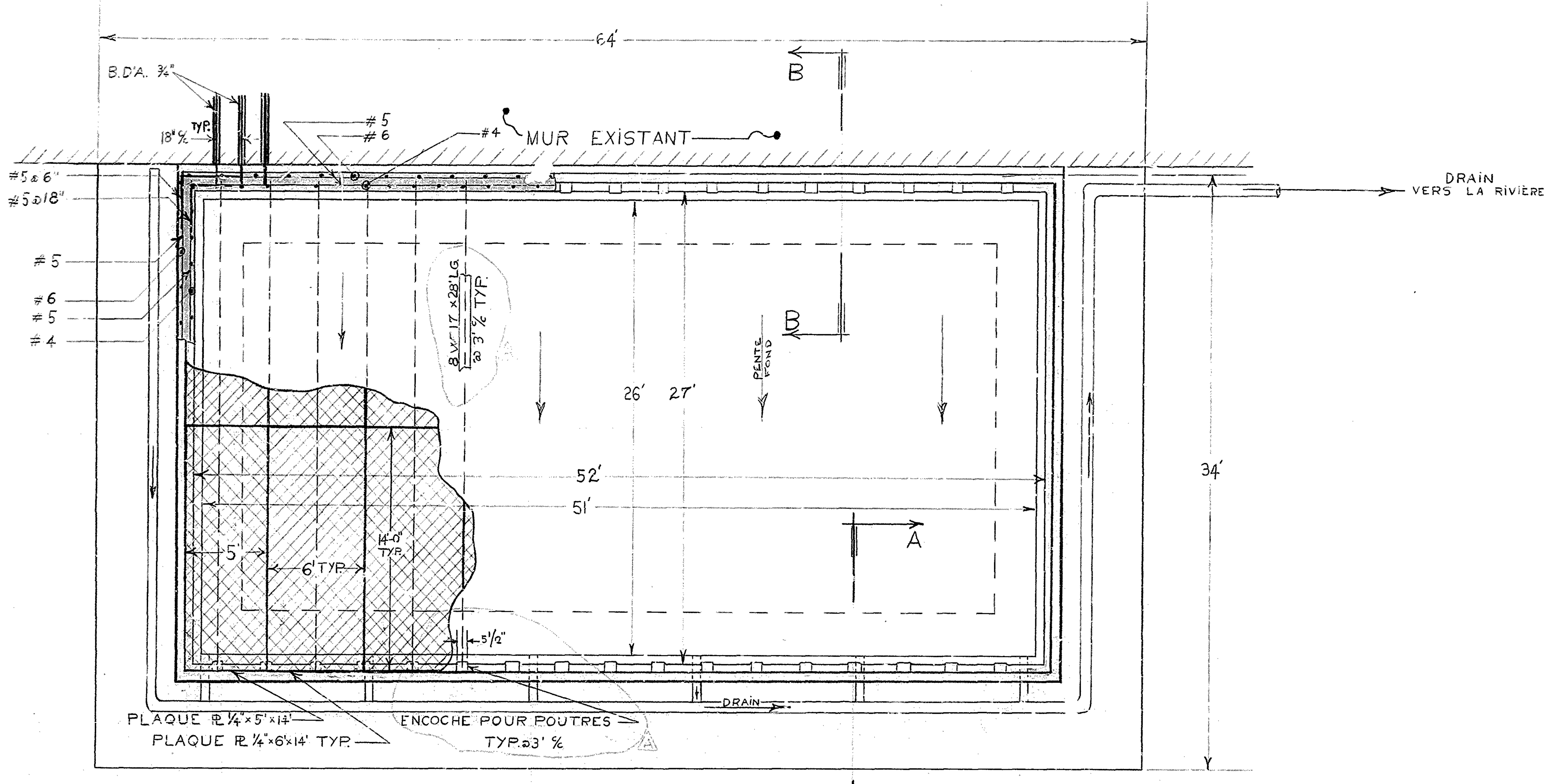
(.6) Une poutre maitresse (Master log - Plan de référence R-16-105.2)

(.7) Poutrelles de vannage - Plan de référence R-16-105.2

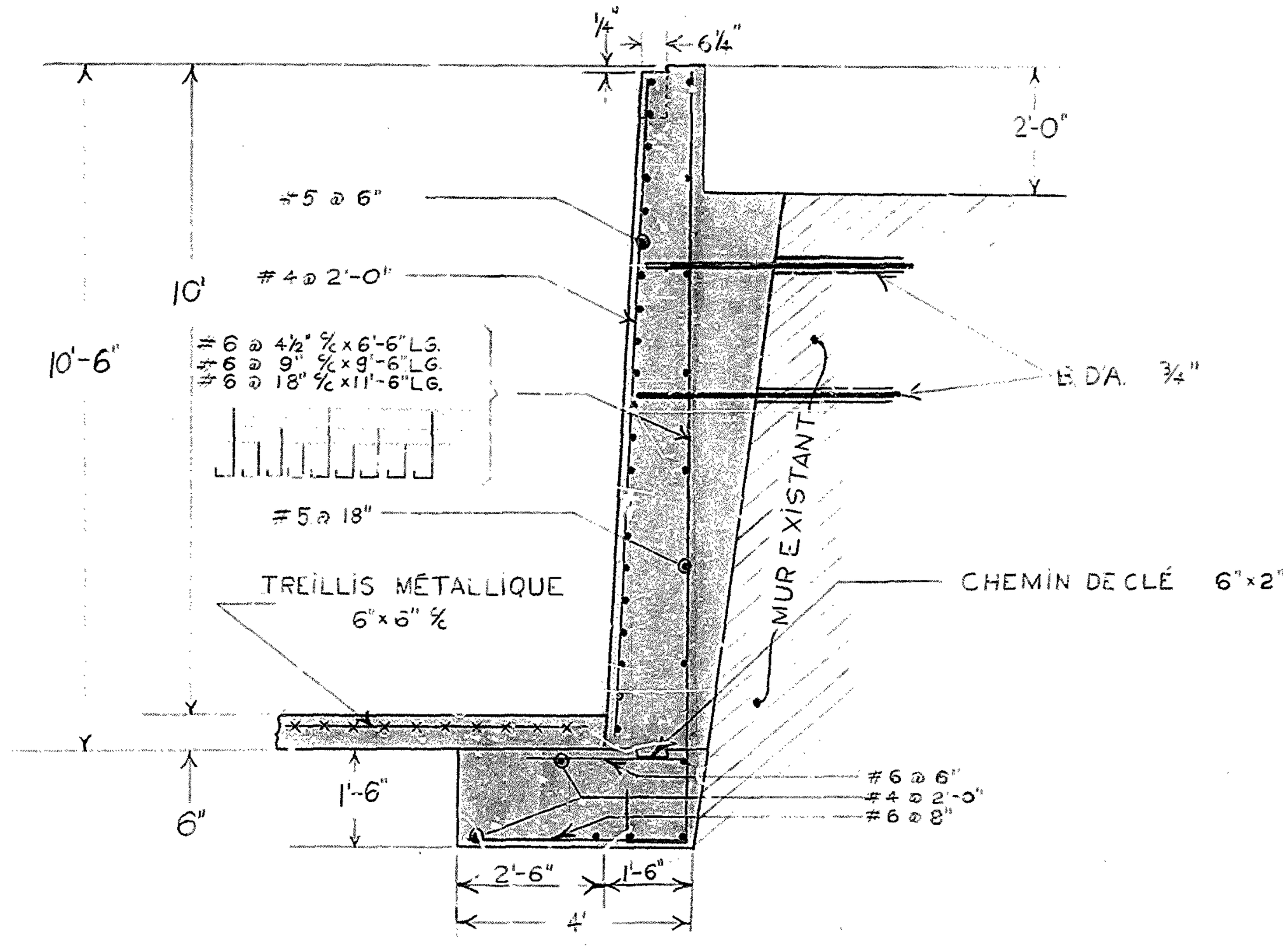
(.8) Pièces de chêne.

SOMMAIRE OPERATIONNEL

Au moyen d'une grue on enlève le toit amovible et à l'aide de la poutrelle maitresse on transporte et installe les poutrelles inférieures L1 à L9 et celles supérieures U1 à U7 en commençant par les numéros 1.

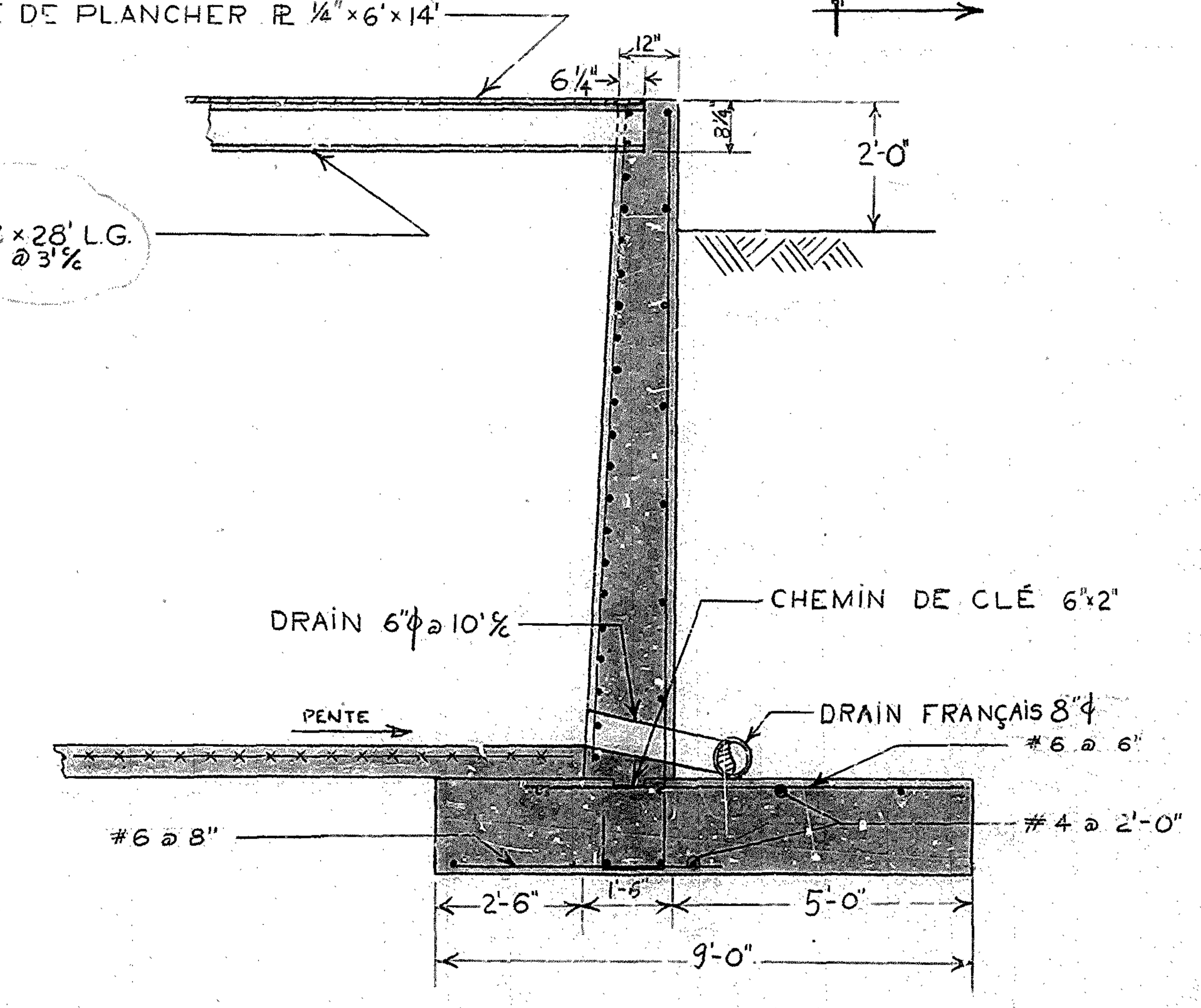


PLAN ÉCHELLE: ¼" = 1'-0"



ÉCHELLE: ½" = 1'-0"

SECTION B-B



ÉCHELLE: ½" = 1'-0"

SECTION A-A

NOTES

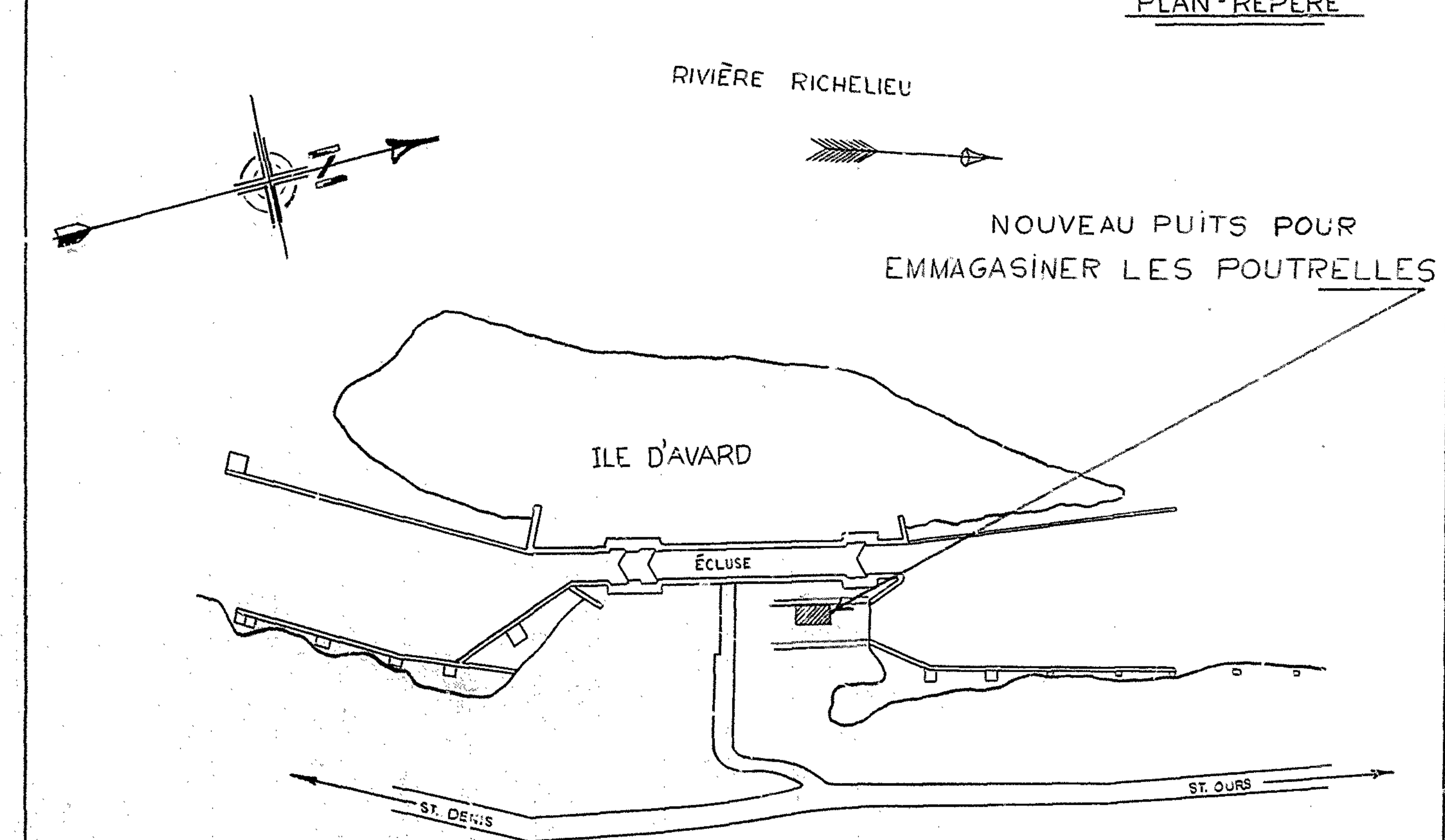
EXCAVATION: EXCAVER UNE QUANTITÉ APPROXIMATIVE DE 2000 V³ SUR UNE PROFONDEUR DE 13' PAR 36' DE LARGEUR ET 68' DE LONGEUR, PRISES AU FOND DE L'EXCAVATION.

REMBLAIS: REMBLAIS DE 3', SOIT:
- UNE ÉPAISSEUR DE 12" DE GRAVIER COMPACTÉ = 85 V³.
- UNE COUCHE DE 12" DE SABLE COMPACTÉ = 85 V³.
- UNE COUCHE DE 12" DE PIERRE CONCASSÉE ¾"φ = 85 V³.

BÉTONNAGE: QUANTITÉ DE BÉTON: 186 V³
FORMES: 3280 PI².

COMPACTION: LA COMPACTION SE FERA PAR COUCHES SUCCESSIVES DE 6" POUR LE GRAVIER, LE SABLE ET LA PIERRE CONCASSÉE.

PLAN-REPÈRE



ÉCHELLE: 1" = 200'

RÉFÉRENCE	
TITRE	DESSIN NO.
ARMATURE DU PUITS D'EMMAGASINEMENT DES POUTRELLES DE VANNAGE.	2770

REVISIONS				
NO.	DATE	DESCRIPTION	PAR	VER. PAR
A	21-8-67	8WF17 POUR 8WF48	A. Proulx	[signature]

MINISTÈRE DES TRANSPORTS

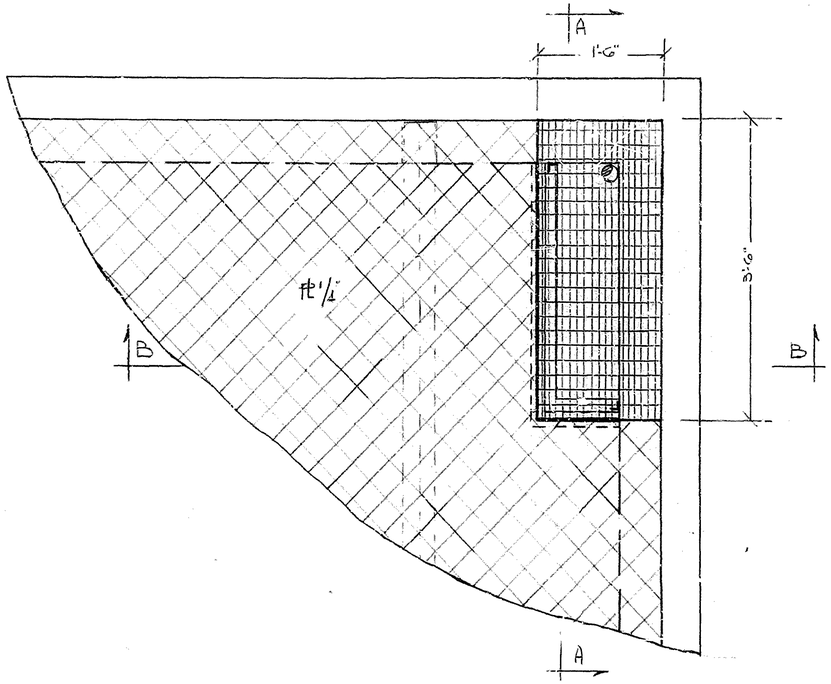
SERVICES DE LA MARINE
DIVISION DES CANAUX

Puits pour emmagasiner les poutrelles de vannage à l'entrée aval de l'écluse

ÉCLUSE ST-OURS

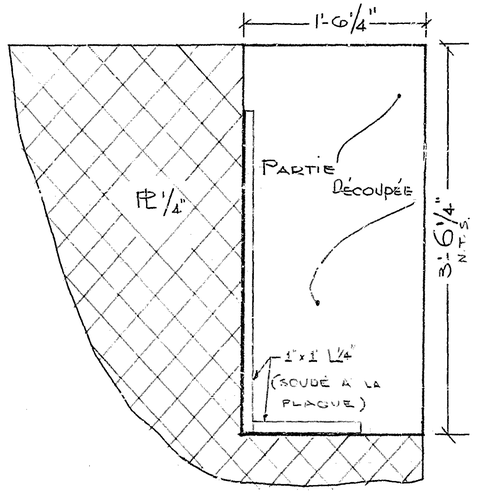
Échelle: indiquée
Date: 10-7-67
Conçu par: [signature]
Dessiné par: N. Trempe
Vérifié par: J.B.
[signature] INGÉNIEUR SURINTENDANT

2768



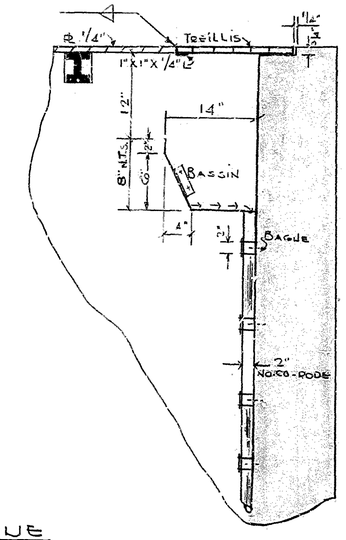
PLAN MONTRANT LE DETAIL "X"

ECHELLE: 1"=1'-0"



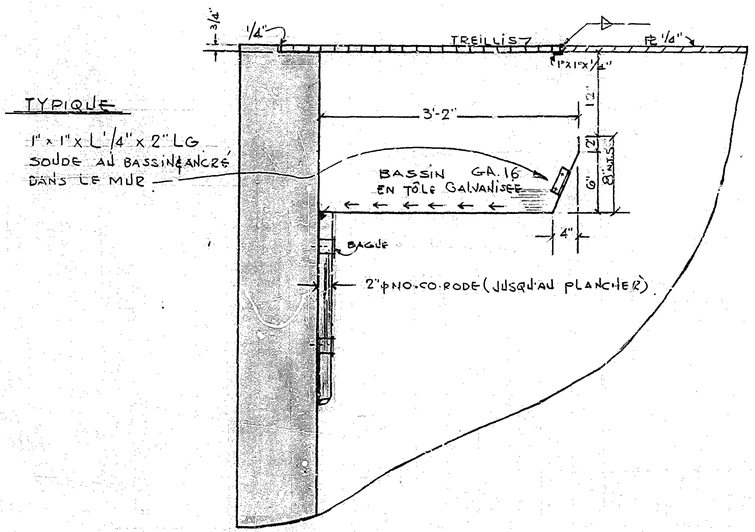
DÉCOUPAGE DE LA PLAQUE MÉTALLIQUE DE 1/4" ép.

ECHELLE: 1 1/2"= 1'-0"



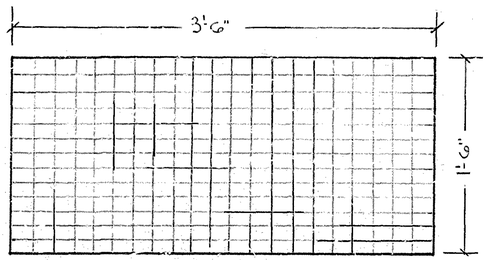
COUPE "B-B"

ECHELLE 1"= 1'-0"



COUPE "A-A"

ECHELLES: 1"= 1'-0"

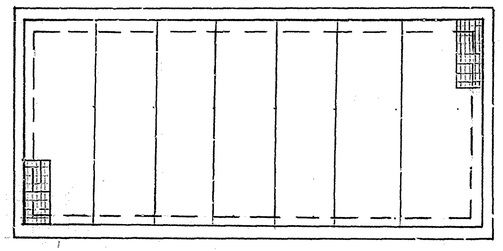


TREILLIS METALLIQUE

ECHELLE 1 1/2"= 1'-0"

NOTE QUANTITÉ = 10

TREILLIS MÉTALLIQUE: MEMBRURE PORTANTE 3/4"x 3/16"
SYMBOLE No. F.A.2 (FLOWFORGE): TYPE 21 BARRES
DE FISHER & LUDLOW
2" C/C TRANSVERSALE
1 3/16" MEMBRURE PORTANTE.



PLAN CLEF (AUCUNE ÉCHELLE)

STE. ANNE & CARILLON = 2 COINS
ST OURS = 4 COINS

MINISTERE DES TRANSPORTS

CANAUX DU QUEBEC

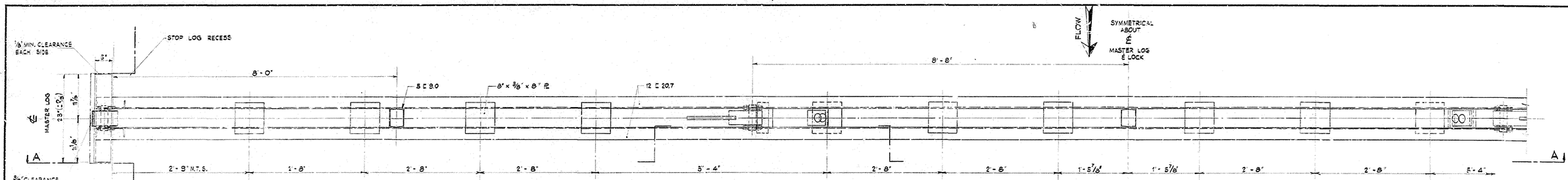
NOUVEL ARRANGEMENT DU COUVERCLE POUR AÉRATION DES PUITS SERVANT A EMMAGASINER LES POUTRELLES DE VANNAGE.

NO	DESCRIPTION	DATE	PAR	VERIFIÉ
	REVISIONS			

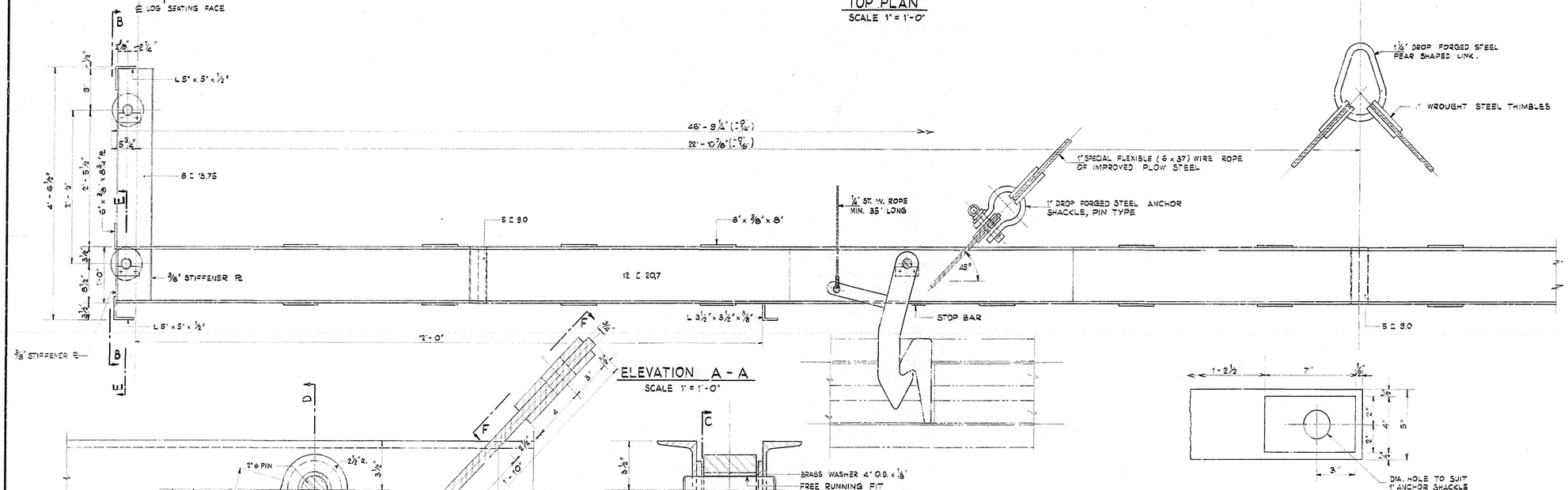
PROJETÉ PAR: J. Bertrand
DESSINÉ PAR: A.P.
VERIFIÉ PAR: J. Bertrand.
DATE: 18 OCT. '67 J. G. Marchand Ing. INGENIEUR-SURINTENDANT

ECHELLES: TELLES QU'INDIQUÉES

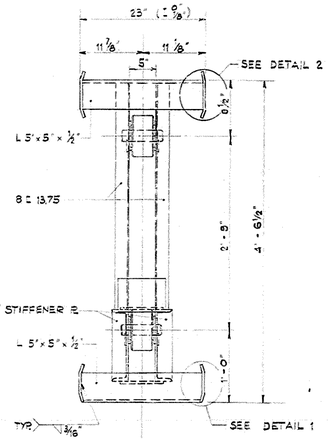
2768-3



TOP PLAN
SCALE 1" = 1'-0"

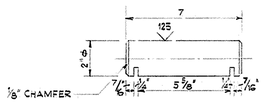


ELEVATION A - A
SCALE 1" = 1'-0"

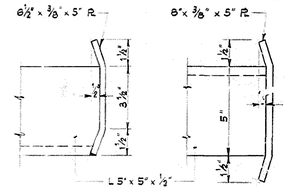


END VIEW B - B
SCALE 1" = 1'-0"

VIEW F - F
SCALE 3" = 1'-0"

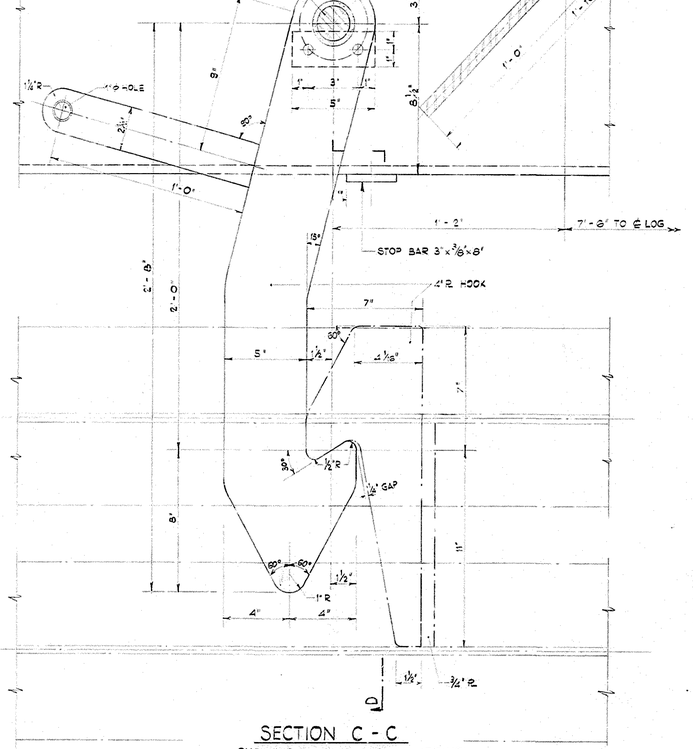


DETAIL OF PIN
SCALE 3" = 1'-0"

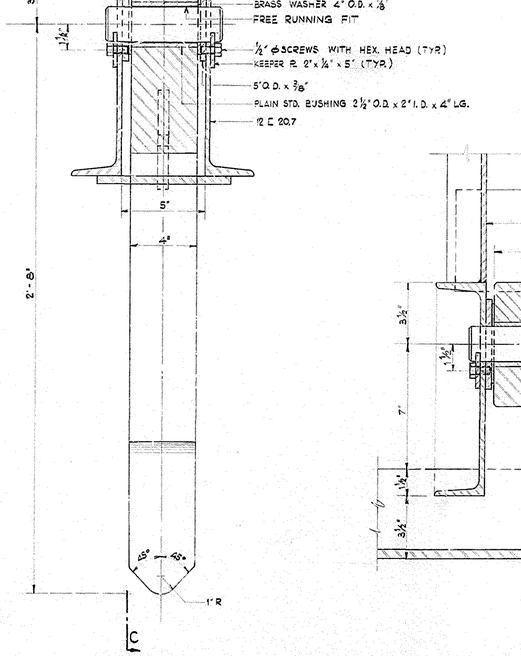


DETAIL 1
SCALE 3" = 1'-0"

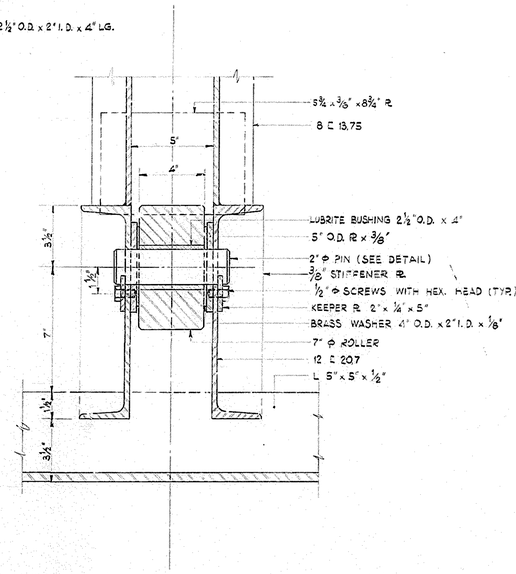
DETAIL 2
SCALE 3" = 1'-0"



SECTION C - C
SHOWING MASTER LOG IN LIFTING POSITION OF LOG Nº L1
SCALE 3" = 1'-0"



SECTION D - D
SCALE 3" = 1'-0"



SECTION E - E
SCALE 3" = 1'-0"

RU-16-105.1

DEPARTMENT OF TRANSPORT
MARINE WORKS
CANALS DIVISION
QUEBEC CANALS
RICHELIEU RIVER - ST. OURS LOCK

MASTER LOG & DETAILS

SCALE: AS SHOWN
DESIGN: H.S.G.
DRAWN: X. SCH.
CHECKED: J. R.

DATE: SEPT. 1967

for H. Grave P.Eng.
CHIEF, CANALS DIVISION

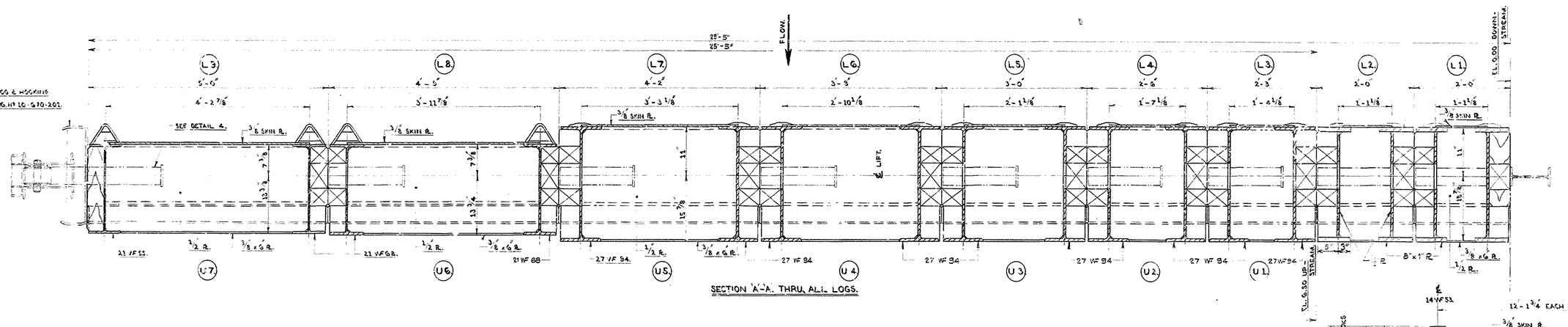
10 - 670 - 201

DATE:	REVISIONS:	MADE:	CH'CK'D:

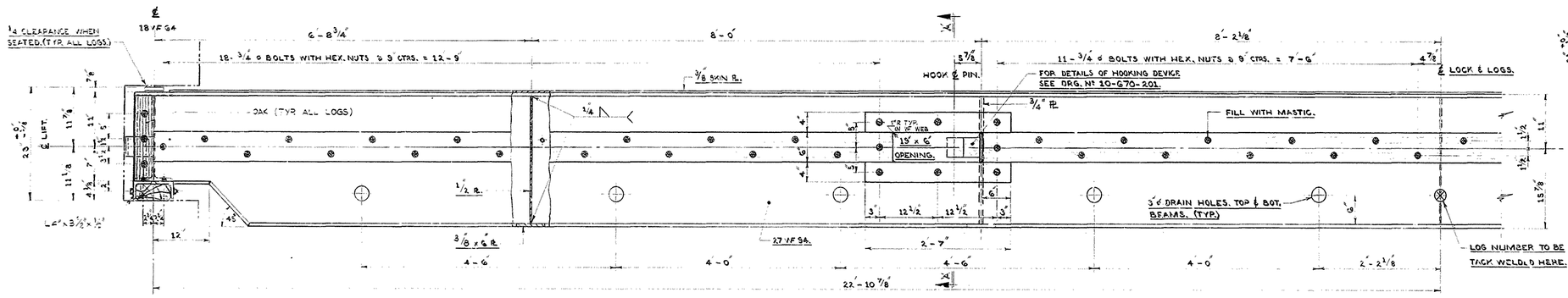
N.W.C.L. TRANSLAR 300-10-66

RU-16-105.1

FOR MASTER LOG & HOOKING DEVICE SEE DRG. Nº 10-670-202.

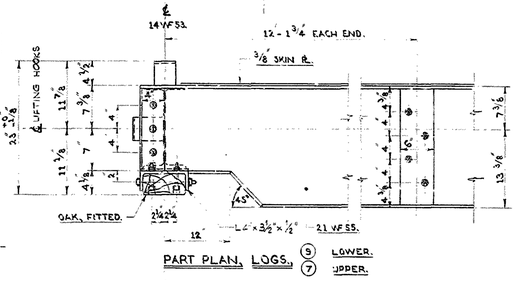


SECTION 'A'-A. THRU. ALL LOGS.

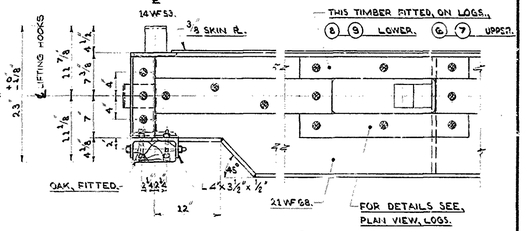


PLAN VIEW. - LOGS. ③ ④ ⑤ ⑥ ⑦ LOWER. ① ② ③ ④ ⑤ UPPER.

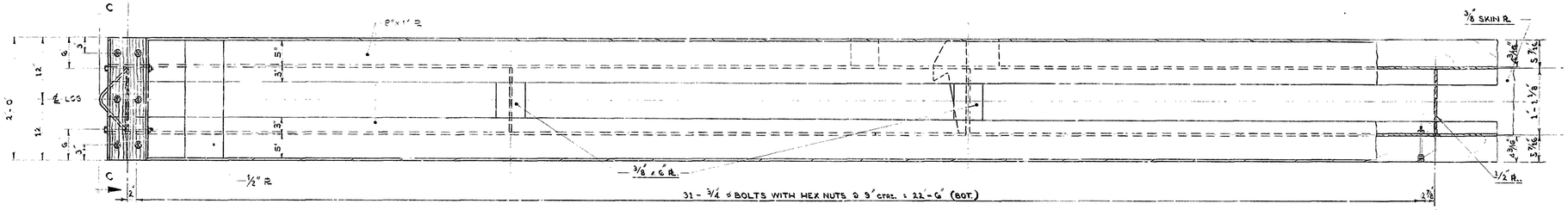
LENGTH OVERALL 46'-8" ± 0" (TYP. ALL LOGS)



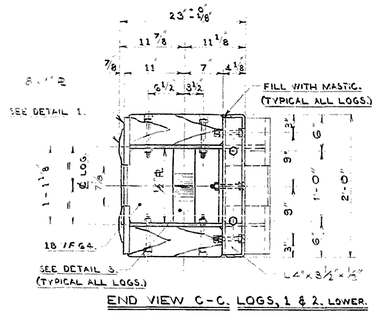
PART PLAN, LOGS. ⑤ LOWER. ⑦ UPPER.



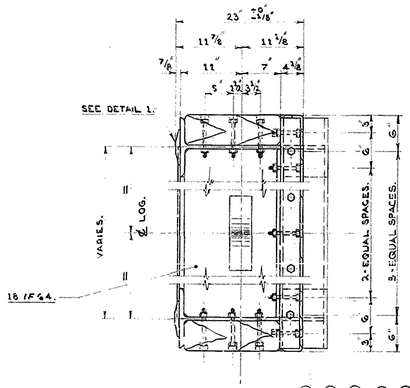
PART PLAN, LOGS. ⑧ LOWER. ⑥ UPPER.



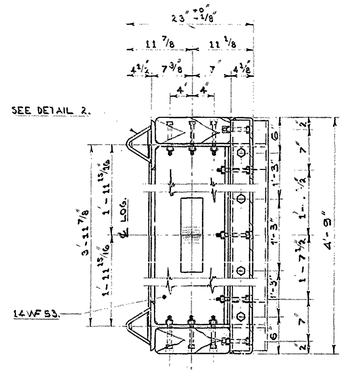
ELEVATION B-B. LOGS, 1 & 2. - LOWER



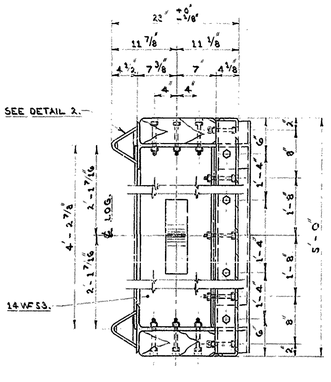
END VIEW C-C. LOGS, 1 & 2. LOWER.



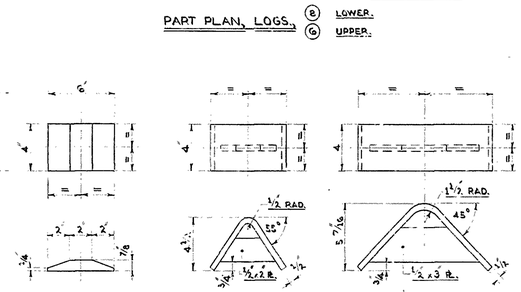
END VIEW, LOGS, ③ ④ ⑤ ⑥ ⑦ LOWER. ① ② ③ ④ ⑤ UPPER.

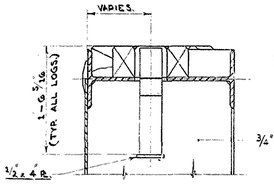


END VIEW, LOGS, ⑥ LOWER. ⑥ UPPER.



END VIEW, LOGS, ③ LOWER. ⑦ UPPER.





DETAIL 4.

NOTES. - (11) & (L1) DENOTES LOG Nº & LOCATIONS (U= UPPER. L= LOWER.)
- ALL SEALS SHALL BE MADE FROM OAK.
- SEALS SHALL BE PROVIDED SLIGHTLY OVERSIZE, BOLTED IN PLACE ON THE LOGS AND PLANED TO SMOOTH STRAIGHT SURFACES. LOGS SHALL SEAT ONE UPON THE OTHER, SO THAT NO GAPS APPEAR BEETWEEN THE SEALS.
- SEALS SHALL BE TREATED WITH "PENTOX" DARK GREEN WOOD PRESERVATIVE STAIN.

NOTES. ALL CONTACT FACES TO BE STRAIGHT & TRUE. HORIZONTAL FACES TO BE PARALLEL & AT RIGHT ANGLES WITH VERTICAL FACES. ALL WELDING TO BE DONE IN ACCORDANCE WITH C.S.A. W47-W48. & W59. LATEST EDITIONS. MATERIAL., ROLLED SHAPES & PLATES. A.S.T.M. A-36. OR A-7 UNLESS OTHERWISE STATED. EACH LOG TO BE NUMBERED WITH 5" HIGH FIGURES CUT FROM 3/16 R. & TACK WELDED TO UPPER WEB OF EACH LOG.

RU-16-105.2

DEPARTMENT OF TRANSPORT

MARINE WORKS

CANALS DIVISION

QUEBEC CANALS

ST. OURS LOCK.

UPPER & LOWER STOP LOGS.

SCALE: 1"=1'-0" UNLESS STATED. DATE: SEPT. 1967

DESIGN: H.S.G.

DRAWN: D.A.W.

CHECKED: J.R.

H. Grant P. Eng. for CHIEF, CANALS DIVISION

10-670-202.

DATE:	REVISIONS:	MADE:	CH'CK'D:

K.W.C.L. TRANSLAR 30-12-65

R-16-105.2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25.10.2016 13:03

Appendix B – Template for the Environmental Protection Plan (EPP)

Company logo

Project Name

Location

Environnemental protection plan (EPP)

Project

Date

Contractor name

Table des matières

Document modifications follow-up

Modification number	Date	Author(s)	Brief modification description
1.0	[yyyy-mm-dd]	[Name of author]	Document Creation.

EPP Objective

An Environmental Protection Plan (EPP) is a document that describes site-specific environmental protection measures and responsibilities during the implementation of a project. An EPP is designed to ensure that the environmental mitigation commitments and measures outlined in the specifications are properly understood and implemented by the Contractor. The EPP must contain specific and direct guidelines to achieve the targeted environmental outcomes in the mitigation measures.

The "ENVIRONMENTAL PROTECTION" section of the quotation contains a non-exhaustive list of indications on the EPP. This list may include, for example, the following:

- The Contractor must submit an Environmental Protection Plan to the Government Representative for review and approval prior to the commencement of construction activities or the delivery of materials and equipment to the site;
- The plan should provide a comprehensive overview of known or potential environmental problems to be addressed during construction and of applicable safeguards to mitigate environmental impacts;
- The actions included in the environmental protection plan must be presented per a level of detail which agrees with the environmental problems and with the construction work to be carried out.

Environmental Protection Plan (EPP)

*Please insert a nomenclature into a subsection, ex 1.1, 1.2, 1.3, etc.

1. Contact Information

The objective of this section is to identify the persons responsible for the implementation of the EPP.

The "ENVIRONMENTAL PROTECTION" section of the estimate contains a non-exhaustive list of the elements to be contained in an EPP. This list may include, for example, the following:

- The names of the persons responsible for ensuring compliance with the plan;
- The names and skills of the persons responsible for the exit signs for residual hazardous materials to be evacuated from the site.

Specifically, this section should include, but is not limited to:

- The name and contact information of the Contractor's representative responsible for the implementation of the EPP;
- The names of Parks Canada staff involved in the environmental component of the project;
- The names of other project contacts with key environmental responsibilities;
- Environmental responsibility of each stakeholder;
    - An organizational chart of the Contractor and the communication chain.

1. Worker awareness of EPP

The objective of this section is to describe the Entrepreneur's strategy to ensure that its staff is aware of the content of the EPP, is aware of the environmental issues at the site of work and is adequately trained in the implementation of the EPP.

The "ENVIRONMENTAL PROTECTION" section of the estimate contains a non-exhaustive list of the elements to be contained in an EPP. This list may include, for example, the following:

- The names and qualifications of the persons responsible for the training of construction site personnel;
- A description of the training program for personnel assigned to the protection of the environment.

Specifically, this section should include, but is not limited to:

- Strategy for training workers prior to work;
- The EPP communication strategy for workers, for example:
- Review of environmental issues and measures at start-up and construction meetings;
    - Discussion of the environmental aspect in daily work planning meetings

2. Environmental Regulatory Framework

Include in this section a list of environmental notices, permits, approvals and approvals received prior to construction. A copy of these documents must be at all times at the site.

The main environmental restrictions and requirements outlined in these documents are to be found in this section.

Any other regulatory compliance measures affecting or restricting the construction project (ex critical periods for wildlife protection) should also be included in this section.

3. Erosion and sedimentation control

The purpose of this section is to develop an erosion and sediment control plan for all periods of construction and reclamation. This plan must be adapted to the scope of the project and the associated risks. The plan must define concretely the means and techniques used to control the sediments and the location of the facilities.

The "ENVIRONMENTAL PROTECTION" section of the estimate contains a non-exhaustive list of the elements to be contained in an EPP. This list may include, for example, the following:

- *A plan for the prevention of erosion and sediment transport, indicating the measures to be implemented, including monitoring of work and reporting to verify compliance with federal laws and regulations, Provincial and municipal governments.*
- *Traffic control plans, including measures to reduce the erosion of temporary road platforms by the movement of construction vehicles, particularly in rainy weather. These plans must include measures to reduce the transport of materials on public roads by vehicles or runoff.*

Specifically, this section should include, but is not limited to:

- Identification of areas at risk (ex watercourses, wetlands, steep slopes, etc.);
- Erosion prevention procedures (ex timing of project implementation, minimization of site area to the minimum required, management of the area under construction, land cover measures);

- Sediment control measures (ex sediment barriers, filter berm, sediment traps, etc.), including the usual specifications and drawings of sediment control structures (may be included in the annex);
- Detailed work plans for aquatic structures, including site isolation and project timelines;
- Water management plans, including on-site controls, equipment, and proposed drainage areas;
- Areas where erosion and sediment control measures are applied (indicate on the plan in Appendix 1);
- Monitoring of control measures, preventive measures, and corrective measures (ex repairs);
- Removal of non-biodegradable materials when the area is stabilized.
    - Any other requirements specified in the specification and the mitigation table for erosion and sediment control.

4. Procedure for refueling and maintenance of equipment

The purpose of this section is to identify measures to protect the environment during maintenance and refueling of machinery and equipment. Planned supply areas should be identified on the mobilization plan in Appendix 1.

5. Wastewater, Stormwater and Pump Water Management Plan

The purpose of this section is to define on-site water management, including wastewater, storm water inside and outside the site, and pumping water (ex, drying a work area or keep dry excavations).

The "ENVIRONMENTAL PROTECTION" section of the estimate contains a non-exhaustive list of the elements to be contained in an EPP. This list may include, for example, the following:

- A run-off and leach management plan, indicating the measures that will be implemented to prevent any discharge of the water coming from the site into the surrounding aquatic environment;
- A wastewater management plan, indicating the methods and procedures to be used for the management or disposal of wastewater directly from construction activities, eg water used for concrete curing, Cleaning / discharging, grounding, disinfection, hydrostatic testing and rinsing of pipelines.

More specifically, this section should include, but is not limited to:

- Pre-discharge sites approved by Parks Canada;
- Methods of confinement and recovery of wastewater from the site (eg cleaning water from concrete surfaces, cleaning water from concrete pumps, runoff water, etc.);
- Water treatment methods, if required;
- Control of turbidity in the aquatic environment;

- Methods of verifying compliance with applicable quality criteria for water discharged into the aquatic environment;
- Any other requirements specified in the estimate and the mitigation measures table for on-site water management.

6. Excavated soil management plan

This section is complementary to section 4 on erosion and sediment control. It aims to detail temporary storage measures for excavated soil during the work, contaminated soil management methods, where appropriate, and protection of the environment during the period of soil disturbance.

More specifically, this section should include, but is not limited to:

- Temporary storage areas (indicate in the mobilization plan in Appendix 1);
- Methods for stabilizing slopes and disturbed soils;
- Methods for managing soils during temporary storage (excavated soil to be reused and soils disposed off-site);
- The name of the center (s) to which the contaminated soil will be sent, if applicable;
- Details on the concrete implementation of the measures specified in the estimate for contaminated soil management, where applicable;
- Any other requirements specified in the specification and the mitigation table for soil and excavation management.

7. Vegetation protection

The objective of this section is to indicate the means that will be put in place to protect the vegetation on the site and outside the site near taxiways and access roads, to plan for the management of undesirable species, and specify the trees and shrubs to be felled or pruned for the purposes of the work. Any intervention on vegetation must be validated and authorized by Parks Canada.

More specifically, this section should include, but is not limited to:

- Measures to manage irritant species and invasive alien species (ex, phragmite), including methods of cleaning machinery and means of disposing of plant residues;
- Measures to protect trees and shrubs against damage and disturbance caused by the work;
- Identification and location of trees to be felled and pruned, previously approved by Parks Canada;

- If required, a pesticide treatment plan approved by the Parks Canada process;
- Any other requirements specified in the specification and the mitigation table for vegetation management.

8. Residual Materials and Hazardous Materials Management Plan

Indicate in this section waste management measures, including hazardous and non-hazardous residual materials. This section should also include measures for the storage and handling of hazardous materials used on site.

The " CONSTRUCTION WASTE / DEMOLITION MANAGEMENT AND DISPOSAL " section of the estimate contains a non-exhaustive list of waste management and waste reduction measures. This list may include, for example, the following:

- Before starting work, meet with the Government Representative to review the waste management objectives and waste reduction plan for the construction, renovation and demolition (CRD) waste generated by the project.
- The waste management objective is to reduce as much as possible the total flow of construction / demolition waste to landfills.
- Provide the Government Representative with documents certifying that comprehensive measures and procedures for waste management, recycling, reuse / reuse of recyclable and reusable / re-employable materials have been implemented.
- Minimize the amount of non-hazardous solid waste generated by the work; Maximize the reduction at source, reuse / reuse and recycling of solid waste produced by CRD activities.

The "ENVIRONMENTAL PROTECTION" section of the estimate contains a non-exhaustive list of the elements to be contained in an EPP. This list may include, for example, the following:

- A plan for the disposal of non-hazardous residual materials, hazardous or special residual materials including methods and sites for the disposal of solid waste and debris from clearing.
- A plan for the prevention of contamination indicating the potentially hazardous substances to be used on the site, measures to prevent the substances being suspended in the air or introduced into the soil, as well as the details of the measurements that will be taken to ensure that the storage and handling of these substances are in compliance with federal, provincial and municipal laws and regulations.

This section should include, but is not limited to:

- Waste management measures, including hazardous and non-hazardous waste;
- Measures for the storage and handling of hazardous materials used on site;
- Container and hazardous material shelter locations (indicate in the mobilization plan in Appendix 1);
- The procedure for the management and disposal of concrete surplus from concrete pumps;
- Any other requirements specified in the specification and the mitigation measures table for the management of residual materials and hazardous materials.

9. Protection of wildlife

Indicate in this section the requirements specified in the estimate and the table of mitigation measures to protect terrestrial, aquatic, and avian wildlife.

10. Protection of aquatic environments

The purpose of this section is to identify the means to meet the requirements of the estimate and the mitigation table to protect aquatic environments (rivers, canals, wetlands, etc.). Among other things, indicate ways of preventing the dispersal of invasive exotic species (ex zebra mussels).

11. Dust and emission control

Indicate in this section the requirements specified in the specification and the table of mitigation measures that aim to minimize emissions of fine particulate matter and greenhouse gases into the air.

The "ENVIRONMENTAL PROTECTION" section of the estimate contains a non-exhaustive list of the elements to be contained in an EPP. This list may include, for example, the following:

- A plan for the prevention of air pollution, specifying measures to retain dust, debris, materials and residual materials inside the site.

12. Noise control

Indicate in this section the requirements outlined in the quote and the table of mitigation measures to minimize noise and inconvenience to site visitors and area residents as appropriate.

13. Modalities of restoration of the site at the end of the works

The objective of this section is to specify the planned restoration measures at the end of the work.

14. Emergency Response and Environmental Prevention

This section should specify steps for emergency response, particularly in the case of a spill of oil or other hazardous materials.

The "ENVIRONMENTAL PROTECTION" section of the estimate contains a non-exhaustive list of the elements to be contained in an EPP. This list may include, for example, the following:

- A spill contingency plan that includes procedures to be followed, instructions to be followed and reports to be produced in the event of an unpredictable spill of a controlled substance.

Specifically, this section should include, but is not limited to:

- List of products and materials considered or defined as hazardous or toxic to the environment. These products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, hot-melt rubber membrane materials, bituminous cement, sand blasting agents, paint, solvents, and hydrocarbons;
- Equipment required on site;
- The contents and location of on-site recovery kits;
- Procedures for refueling and storing fuel;
- Spill prevention procedures (containment and storage of materials, safety, handling, use and disposal of empty containers, surplus products or waste generated by the application of these products in accordance with federal and provincial force);
- The spill response procedure (containment, cleaning, disposal of contaminated materials, etc.);
- An Incident Report Form to report spills (if included as an appendix, refer to them here);
- An up-to-date contact list for emergency response (Parks Canada, Environment Canada, Coast Guard, etc.), including information required to report spills.
- A fire emergency response plan;
- Any other requirements specified in the specification and the mitigation measures table for the management of spills and environmental emergencies.

Annexe 1. Mobilization plan

This schedule must include a plan identifying all elements that can be located in relation to environmental issues and the protection of the environment in the mobilization area and the machinery lanes.

The "ENVIRONMENTAL PROTECTION" section of the estimate contains a non-exhaustive list of the elements to be contained in an EPP. This list may include, for example, the following:

- Drawings showing the location of temporary excavations or site paths in embankments, materials, constructions, sanitary installations, deposits of surplus materials or contaminated materials; The drawings illustrating the methods that will be used to control runoff and to confine the materials to the site.
- A plan of the work area showing the activities planned in each part of the works area and indicating the areas of restricted use as well as the prohibited areas of use. This plan shall include measures to mark the boundaries of usable areas and methods of protection of the elements within authorized work areas to be preserved.

Specifically, this section should include, but is not limited to:

- Location of trees to be felled and trees to be protected (tree felling must be approved in advance by Parks Canada);
- Excavation areas;
- Temporary lanes and access;
- The location of temporary facilities (ex, platforms, cofferdams, etc.);
- Storage areas for excavated soils and other stacked materials, where applicable;
- Storage areas for building materials and debris;
- Location of erosion prevention equipment (ex, sediment barrier);
- Location of maintenance and refueling areas for machinery;
- Location of hazardous material shelters and waste containers;
- Location of oil recovery kits;
- The location of the confined enclosure for concrete surplus, where applicable;
- Location of water treatment facilities, where applicable (settling pond, etc.);
- Identified sites for the discharge of water into the environment.
- Etc.

Annexe 2. Environmental surveillance plan

Include a periodic monitoring report that captures the main measures of each section of the EPP to systematically check on their implementation and their proper functioning.

Additional Annexes

Add annexes to include the following:

- Material Safety Data Sheets;
- Data sheets on sediment containment methods (ex sediment barrier) or other specific equipment related to the environment used on the site;
- Management of nonconformities;
- Relevant shop drawings and drawings.

Appendix C – Mobilization Areas

Mobilisation Zones

Zone de mobilisation – Mobilization zone