



Government
of Canada

Gouvernement
du Canada

SPECIFICATIONS FOR

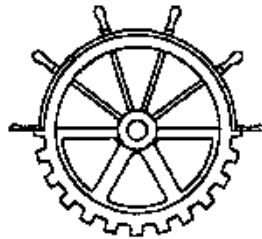
Rideau Canal
Poonamalie Dam Phase III
Catwalk

ISSUED FOR TENDER

Project No. R.066861.319

July 31, 2019

Prepared by:



Parks Canada Infrastructure Directorate
Ontario Region
Public Services and Procurement Canada

2720 Riverside Drive, Tower A, Floor 0
Ottawa, Ontario
K1A 0M2

<u>Section</u>	<u>Title</u>	<u>Pages</u>
<u>Division 00 - Procurement and Contracting Requirements</u>		
00 01 12	LIST OF DRAWINGS	1
<u>Division 01 - General Requirements</u>		
01 11 00	GENERAL INSTRUCTIONS	6
01 20 01	SITE ACCESS	2
01 22 01	MEASUREMENT AND PAYMENT	1
01 33 00	SUBMITTAL PROCEDURES	4
01 35 29	HEALTH AND SAFETY REQUIREMENTS	5
01 35 43	ARCHAEOLOGICAL, CULTURAL AND ENVIRONMENTAL PROCEDURES	16
01 45 00	QUALITY CONTROL	3
01 52 00	CONSTRUCTION FACILITIES	3
<u>Division 02 - Existing Conditions</u>		
02 41 21	REMOVALS	2
<u>Division 05 - Metals</u>		
05 05 20	ANCHORS	3
05 50 00	METAL FABRICATIONS	6

RID Poonamalie Dam	LIST OF DRAWINGS	Section 00 01 12
Phase III		Page 1
Catwalk		
Proj. No. R.066861.319		2019-07-31

<u>Civil Drawing Number</u>	<u>Title</u>
100	Cover Page and Site and Location Plan
101	Plan, Elevation Sections and Details
102	Catwalk Details 1
103	Catwalk Details 2

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 General
 - .1 These detailed specifications cover requirements for furnishing of labour, materials, tools, equipment, transportation, supervision and quality control necessary to completely perform work, as described by the drawings and specifications.
- .2 Work of this Contract comprises general construction of elevated catwalk across the overflow spillway at Poonamalie Dam on the Rideau Canal Waterway; and further identified as the following:
 - .1 Mobilization/Demobilization: Activate, mobilize and demobilize contractor`s personnel, general equipment and operating supplies to site.
 - .2 Permits: Obtaining regulatory permits, certificates of authorization and approvals.
 - .3 Site Access and staging area: use existing granular road and parking area for staging and access to the North wingwall of Poonamalie Dam. Maintain and repair any roadway damage associated with the construction.
 - .4 Environmental Procedures: provide required procedures to protect archaeological resources, cultural resources and environment protection for duration of project.
 - .5 Final design, fabricate, deliver and install the steel elevated catwalk along the North wingwall to deck of the dam.
 - .6 Miscellaneous removal: Remove, salvage and reinstall steel brackets and timber splashboard along the North wingwall. Remove and dispose 2 existing steel ladders.
 - .7 Provide Quality Control to steel fabrication and welding application.
 - .8 Grout repair: fill holes along the South wingwall with grout.
 - .9 Perform general clean-up to the Departmental Representative full satisfaction and approval. Repair any damage associated with the construction.

1.2 WORK RESTRICTIONS

- .1 The Contractor shall for the purpose of the Ontario Occupational Health and Safety Act and Regulations for Construction Projects, and for the duration of the Work of the Contract:
 - .1 Assume the role of Constructor in accordance with the Authority Having Jurisdictions.
- .2 Protect from damage the in-ground and surface utility line, concrete hydro box (pull box), water gauge, snow gauge and power poles, which are in closed proximity to Work as indicated.
- .3 With the exception of scaffolding, no work is permitted within the waterway.

1.3 TIME OF COMPLETION

- .1 Commence work in accordance with notification of acceptance of offer and complete Work within dates outlined in contract.
- .2 Comply with work schedule restrictions.
 - .1 Work to be completed by December 13, 2019.

1.4 ACCESS TO SITE

- .1 Project location is part of the Rideau Canal Waterway, on the Rideau River, in Rideau Lakes Township near Smith Falls.
- .2 The project site is along the shoreline of Park Canada's Property, which can be accessed from Salter Lane, Smith Falls, ON.
- .3 Make arrangements, obtain required permits, and confine activities to such routes and load limits as authorities having jurisdiction may require.
- .4 Access to Work, and staging areas as indicated or as the approved plan.
- .5 Clean public roads routinely to remove sediment and debris deposited by construction activities.
- .6 Ensure that no debris or sediment enter into the waterway during transportation and installation of material.

1.5 EXAMINATION OF SITE

- .1 Investigate and be fully informed as to the character and extent of the work to be performed and the difficulties involved, the facilities available for delivering, handling and placing of materials.
- .2 Examine site and conditions likely to affect work and be familiar and conversant with existing conditions.
- .3 After contract award, Contractor to record photos of surrounding properties, objects, and structures liable to be damaged or be subject of subsequent claims.

1.6 FEES, PERMITS, AND CERTIFICATES

- .1 Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates.
- .2 "Historic Canal Regulations" apply to and govern work under this Contract. Regulations may be obtain from Justice Canada's website at:
<http://laws-lois.justice.gc.ca/eng/regulations/sor-93-220/>.
- .3 Contractor may not mobilize or begin any work until Parks Canada issues permit under Historic Canals Regulation (SOR93-220 Sections 11, 14 and 15).

- .1 Permit will not be issued before following submittals are submitted and accepted:
 - .1 Basic Environmental Management Plan (BEMP).
 - .2 Health and Safety Plan.
 - .3 Site Layout Plan.
- .4 Changes to project scope of work not assessed under Environmental Impact Assessment (EIA) will require review and acceptance by Client Department and may require issuing revised permit.

1.7 MINIMUM STANDARDS

- .1 Use new materials and work to at least all applicable minimum standards of: Canadian General Standards Board, Canadian Standards Association, National Building Code of Canada 2015 (NBCC), ASTM, applicable Provincial and Municipal codes, and all other national and international applicable standards.
- .2 In case of conflict or discrepancy, most stringent requirement will apply.

1.8 ABBREVIATIONS

- .1 Abbreviations used are:
 - .1 ASTM - American Society for Testing and Materials.
 - .2 ANSI - American National Standards Institute.
 - .3 CSA - Canadian Standards Association.
 - .4 NBCC - National Building Code of Canada.
 - .5 CPM - Critical Path Method.
 - .6 CGSB - Canadian General Standards Board.
 - .7 OPSS - Ontario Provincial Standard Specifications.
 - .8 PSPC - Public Services and Procurement Canada, formerly Public Works and Government Services Canada (PWGSC).

1.9 DEFINITIONS

- .1 Unless context clearly indicates otherwise, these definitions apply:
 - .1 River - Rideau River.
 - .2 Dam - Poonamalie Dam at Lock 32.
 - .3 Plans - Drawings listed in "List of Drawings".
 - .4 Specifications - Subject matter listed in the "List of Contents", addenda to specifications, and relative written communications sent by Departmental Representative to Contractor in connection with Work.

1.10 WATER LEVELS

- .1 Contractor required to work in areas where water is normally present.
- .2 Information on control of water levels may be obtained from Departmental Representative.
- .3 Normal navigation period runs from approximately Victoria Day weekend to Thanksgiving weekend,

- .1 May 17 2019 to October 14 2019.
- .2 Navigation season may be subject to change.

- .4 Water levels may fluctuate due to rain, snow, snowmelt, evaporation, leakage, spring freshet and operational requirements.

- .5 Normal Navigation Season water levels, using CGVD28 datum, are:
 - .1 Upstream: 123.90 m to 123.10 m.
 - .2 Downstream: 121.80 m to 121.74 m.

- .6 Normal drawdown (non-navigation season) water levels, using CGVD28 datum, are:
 - .1 Upstream: 123.10 m.
 - .2 Downstream: 121.65 m to 121.60 m.

- .7 Upstream historical maximum water level, using CGVD28 datum: 124.24 m.

- .8 Upstream 1:100 Year Flood Level: 124.50 m (CGVD28 datum).
 - .1 Refer to Rideau Valley Conservation Authority (RVCA) "Rideau Lakes: Sub-watershed Report", 2014

- .9 Elevation of top surface of the overflow spillway at North Wingwall: 123.65 m (CGVD28 datum).

- .10 During drawdown period (non-navigation season), water levels might rise occasionally, depending on weather conditions. There is no data available regarding water levels during those times. Fluctuation of water level may exceed navigational levels or maximum water level.

- .11 Dates indicated are not firm commitment and approximation only based on previous years practice.

1.11 REQUIREMENTS OF REGULATORY AGENCIES

- .1 Adhere to local municipality noise by-laws.

- .2 Dispose of unwanted materials at location off lands approved by Ontario Ministry of the Environment.

- .3 Adhere to National, Provincial and Municipal requirements relating to the safety, health and protection of workers and the environment.

1.12 CLEAN-UP

- .1 Clean and tidy premises on daily basis, do not permit accumulation of debris, trash, or garbage. Provide garbage receptacles in work areas.

- .2 Remove rubbish, debris, and garbage from construction activities to off site.

- .3 At completion of Work remove surplus materials, tools, rubbish, and debris, and dispose of them in an approved manner off the property.

1.13 TAXES

- .1 Pay all taxes properly levied by law (including Federal, Provincial, and Municipal). Include in Lumpsum payment.

1.14 QUALITY CONTROL

- .1 Carry out work using qualified licensed workers or apprentices in accordance Provincial Act respecting manpower vocational training and qualification.
- .2 Permit employees registered in Ontario apprenticeship program to perform specific tasks only if under direct supervision of qualified licensed workers.
- .3 Determine permitted activities and tasks by apprentices, based on level of training attended and demonstration of ability to perform specific duties.
- .4 Provide a CSA W178.2 Level II certified welding inspector to carry out a technical review of the shop drawings related to the welding of structural steel and ensure steel welding Quality Control both in the shop fabrication and field erection.

1.15 CUT, PATCH AND MAKE GOOD

- .1 Repair, replace, and refinish, to Departmental Representative's approval, existing surfaces and items damaged in connection with Work, at Contractor's expense.
- .2 Repaired, replaced, and refinished items to be at least equal to those that existed immediately before damage occurred.
- .3 Disturbed lawn/riprap areas to be reinstated to the original condition.

1.16 SIGNS

- .1 Provide common-use signs related to traffic control, information, instruction, use of equipment, and public safety devices in both official languages or by use of commonly-understood graphic symbols to Departmental Representative's approval.
- .2 No advertising permitted on this project.
- .3 The Contractor is not allowed to advertise this project on any website or in publications without permission from PSPC.

1.17 CONTRACT DOCUMENTS

- .1 Drawings and specifications are complementary, items shown or mentioned in one and not in other are deemed to be included in contract work.

- .2 Contractor responsible for printing/duplicating required drawings or specifications for:
 - .1 Suppliers;
 - .2 Sub-contractors;
 - .3 On-Site drawings & specifications;
 - .4 Project Record drawings.

- .3 Maintain at site for Contractor and Departmental Representative, one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Amendments.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.

1.18 LAYOUT OF WORK

- .1 Contractor responsible for layout and control survey work, and checking plan dimensions against field measurements.
- .2 Lay out Work according to elevations and dimensions shown on plans and verified or determined in field.
- .3 Notify Departmental Representative immediately of any discrepancies between field measurements and dimensions shown on plans.
- .4 Be responsible for rectification of errors resulting from failure to verify dimensions, elevations, and other pertinent data shown on plans.

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

- .1 Poonamalie Dam vehicular access to the work area is possible from Salter Lane. Refer to drawings.
- .2 The work of this Section includes but is not limited to:
 - .1 Maintaining access road and work/storage areas for duration of work.
 - .2 Restoring roads and staging area acceptable to Department Representative at the end of project.

1.2 RELATED SECTIONS

- .1 Section 01 35 29 - Health and Safety Requirements.
- .2 Section 01 35 43 - Archaeological, Cultural and Environmental Procedures.
- .3 Section 01 52 00 - Construction Facilities.

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Payment included in Lump Sum Price.

1.4 INFORMATION AND SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - SUBMITTAL PROCEDURES.
- .2 Submit Site Layout Plan at least 10 days prior to proposed mobilization date.
 - .1 Prepare Site Layout Plan indicating proposed layout of construction zones, work areas, staging areas and parking areas.
 - .2 AutoCAD drawings used for development of Contract Drawings available upon request.

1.5 DELINEATING THE WORK/STORAGE AREA

- .1 Use existing fencing and/or secure gate at entrance to the site to prevent Public access to the work areas at all times during construction. Provide temporary fencing where no existing barrier provided.
- .2 Take appropriate security precautions to safeguard equipment, tools, and materials on site from vandalism and theft.
- .3 Remove temporary fencing and/or temporary gate in it's entirety from the site after work is completed. Make good all damage.

1.6 PARKING

- .1 If additional storage and parking area is required, the contractor must submit a plan to the departmental representative. The plan must minimize the destruction of existing trees and other landscape and provide details to make good any disturbed areas at end of project.

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 SECTION INCLUDES

- .1 This section covers measurement of work for payment purposes.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Lump Sum Price Item - All Work items to be paid as Lump Sum Price and not measured for payment. These items include costs associated to perform work including but not limited to materials, equipment, personnel, overhead, etc.

1.3 APPLICATIONS FOR PAYMENT

- .1 Make applications for payment on account as provided in Contract as Work progresses.
- .2 Date applications for payment last day of payment period and ensure amount claimed is for value, proportional to amount of Contract, of Work performed and products delivered to place of work at that date.
- .3 Submit breakdown of lump sum items, at least 10 days before first application for payment. The proposed Schedule of values for parts of Work completed with respect to the aggregate total amount of the Contract, will be used to facilitate application evaluation of payments.
- .4 Support claims for products delivered to place of work but not yet incorporated into Work by such evidence as Departmental Representative may reasonably require to establish value and delivery of products.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 ADMINISTRATIVE

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

1.2 SHOP DRAWINGS AND PRODUCT DATA

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

- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 Allow 5 working days for Departmental Representative's review of each submission.
- .4 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .5 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .6 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .7 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 On manufacturer's data sheets, clearly indicate specific product being submitted for review and for which portion of work.
- .8 After Departmental Representative's review, distribute copies.
- .9 Submit one electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

- .10 Submit one electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .11 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, electronic 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.
- .12 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.
- .13 Submittals include but are not limited to the following:
 - .1 Notice of Project
 - .2 Project Schedule
 - .3 Contract Amount Breakdown
 - .4 Site Layout and Access Plan
 - .5 Basic Environmental Management Plan (BEMP)
 - .6 Health and Safety Plan
 - .7 Workplace Safety and Insurance Board Experience Rating Report
 - .8 Photos of Existing Site Conditions
 - .9 List of staff personnel, welders, inspectors and their qualification
 - .10 Quality Control and Inspection Reports
 - .11 Metal Fabrications Shop Drawings
 - .12 Steel Catwalk Transportation and Erection Plan
 - .13 Manufacturer's Instructions, Guarantees, Warranties, and Product Data and Literature
 - .14 Copies of Orders, Directions, and Reports Issued by Agencies Having Authority
 - .15 Incident and Accident Reports

1.3 FEES, PERMITS AND CERTIFICATES

- .1 Provide authorities having jurisdiction with information requested.
- .2 Pay fees and obtain certificates and permits required.
- .3 Furnish certificates and permits.

RID Poonamalie Dam
Phase III
Catwalk
Proj. No. R.066861.319

SUBMITTAL PROCEDURES

Section 01 33 00
Page 4
2019-07-31

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Standards Association (CSA): Canada
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .2 National Building Code 2015 (NBCC):
 - .1 NBCC 2015, Division B, Part 8 Safety Measures at Construction and Demolition Sites.
- .3 Province of Ontario:
 - .1 Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects, O. Reg. 213/91 as amended.
 - .2 O. Reg. 490/09, Designated Substances.
 - .3 Workplace Safety and Insurance Act, 1997.
 - .4 Municipal statutes and authorities.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS)

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00.
- .2 Submit Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
 - .3 Measures and controls to be implemented to address identified safety hazards and risks.
 - .4 Contractor's and Sub-contractors' Safety Communication Plan.
 - .5 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations.
- .3 Departmental Representative will review Contractor's Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.
- .4 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .5 Submit names of personnel and alternates responsible for site safety and health.

- .6 Submit records of Contractor's Health and Safety meetings when requested.
- .7 Submit copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, when requested.
- .8 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.
- .9 Submit copies of incident and accident reports.
- .10 Submit Workplace Safety and Insurance Board (WSIB) - Experience Rating Report.

1.3 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to commencement of Work.
- .2 File other required notices in accordance with Acts and Regulations of Province of Ontario.
- .3 Submit copies of Notice of Project to Departmental Representative immediately.
- .4 Keep copy of Notices of Project and other notices on site at all times.

1.4 SAFETY ASSESSMENT

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

1.5 MEETINGS

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

1.6 REGULATORY REQUIREMENTS

- .1 Comply with the Acts and regulations of the Province of Ontario.
- .2 Comply with specified standards and regulations to ensure safe operations at site.

1.7 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Corroded metals from existing ladders and splashboard brackets.
 - .2 Silica in concrete.
- .2 Hazards on-site include but are not limited to:
 - .1 Working near or under electrical wires.
 - .2 Working above water.
 - .3 Falling hazards.

1.8 GENERAL REQUIREMENTS

- .1 Develop written Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.
- .3 Relief from or substitution for any portion or provision of minimum Health and Safety standards specified herein or reviewed site-specific Health and Safety Plan shall be submitted to Departmental Representative in writing.

1.9 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .3 Where applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act and Regulations for Construction Projects for the Province of Ontario.

1.10 UNFORSEEN HAZARDS

- .1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, immediately stop work and advise Departmental Representative verbally and in writing.
- .2 Follow procedures in place for Employees Right to Refuse Work as specified in the Occupational Health and Safety Act for the Province of Ontario.

1.11 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province of Ontario, and in consultation with Departmental Representative.
 - .1 Contractor's Health and Safety Policy.
 - .2 Contractor's Name.
 - .3 Notice of Project.
 - .4 Ministry of Labour Orders and reports.
 - .5 Occupational Health and Safety Act and Regulations for Construction Projects for Province of Ontario.
 - .6 Address and phone number of nearest Ministry of Labour office.

- .7 Material Safety Data Sheets.
- .8 Written Emergency Response Plan.
- .9 Health and Safety Plan.
- .10 Valid certificate of first aider on duty.
- .11 WSIB "In Case of Injury At Work" poster.
- .12 Location of toilet.

1.12 CORRECTION OF NON-COMPLIANCE

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

1.13 BLASTING

- .1 Blasting or other use of explosives is not permitted on this project.

1.14 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.
- .2 Assign responsibility and obligation to Competent Supervisor to stop or start Work when, at Competent Supervisor's discretion, it is necessary or advisable for reasons of health or safety. Departmental Representative may also stop Work for health and safety considerations.

1.15 FIRE SAFETY REQUIREMENTS

- .1 Comply with National Building Code of Canada 2015 (NBCC) for fire safety in construction and National Fire Code of Canada 2015 (NFC) for fire prevention, firefighting, and life safety in building in use.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used.

RID Poonamalie Dam	HEALTH AND SAFETY	Section 01 35 29
Phase III	REQUIREMENTS	Page 5
Catwalk		
Proj. No. R.066861.319		2019-07-31

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This Section describes requirements for protection of the environment that apply to Work. These requirements apply to all Sections of this Specification, without limiting the conditions and approvals imposed by statute.
- .2 Scope of Work anticipates the supply and installation of steel catwalk on top of concrete spillway of Poonamalie Dam North Wingwall.
- .3 Control work to provide effective environmental, waterway, and fish habitat protection. Departmental Representative and Parks Canada Agency (PCA) Environmental Officer will monitor environmental protection measures and will identify whenever such protection is found to be ineffective. Change protective measures or work procedures as directed by Departmental Representative to ensure environmental, waterway, and fish habitat protection.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 There will be no measurement of Archaeological, Cultural and Environmental Procedure.
- .2 Item includes environmental protection procedures to be paid in lump sum price.

1.3 REGULATORY REQUIREMENTS

- .1 Comply with environmental requirements of Contract Documents, applicable federal, provincial, and local statutes, acts, regulations, and ordinances of Agencies having jurisdiction.
- .2 Client Department, Parks Canada Agency, is main Environmental Authority for this project.
- .3 Client Department will not issue permit to authorize start of Work, under Historic Canal Regulations, before review and acceptance of Basic Environmental Management Plan.
- .4 Comply with and enforce compliance by employees of prescribed environmental mitigation measures outlined in Basic Environmental Management Plan (BEMP), Environment Impact Assessment (EIA) and PCA Best Management Practices (BMP).
 - .1 The following sections of the BMP is to be highlighted to the contractor: Sections 1-4 (pages 10 - 13) and Appendix A (pages 30 - 34).
- .5 Allow Client Department Environmental Authority full access to affected Work area and cooperate to provide reasonable facilities for such access.

- .6 Comply with written orders from PCA Environmental Authority to correct deficiencies or implement additional environmental mitigation measures.
- .7 Submit copies of environmental written orders to Departmental Representative.
- .8 Departmental Representative will notify Contractor in writing of observed non-compliance with Federal, Provincial, or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Management Plan.
- .9 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
 - .1 Take action only after receipt of written approval by Departmental Representative.
 - .2 Departmental Representative may issue stop order of work until satisfactory corrective action has been taken.
 - .3 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

1.4 HERITAGE PROTECTIONS

- .1 The Rideau Canal is a National Heritage Site.
- .2 Preserve heritage elements of site by executing Work without damage to site features or character defining elements.
- .3 Notify Departmental Representative and PCA Environmental Authority immediately if heritage items are damaged.
- .4 Employ minimal intervention approach for all Work.
- .5 Access roads, staging areas, and work pads require review and approval.
- .6 Damage to heritage elements will not be tolerated.
- .7 Ensure appropriate supervision work, adequate training for workers, and other necessary precautions to protect existing structures.
- .8 Notify Departmental Representative immediately where reasonable concern exists that damage may result from Work.
- .9 Contractor may propose alternative work methodologies to be accepted by Departmental Representative and PCA Environmental Authority.
- .10 Protect possible archaeological and cultural resources by excavating only to limits indicated.
 - .1 Excavation beyond indicated limits requires acceptance by Departmental Representative and PCA Environmental Authority.

1.5 RELICS AND ANTIQUITIES

- .1 Corner stones and their contents, buried artifacts, remains and evidence of ancient persons and peoples, commemorative plaques and other objects of historic value and worth, remain the property of the Crown. Protect and notify Departmental Representative immediately of discovery of such objects.
- .2 Should historic objects be uncovered during the work, stop work immediately and notify Departmental Representative.
- .3 Do not resume work until directed by Departmental Representative.

1.6 ARCHAEOLOGICAL AND CULTURAL REQUIREMENTS AND RESTRAINTS

- .1 Site may contain possible cultural and archaeological remnants.
- .2 PCA Environmental Authority may monitor and record some or all aspects of site access routes and disturbances to soil overburden due to equipment and general work operations.
- .3 Cease Work immediately in affected work area and notify Departmental Representative if cultural resources, suspected archaeological resources, or character-defining elements are uncovered or damaged during Work.
- .4 Do not resume work until directed by Departmental Representative.
 - .1 Proceed with other work and await further direction for work in affected area from PCA Environmental Authority on how to proceed.
- .5 Allow Departmental Representative and PCA Environmental Authority Representative full access to affected Work area and cooperate to provide reasonable facilities for such access.

1.7 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00.
- .2 Submit Basic Environment Management Plan (BEMP) to Departmental Representative and Client Department, 5 to 10 working days required for each submission review.
 - .1 In order to allow for the timely commencement of project activities, Basic Environment Management Plan (BEMP) can be submitted as separate components as project details become available. The BEMP, or its components, will be submitted in writing prior to implementation of project activities and must be accepted by Parks Canada and Departmental Representative.
 - .2 It is recommended that an environmental professional(s) (EP) prepare the BEMP or its component plans incorporating guidance found in PCA's Environmental Standards and Guidelines - Ontario Waterways (2017). The BEMP will detail frequency of monitoring and list high-risk construction activities where an environmental professional must be onsite. Monitoring and testing should be adaptable to changing site conditions

- and will capture any event/incident for the length and scope of that event.
- .3 Client Department will outline prescribed mitigation measures during construction start-up meeting.
 - .4 BEMP to present comprehensive overview of known or potential environmental issues to be addressed during construction.
 - .5 BEMP to be prepared in accordance with requirements of Federal, Provincial, and Municipal laws and regulations.
 - .6 Notify Departmental Representative of proposed changes to project plans or schedules effecting BEMP.
 - .7 Submit amended BEMP to address accepted changes for review and acceptance by Client Department.
 - .8 Contractor to ensure on-site personal are aware of, and comply with prescribed mitigation measures in BEMP, EIA and BMP.
- .3 Basic Environmental Management Plan (BEMP) to include:
- .1 Names of Responsible Persons: Persons responsible for ensuring adherence to BEMP.
 - .2 Work Area Plan: showing proposed activities in each portion of work area and identifying areas of limited use or non-use.
 - .1 Work area plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized work areas.
 - .2 Identify areas for storage of hazardous materials, cleaning hazardous materials, refueling, fuel storage and other critical areas
 - .3 Illustrate area(s) dedicated for concrete/grout waste management and concrete waste water management and treatment (if applicable).
 - .3 Provide plans and mitigation for the installation and removal of any temporary structures.
 - .4 Spill Prevention and Control Mitigation: including location for storage and refueling of all fuel and fuel operated equipment located near waterways. Fuel containers are to have secondary containment, overflow and spill protection. Fueling area is to be contained to address potential spillage. Identify procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .5 Contaminant Prevention Mitigation: identifying potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
 - .6 Waste Water Management Mitigation: identifying methods and procedures for management, treatment and/or discharge of waste waters which are directly derived from construction activities.
 - .7 Waste Management Mitigation that is to include the following component plans:
 - .1 Concrete/grout Waste Management Mitigation.
 - .2 Non-Hazardous Solid Waste Disposal Mitigation: identifying methods and locations for solid waste disposal including clearing debris.

- .3 Hazardous Material Handling Mitigation: describing hazardous waste materials isolation, removal, handling, storage, transportation, disposal, and staff training procedures to be followed prior to start of work.
- .4 Waste Reduction Work Mitigation: indicating materials and quantities of material that will be recycled and diverted from landfill.
- .8 Historical, archaeological, cultural resources, biological resources and wetlands mitigation that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.
- .9 Vegetation Management, Protection and Replantation Mitigation.
 - .1 Vegetation that is to be removed should be outlined and kept to minimum.
 - .2 Vegetation/trees that are removed shall be replaced or compensated for, and outlined within a revegetation mitigation.
- .10 Wildlife and Aquatic life Protection and Management Mitigation.
- .11 Species at Risk (SAR) Management Mitigation.
- .12 Erosion, Sediment and Dust Control Mitigation: which identifies type and location of erosion, sediment and dust controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion, sediment and dust control mitigation, Federal, Provincial, and Municipal laws and regulations.
- .4 BEMP to follow baseline water and streambed quality indicated in Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life:
<http://ceqg-rcqe.ccme.ca/en/index.html>
- .5 The BEMP will detail frequency of monitoring and list high-risk construction activities where a Third-party Qualified Environmental Professional (TPQEP) must be onsite. The BEMP will include a list of key project activities and identify the actual and potential environmental impacts associated with each activity including those described in the EIA. If required, environmental monitoring and water quality monitoring and testing for high-risk events/activities (as outlined within the BEMP) shall be conducted by a TPQEP. Monitoring and testing should be adaptable to changing site conditions and will capture any event/incident for the length and scope of that event. Monitoring and testing by a TPQEP may be required for additional events/activities at PCAs discretion.
- .6 The BEMP should demonstrate the Contractor's understanding of the legislative context, Owner Environmental Authority, Environmental Standards and Guidelines (ESG) document, Environmental Impact Analysis (EIA) and PCA Best Management Practices (BMP).
- .7 The BEMP must provide a comprehensive overview of known or potential environmental issues to be addressed during construction tasks detailing all proposed methods, strategies, structures, facilities, equipment and systems critical to environmental protection; all proposed environmental protection

and mitigation measures, monitoring and follow-up activities; all relevant standards and guidelines and all performance criteria applicable to the project.

1.8 HISTORICAL AND ARCHAEOLOGICAL CONTROL

- .1 Provide protection for historical, archaeological, cultural, and biological/vegetation resources in accordance with approved BEMP.
- .2 Accommodate PCA Cultural Resource Management (CRM) representatives' needs for documentation of existing structures after discovery.
- .3 Include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and Departmental Representative to address situations where such resources not known to be on site are discovered during construction.
- .4 Should any archaeological or cultural resource be discovered while excavation, stop work. Contact Departmental Representative for direction prior to continuing work.

1.9 WORK RESTRICTION PERIODS

- .1 Removal of woody vegetation will not occur during the breeding bird season from May 1st to August 31st inclusive (see Wildlife Protection and Plant and Tree Protection for further details).
- .2 Additional timing restriction for shoreline works may be required for aquatic wildlife /turtle hibernation activities. Areas of impact should be isolated from wildlife access prior to these sensitive time periods.

1.10 FIRES

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

1.11 PLANT AND TREE PROTECTION

- .1 Reduce soil displacement and compaction by using heavy machinery in designated areas and on existing vehicle paths.
- .2 Avoid using heavy machinery on saturated ground.
- .3 Use equipment of low bearing weight and low psi tires wherever possible.
- .4 Provide barriers around trees which may be affected by work, including staging areas.
 - .1 Locate barrier 1 metre beyond Dripline.
 - .2 Barrier to consist of protective wood framework covered with plastic construction fence material, extending from grade level to a height of 2 metres.
 - .3 Maintain barriers in good repair throughout duration Work.

- .4 Remove barriers upon completion of Work.
- .5 Where these restrictions are not possible, seek acceptance of Departmental Representative for alternative solutions.
- .5 Damage to trees due to Contractor's operations:
 - .1 Broken branches 25 mm or greater in diameter: cut back cleanly at break, or to within 10 mm of their base, if substantial portion of branch is damaged Departmental Representative will direct.
 - .2 Exposed roots 25 mm or larger: cut back cleanly to soil surface within five calendar days of exposure.
 - .3 Damaged bark: neatly trim back to uninjured bark, without causing further injury, within five calendar days of damage.
- .6 Prune trees close to tree trunk, make shallow undercut first, then follow with top cut. Do not use axe for pruning.
- .7 Cut trees at ground level and do not leave pointed stumps.
- .8 Pay special attention to fruit bearing shrubs.
- .9 Clear vegetation by hand from unstable or erodible banks, where possible avoid using heavy machinery.
- .10 Use native species for tree planting and ground cover with mulch to prevent erosion and help seeds germinate.
 - .1 Keep site stabilized if there is less than four weeks remaining in growing season.
 - .2 Visual site inspections to be conducted in spring and fall for first two growing seasons following planting. If any plantings are found dead or failing, mitigation measures to be implemented to reduce risk of future failure and plants to be replaced and monitored accordingly.
- .11 Trees, shrubs and vegetation which are to remain throughout construction should be properly identified and delineated.
- .12 Where practical, the branches of the large trees should be trimmed back as the first option rather than cutting the entire tree.
- .13 Grubbing should not be conducted unless a suitable planting plan and Erosion and Sediment Controls are in place. Discuss with EA officer for suitable plans.
- .14 In larger areas to be cleared attempts should be made to keep trees >15 cm DBH intact and instead remove lower limbs (< 2.5 m high).
- .15 Delineate areas to be avoided with flagging tape or temporary fences.
- .16 Ensure appropriate handling procedures are followed for noxious weeds such as Giant Hogweed or Wild Parsnip.
- .17 Root systems of trees identified to remain should be properly delineated and fenced off, so as to protect the root systems from being crushed and impacted by machinery

- .18 In the event that the installation of root-protectant fencing is not possible or ideal, alternative measures, as approved by PCA, must then be implemented. Such measures must provide a sufficient amount of soil compaction prevention with regards to the highest level of activity to occur within the immediate area of protection.
- .19 Disturbance of vegetation along the shoreline must be limited to what is required.

1.12 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Waterways to be kept free of excavated fill, waste material and debris.
- .3 Do not use waterway beds for borrow material.
- .4 Do not release deleterious materials into waterway.
- .5 Do not use salt as deicer or sand for traction within 30 m of waterway.
- .6 Where ice is safety concern, use environmentally acceptable deicing or traction materials approved by Departmental representative.
- .7 Ensure temporary access structures such as scaffolding placed in waterbodies are free of earth material, and excess, lose or leaking fuel, lubricants, coolant and other deleterious material that could enter waterway.
- .8 Use biodegradable hydraulic fluids for machinery that will be working around the river.

1.13 AIR QUALITY AND NOISE CONTROL

- .1 Minimize noise levels from construction activities by using proper muffling devices, in addition to appropriate timing and location of these activities to reduce or minimize effect of noise on nearby residents, recreationists, and wildlife.
- .2 On- site vehicles to have a Drive Clean Emissions Report in accordance with O. Reg. 361/98: Motor Vehicles under the Environmental Protection Act, R.S.O.
 - .1 Departmental Representative or PCA Environmental Authority may stop a vehicle if they believe vehicle is emitting excessive exhaust smoke or suspect emission control equipment has been tampered with.
- .3 Keep a record of complaints and issues to monitor and mitigate public complaints.
 - .1 Contractor to address issues that arise.
- .4 Comply with Municipal Noise By-Laws.
- .5 Notify public of planned activities that may cause disturbances and schedule them to avoid sensitive time periods.

- .6 Minimize idling of construction equipment and machinery.
- .7 Use well maintained equipment and machinery fitted with fully function emission control systems, mufflers, exhaust baffles, and engine covers.

1.14 HAZARDOUS MATERIALS

- .1 Place materials defined as hazardous or toxic waste in designated containers.
- .2 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Human Resources Development Canada, Labour Program.
- .3 Store Hazardous Materials in secure areas on impermeable pads, provide berms if necessary.
- .4 Compressed fuel tanks shall be placed off to side of work area when not in use and shall be equipped with an impact-protection barrier.

1.15 WILDLIFE PROTECTION

- .1 Detail procedures for preventing turtle entry and nesting within disturbed projects area in BEMP.
- .2 Place temporary reptile exclusion fencing around stockpiled material and construction areas that may attract turtle nesting activities.
 - .1 Reptile exclusion fencing must follow the guidance in the document titled Species at Risk Branch, Best Practices Technical Note, Reptile and Amphibian Fencing, Ver. 1.1, developed by the Ontario Ministry of Natural Resources and Forestry:
http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_tx_rptl_amp_fnc_en.pdf
- .3 BEMP to detail procedures for avoiding disturbance to wildlife and nesting birds.
- .4 Do not use synthetic plastic erosion control mats or blankets to prevent entrapment hazard for turtles.
- .5 Standard sediment fencing on site should not have mesh/netted backing.
- .6 Retain the services of a qualified biologist to educate workforce on potential wildlife which could occur in the vicinity of the work area and measures to avoid wildlife.
- .7 When possible, complete work during daylight. If nighttime lights are used, they are to be installed so as to illuminate the work area only to minimize impacts to nighttime activities of wildlife.

1.16 AQUATIC LIFE PROTECTION

- .1 In water work to be completed before March 15 to protect fish populations.
- .2 Should conditions at the work site indicate that there are unforeseen negative impacts to fish or their habitat, cease all work until the problem has been corrected and/or appropriate guidance has been obtained from Parks Canada.
- .3 Report to Departmental Representative and PCA Environmental Authority, invasive species found within project area.
- .4 Aquatic invasive species to be euthanized rather than returned to water system.

1.17 SPECIES AT RISK

- .1 Potential species at risk in project areas include: Eastern Whip-poor-will, Eastern Musk Turtle, Blanding's Turtle, and Snapping Turtle.
- .2 Provide training to all employees before beginning work on site on identifying species at risk and procedures to follow if species at risk is encountered.
- .3 Stop work and contact Departmental Representative and PCA Environmental Authority on how to proceed if species at risk does not or cannot leave site.
- .4 Perform daily site sweeps before beginning work to ensure that there are no turtles in work area.
- .5 Minimize disturbed areas and clearly mark work space.
- .6 If species at risk are observed or encountered, animal must not be harmed or harassed, stand back and allow animal to leave site.

1.18 INVASIVE SPECIES

- .1 Clean mud, dirt, and vegetation off machinery and equipment before entering work site and before leaving work site. Inspect and clean in accordance with Clean Equipment Protocol for Industry:
http://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf
- .2 Submit photo and report to Invading Species Hotline (1-800-563-7711) or online at EDDMapS Ontario, <https://www.eddmaps.org/ontario/> and to Departmental Representative and PCA Environmental Authority if an invasive species is suspected.
- .3 Conduct site assessment for invasive plant infestations prior to carrying out field activities.
- .4 Move only contaminate-free materials to non-infested areas to prevent spread of invasive plants.

- .5 Familiarize workers with invasive species potentially present within work site areas including but not limited to: European Buckthorn, Japanese knotweed, and Zebra mussel.
- .6 Properly dispose of any found invasive species to ensure no further propagation.
- .7 Preventative and Control Measures, as identified in the Ontario Waterways (2017) document to be incorporated into the BEMP and implemented by the Contractor.

1.19 WATER QUALITY

- .1 Do not exceed Ontario Drinking Water Quality Guidelines due to project activities.
- .2 Place only washed and clean material free of fine particulate matter in or near water where previously planned or authorized.
- .3 Snow containing salt or sand may not be dumped or allowed to melt into waterway.
- .4 Water quality to be maintained in accordance with Canadian Council of Ministers of the Environment Canadian Water Quality Guidelines for the Protection of Aquatic Life.
- .5 Water with pH > 9 must be treated to release directly into the watercourse.
- .6 Water with pH > 12.5 is treated as a hazardous waste in accordance with Ontario Regulation 347 of the Environmental Protection Act and water must be removed from site.
- .7 Stop work in immediate area in the event pH, sedimentation, or turbidity exceed identified thresholds and implement mitigation measures accepted by Departmental Representative.
- .8 Store chemicals and materials in dry storage to prevent infiltration of leachate into water table or surface run-off.

1.20 FLOODS, EXTREME WEATHER, AND ICE FORMATION

- .1 Design project worksite to withstand variable weather conditions.
- .2 Minimize risk of inundation due to wet weather by grading, providing drainage and covering or protecting surfaces.
- .3 Stabilize work area against impact of high flow and heavy rainfall events at the end of each workday.
- .4 Restrict construction activities during wet weather to reduce surface run-off from exposed Work areas.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 CLEANING

- .1 Progress Cleaning: Leave Work area clean at end of each day.
- .2 Separate and recycle materials that can be recycled.
- .3 Clean areas under contract to condition at least equal to that previously existing and to approval of Departmental Representative.
- .4 Store all oils, lubricants, fuels and chemicals in secure areas on impermeable pads; provide berms and secondary containment systems as necessary.
- .5 Concrete debris to be placed into watertight container daily, and or more frequently as directed.
- .6 Permit no amount of debris, trash, or garbage to accumulate on-site.
- .7 Do not bury rubbish on site.
- .8 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .9 Waste generated will be disposed according to regulations (i.e. O. Reg 102/94 and O. Reg. 558/00, R.R.O. 1990, 347).
- .10 Spills:
 - .1 Have environmental emergency response plan in place, spill kit, and other materials readily available on-site to respond quickly if spills occur.
 - .1 Spill kit to be maintained on site.
 - .2 Contractor to ensure adequate additional resources available
 - .2 Report spills immediately to Departmental Representative, Client Department, and Ontario Ministry of Environment Spills Action Centre (Telephone No. 1-800-268-6060).
 - .3 Secure source of spill to stop flow of spill and isolate area of spill.
 - .4 Using appropriate safety precautions, collect liquid or solidify liquid with an inert, noncombustible material, or absorbent pads.
 - .5 Clean-up, remove, and dispose of contaminated materials in accordance with MSDS or as directed by Ontario Ministry of Environment.
 - .6 Be responsible for costs of cleaning up spills by method accepted by Departmental Representative and Client Department.
 - .7 Submit documentation of remediation techniques and test results.
 - .8 Provide training to site personnel in the use of the kit.

- .9 Spill response materials to be compatible with the type and quantity of materials being handled.
- .11 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
 - .1 Temporary structures, used or maintained for purpose of this project must be removed from site after completion of project.

3.2 DISPOSAL OF WASTE MATERIALS

- .1 Waste subject to Ontario Environmental Protection Act to be transported with valid "Certificate of Approval for a Waste Management System" to site approved by Ontario Ministry of the Environment to accept that waste.
- .2 Obtain and submit Waste Generator Numbers, permits, manifests, and other paperwork necessary to comply in accordance with Section 01 74 20 - Waste Management and Disposal.
- .3 Recyclable material and waste to be removed from site in accordance with all Federal, Provincial, and Municipal regulations to licensed disposal facilities in accordance with Section 01 74 20 - WASTE MANAGEMENT AND DISPOSAL and in accordance with regulations (i.e., O. Reg. 102/94 and O. Reg. 558/00, R.R.O. 1990, 347.
- .4 Dispose of contaminated excavated materials in designated areas in accordance with approved BEMP.
- .5 Excavation, filling, pumping, towing, hauling, disposal and dumping operations for excavation will employ such methods and equipment to ensure no loss of materials into waterways.

3.3 EROSION, SEDIMENT AND DUST PROTECTION

- .1 Submit Erosion, Sediment and Dust Control Mitigation as part of BEMP to demonstrate:
 - .1 Focus primarily on sediment and dust control and erosion control secondary.
 - .2 Areas to be controlled: including adjacent areas that could be negatively impacted by construction activities.
 - .3 Consideration of project schedule in selecting environmental controls.
 - .4 Consideration of seasonal requirements and plans for design controls and practices for controlling associated erosion and sediment.
- .2 Prior to starting work that will create dust or debris, install effective mitigation techniques for erosion, sediment, dust and debris control in accordance with Federal, Provincial and Municipal laws and regulations.
 - .1 Maintain these protective measures at all times, including during shut down periods.
 - .2 Choose appropriate controls based on particle size present in sediment.
- .3 Provide sediment barrier around work areas where, due to activities, sediment or dust may enter the waterway.

- .4 Maintain standby supply of pre-fabricated sediment fence barrier, or an equivalent ready-to-install sediment control device.
- .5 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .6 Implement erosion and sediment control measures prior to Work and maintain during Work phase. The following principles should be considered:
 - .1 Reduction of sediment development through sediment collection or anchoring.
 - .2 Sedimentation of mobilized sediments.
 - .3 Filtration of sediment carrying flows.
 - .4 Collection of captured or contained sediments.
 - .5 Treatment of pH.
- .7 Consider particle size present in the sediment to select appropriate control options.
- .8 Erosion and sediment controls must be selected to treat particle size present in the native soils and sediments on Work.
- .9 Environmental protection measures shall be checked after each extreme weather event. Avoid activities that could lead to erosion during excessively wet weather conditions; monitor forecasts for heavy rainfall watches & warnings.
- .10 All disturbed areas of work site shall be stabilized immediately and re-vegetated as soon as conditions allow. All exposed areas should be covered with erosion control blankets or other measures to keep the soil in place and prevent erosion until vegetated in the spring.
- .11 Sediment control measures and exclusion fencing must be removed in a way that prevents escape or re-suspension of sediments.

3.4 OPERATION AND MAINTENANCE OF EQUIPMENT

- .1 Maintain machinery and equipment to be clean, free of leaks, and in optimal working condition.
 - .1 Ensure measures are in place to minimize impact of spills.
- .2 Provide and use drip trays under all fuel-powered equipment and machinery to prevent discharge of oil, grease, antifreeze, or other materials into ground or waterways.
 - .1 Drip trays shall be sized to encompass the perimeter of the machinery/equipment and shall provide ample spacing for refueling activities.
- .3 Equipment and heavy machinery to meet or exceed applicable emission requirements.
- .4 Operate machinery from stable location.
- .5 Leave machinery running only while in actual use, except where extreme temperatures prohibit shutting machinery down.

- .6 Designate a re-fueling depot with spill management equipment in place.
- .7 Vehicle and equipment maintenance and refueling to be conducted over impermeable/absorptive material situated at a designated area that is located at least 30 m away from nearest waterway.
 - .1 If 30 m is not possible area should be reviewed by Departmental Representative.
- .8 Store oils, lubricants, fuels, and chemicals in secure areas on impermeable pads.
- .9 There shall be no discharge of chemicals and cleaning agents in or near aquatic habitats; all such substances shall be disposed of at a facility licensed to receive them.

3.5 GROUTING ACTIVITIES

- .1 Avoid grouting activities during or immediately after wet weather conditions.
- .2 Ensure use of grout, sealants, and other compounds in accordance with appropriate Product Technical Data Sheet.
- .3 Remove dust and debris generated as result of concrete work and dispose off-site ensuring material does not enter waterway. Isolate all work from waterway.
- .4 Place concrete and lime-containing debris into watertight container daily, or more frequently as directed.
- .5 In event of a release of grout Notify Departmental Representative, PCA Environmental Authority and Ontario Ministry of Environment Spills Action Center (Tel: 1-800-268-6060).
 - .1 Clean up and execute remediation immediately in accordance with provincial and federal regulatory requirements and accepted by PCA Environmental Authority.
 - .2 Install additional sediment barriers as necessary/applicable.
 - .3 Document remediation, testing, results to be submitted to Departmental Representative and PCA Environmental Authority.
- .6 As concrete leachate is alkaline and highly toxic to fish and other aquatic life, ensure that all works involving the use of concrete, cement and other Portland cement or lime-containing materials (concrete) will not deposit, directly or indirectly, sediments, debris, concrete, concrete fines, wash or contact water into or about any watercourse. Concrete waste water must be removed from site.
 - .1 Refer to ESG-5-C - Concrete Pour Operations and Grouting and strictly follow the defined guidelines.
- .7 Provide containment facilities for the wash-down water from grouting equipment and other tools and equipment.
- .8 Dispose of all waste water in a location where it will not enter subsurface drains, water bodies or storm drains.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 Contractor responsible for all Quality Control. Inspection by Departmental Representative does not relax Contractor's responsibility to carry out Quality Control. Quality Control procedures to be performed by Contractor and paid by Contractor.

1.2 RELATED SECTIONS

- .1 Section 05 50 01 - Metal Fabrications.

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 No measurement of Quality Control.
- .2 Include costs in Lump Sum Price items of work for which Quality Control is required.

1.4 INSPECTION

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

1.5 QUALITY CONTROL AGENCIES

- .1 Contractor to engage independent Quality Control Agencies for purpose of Quality Control to inspect, test, verify work and provide feedback on work including work of sub-contractors and suppliers in accordance with Contract Documents.

- .1 CSA W178.2 Level II certified welding inspector.
- .2 Weld inspector to review fabrication drawings and welding procedures.

1.6 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.

1.7 PROCEDURES

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for inspections/tests, in order that attendance arrangements can be made.
- .2 Submit drawing, procedures and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

1.8 REJECTED WORK

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

1.9 REPORTS

- .1 Submit Weld Inspector reports to certify welding standards conformance.
- .2 Submit copy of mill test reports prior to metal fabrication.
- .3 Provide copies to Subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

1.10 MILL TESTS

- .1 Submit mill test certificates as required of Quality Assurance.

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 SECTIONS

- .1 Section 01 20 01 - Site Access.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA Z797-09(R2014), Code of practice for Access Scaffold.
 - .2 CAN/CSA-Z321-[96(R2006)], Signs and Symbols for the Occupational Environment, withdrawn but still available from CSA, CCOHS and Techstreet.

1.3 SUBMITTALS

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

1.4 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced/gated 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 have to be graveled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all temporary work after use.

1.5 SCAFFOLDING

- .1 Scaffolding in accordance with CSA Z797.
- .2 Ensure scaffolding placed in waterbodies are free of earth material, and excess, lose or leaking fuel, lubricants, coolant and other deleterious material that could enter waterway.

1.6 HOISTING

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

1.7 SITE STORAGE/LOADING

- .1 Confine work and operations of employees to areas defined by Contract Documents. Do not unreasonably encumber premises with products, equipment, debris piles, and removable bins outside of pre-approved staging area determined in advance of Work.
- .2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.8 CONSTRUCTION PARKING

- .1 Parking will be permitted on site provided it does not disrupt performance of Work.
- .2 Provide snow removal during period of Work.
- .3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.
- .4 Clean construction runways and taxi areas where used by Contractor's equipment.

1.9 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning signs, are permitted on site.
- .2 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN/CSA-Z321.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by Departmental Representative.

1.10 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto roadways and restore roadways to original conditions or better.

RID Poonamalie Dam	CONSTRUCTION FACILITIES	Section 01 52 00
Phase III		Page 3
Catwalk		
Proj. No. R.066861.319		2019-07-31

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

- .1 This section specifies requirements for removals to complete work as indicated by drawings and specifications.
- .2 Work includes but is not limited to:
 - .1 Removal and salvage of items on existing concrete overflow spillway: timber splashboard, 10 splash board steel brackets, and anchoring bolts on these items.
 - .2 Removal and dispose of 2 ladders.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Payment of miscellaneous removal and disposal to be included in Lump Sum Price.

1.3 PROTECTION

- .1 Protect existing structures or parts of structures designated to remain. In the event of damage, make repairs and replacements to the approval of, and at no additional cost, to the Departmental Representative.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Inspect the site and verify with the Departmental Representative objects designated to be removed and objects to be preserved.

3.2 REMOVALS

- .1 Do not disturb adjacent work designated to remain in place.
- .2 Items designated to be removed are 2 ladders and associated anchoring bolts.
- .3 Items not designated to be salvaged are to be disposed of in a manner approved by the Departmental Representative.

RID Poonamalie Dam	REMOVALS	Section 02 41 21
Phase III		Page 2
Catwalk		
Proj. No. R.066861.319		2019-07-31

3.3 SALVAGE

- .1 Carefully dismantle materials designated to be salvaged and stockpile at locations designated by the Departmental Representative.
 - .1 Timber splash board.
 - .2 10 steel brackets.

3.4 REINSTALLATION

- .1 Reinstall all items which were removed as a result of construction activities to the Departmental Representative's approval.
 - .1 Install timber splash board into the new steel splashboard support.
 - .2 Install 8 steel brackets as indicated.
 - .3 Supply new anchoring bolts if existing bolts are damaged.

3.5 DISPOSAL OF MATERIALS

- .1 Dispose of materials not designated for salvage or reuse in work off the site.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This section specifies requirements for drilling holes for anchors, and supply and installation of anchors, as described by the drawings and the specification.
- .2 Fill guard post holes on the South wingwall with grout.

1.2 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00.

1.3 SEQUENCE OF WORK

- .1 Anchors shall be installed after test fitting of steel structure.

1.4 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measurement Procedures: in accordance with Section 01 22 01.
- .2 Work covered by this section will be paid for under payment items included in Lump Sum Price.

1.5 REFERENCES

- .1 American Society for Testing and Materials (ASTM):
 - .1 ASTM A123/A123M - 17 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A108-13 Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
 - .3 ASTM F1554-15e2 Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
 - .4 ASTM F3125/F3125M - 18 Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.

1.6 SUBMITTALS

- .1 Submit following for review 5 days prior to work.
 - .1 Installation Procedures
 - .2 Material Technical Data Sheets (MTDS)
 - .3 Material Safety Data Sheets (MSDS)
 - .4 Manufacturer's recommended anchor installation procedures

- .2 Keep copy of accepted Contractor's installation procedures and Manufacturer's Material Technical Data Sheets, Material Safety Data Sheets, and recommended installation procedures at work site.

PART 2 - PRODUCTS

2.1 ANCHORS

- .1 Anchors to be complete with all accessory parts as specified by the manufacturer, and additional accessories indicated on the drawings or described in the specification.
- .2 Anchor bolts: to CSA G40.21 Grade 300W or ASTM F1554 Grade 36.
- .3 All steel components of the anchor, to be hot dipped galvanized to ASTM A123.

2.2 EPOXY GROUT

- .1 Acrylic Epoxy Adhesive: pre-packaged, non-shrinkage, two component adhesive consisting of base resin and fast set hardener, 100% solids.
- .2 Formulated for fast curing and proper alignment installation in wide range of solid base material temperatures from +40°C to -23°C.
- .3 Store materials as specified by the manufacturer.

PART 3 - EXECUTION

3.1 GENERAL

- .1 Except as specified in this section, install to the manufacturer's recommendations.
- .2 Anchors may vary in length. Cut to lengths as indicated and as required.

3.2 COLD WEATHER PROTECTION

- .1 For all anchors: provide housing and heating as per manufacturer's recommendation. This includes ambient temperature within hoarding as well as pre-heating requirements for suitable substrate temperature.
- .2 Temperature of concrete being bonded must be 7 degrees C and be maintained at this temperature for 24 hours during curing of epoxy.

3.3 DRILLING

- .1 Ensure the location of the holes are proper before drilling. Survey the site to guarantee for fitting of the holes.
- .2 Use rotary drilling equipment or core drilling equipment, not percussion drilling equipment.
- .3 If rotary drilling equipment causes damage, use diamond core drilling equipment.

3.4 INSTALLATION

- .1 Supply cranes suitable for site conditions and of sufficient size to lift steel structures and install in the designated area.
- .2 Submit Installation Procedure to guarantee fitting all steel catwalk components on site and to properly locate the anchor holes on concrete foundation.
- .3 Drill holes to diameter recommended by manufacturer. Clean thoroughly by air or water jet.
- .4 Prepare forming, install anchors, mix and pour the epoxy according to manufacturer's instructions.
- .5 Ensure proper alignment of steel base plates.
- .6 Do not disturb anchors between specified gel time and cure time.
- .7 Provide support for steel columns and anchors in position until epoxy has set.
- .8 Allow epoxy to set completely prior to next stage of work.

3.5 MANUFACTURERS SPECIFICATIONS

- .1 Keep a manual of manufacturers' specifications and installation procedures at the work site.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This section specifies requirements for supply and installation of new metal parts described by the drawings and specification.
- .2 Work includes but is not limited to supply and installation of:
 - .1 Galvanized steel catwalk structure.
 - .2 Galvanized steel gratings.
 - .3 Guardrails and posts.
 - .4 Other Metal Accessories.

1.2 RELATED SECTIONS

- .1 Section 01 45 00 - Quality Control.
- .2 Section 05 05 20 - Anchors.

1.3 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM):
 - .1 ASTM A123/A123M-17, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A786/A786M-15, Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.
 - .3 ASTM D7803-19, Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Powder Coating.
 - .4 ASTM E935-13e1, Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.
 - .5 ASTM F436/F436M-18a Standard Specification for Hardened Steel Washers Inch and Metric Dimensions.
 - .6 ASTM F3125 / F3125M - 18, Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
- .2 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA):
 - .1 CSA G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA S16-14, Design of Steel Structures.
 - .3 CSA W48-18, Filler Metals and Allied Materials for Metal Arc Welding.
 - .4 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
- .4 National Association of Architectural Metal Manufacturers (NAAMM):
 - .1 NAAMM AMP 500-06, Metal Finishes Manual.

- .2 NAAMM AMP 510-92, Metal Stair Manual.
- .3 NAAMM MBG 531-17, Metal Bar Grating Manual.

1.4 SUBMITTALS

- .1 Fabrication drawings:
 - .1 Submit fabrication drawings showing designed assemblies, components and connections are stamped and signed by qualified professional engineer licensed in the Province of Ontario, Canada
 - .2 Submit mockup sample display railing colour and coating surface.
 - .3 Submit manufacturer's instructions, printed product literature and data sheets for: galvanization, plates, accessories, and bolts.
- .2 Erection procedures:
 - .1 Submit erection procedures indicating details and information necessary for assembly and erection purposes including:
 - .1 Description of methods.
 - .2 Sequence of erection.
 - .3 Type of equipment used in erection.
 - .4 Temporary support while install base plates with anchor bolts.
- .3 Welding Procedures and Certificates
 - .1 Submit all prequalified welding procedures that will be used on the project. Such procedures to be prepared and sealed by a CSA registered Welding Engineer.
 - .2 Non-destructive Examination (NDE) certifications and procedures shall be submitted to the Departmental Representative upon request.
 - .3 Submit certificate verifying certification by the Canadian Welding Bureau to the requirements of CSA W47.1 and copies of welding qualification certificates and identification cards for welders or welding operators.
 - .4 Manufacturer's certification stating conformity of the welding filler materials to this specification.
- .4 Quality Control Submittals:
 - .1 Submit Weld Inspector reports to certify welding standards conformance.
 - .2 Submit copy of mill test reports 4 weeks prior to fabrication of structural steel.
 - .1 Mill test reports to show chemical and physical properties and other details of steel to be incorporated in project.

1.5 MEASUREMENT AND PAYMENT

- .1 In accordance with Section 01 22 01.
- .2 Payment for metal structures, gratings, railings, stairs and other accessories shall be included in the Lump Sum Prices.

1.6 QUALITY CONTROL

- .1 Companies to be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel structures and/or CSA W55.3 for resistance welding of structural components.
- .2 Perform Quality Control procedures on welding and finishing to Section 01 45 00 - QUALITY CONTROL.
- .3 Ensure fabricated metals are in accordance with required physical properties and manufacturer's product data.
- .4 Perform visual inspection of all welds by:
 - .1 Certified Welding Inspector certified in accordance with CSA W178.2.
 - .2 Welding inspection to be performed to acceptance criteria of CSA W59-13, Section 7.
- .5 Generate report at the end of fabrication confirming that all welds were visually inspected and conformed to standards. Ensure proper materials and procedures are followed for handrail work.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations.
 - .2 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 DESIGN REQUIREMENTS

- .1 Detail connections as shown on design drawings.
- .2 Design connections and other work not detailed on drawings, but necessary for completion of the Work, in accordance with requirements of Ontario Building Code and CAN/CSA-S16.

2.2 MATERIALS

- .1 Structural Steel: to CAN/CSA G40.20/G40.21 Grade 350W for all steel shapes including W sections, channel sections, HSS sections, channels and angles.
- .2 Bolts, nuts and washers: to ASTM F3125, Grade A325 Type 1, unless specified otherwise.
 - .1 Use ASTM F436 washer or 5/16 in. thick common plate washer on all slotted holes.

- .3 Welding Materials: to CSA W59, type required for materials being welded and certified by Canadian Welding Bureau.
- .4 Hot-Dip Galvanizing: galvanize all steel to ASTM A123/A123M, minimum zinc coating of 600 g/m², Coating Grade 85.
 - .1 Touch-Up Primer for Galvanized coating. SPCC 20 Type I Inorganic zinc rich.
 - .2 Applied to all steel members, assemblies, parts, etc. unless noted otherwise.
- .5 Grating:
 - .1 Conform to Metal Bar Grating Manual ANSI/NAAMM MBG531.
 - .2 Type W 30-102 with bearing bar size 25 mm x 3.2 mm, serrated, unless noted otherwise.
 - .3 Hot-dip galvanized in accordance with ASTM A123.
 - .4 Band ends of grating panel. Banding bars to be of the same height as the main bearing bar.
- .6 Railings:
 - .1 Steel pipe to ASTM A53/A53M and ASTM A501, seamless, carbon steel, schedule 80.
 - .2 Guardrail, guardrail posts to be finished with black enamel by powder coat application.
 - .3 Prior to powder coating, all surfaces to be chemically cleaned and treated and prepared in accordance to ASTM D7803 and manufacturer's recommendations.
 - .4 Powder coating to be a polyethylene copolymer thermoplastic designed for maximum mechanical performance, impact resistance and UV-stability, applied to a dry film thickness of 0.5 mm minimum by electrostatic coat and oven cured to a smooth and even surface. Zero VOC content.
 - .5 All bolts/nut for railing to be stainless steel.

PART 3 - EXECUTION

3.1 FABRICATION

- .1 Fabricate structural steel in accordance with CAN/CSA-S16, CISC Code of Standard Practice for Structural Steel, and in accordance with reviewed shop drawings.
- .2 Fabricate gratings, guardrails, and stairs in accordance with reviewed shop drawings.
- .3 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .4 Miter, cope, and weld connections, then grind to smooth finish to CSA W59 and CSA W48.
- .5 Unless noted otherwise, all structural steel members, miscellaneous steels, and connections shall be zinc 'hot-dip' galvanized after fabrication in accordance with all pertinent ASTM standards and primarily ASTM A123/A123M.

- .6 Where welding after galvanizing is necessary, the zinc shall be removed by grinding and the damage repaired in accordance with ASTM A780/A780M.
- .7 Test fit and shop assemble work before deliver to site.

3.2 FINISH APPLICATION

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

3.3 CONNECTION TO EXISTING WORK

- .1 Survey the site, verify dimensions and condition of existing work, report discrepancies and potential problem areas to Departmental Representative for direction before commencing fabrication.

3.4 MARKING

- .1 Mark materials in accordance with CSA G40.20/G40.21. Do not use dye stamping. When steel is to be left in unpainted condition, place marking at locations not visible from exterior after erection.
- .2 Match marking: shop mark bearing assemblies and splices for fit and match.

3.5 ERECTION

- .1 Fit and shop assemble work, ready for erection
- .2 Erect structural steel, as indicated and in accordance with CAN/CSA-S16, CISC Code of Standard Practice for Structural Steel, and in accordance with reviewed erection procedures.
- .3 Install gratings, guardrails, and stairs in accordance with contract drawings and manufacturer's instructions.
- .4 Field cutting, drilling, or altering all members: to approval of Departmental Representative.
- .5 All high-strength bolts are to be installed to a snug-tight condition in accordance with CAN/CSA-S16 and CISC Code of Standard Practice for Structural Steel.
- .6 Provide cold weather protection when erect work in temperature below 7 degrees C.

RID Poonamalie Dam	METAL FABRICATIONS	Section 05 50 01
Phase III		Page 6
Catwalk		
Proj. No. R.066861.319		2019-07-31

3.6 FIELD TOUCH-UP

- .1 The Contractor is responsible for field touch-up coating. Field touch-up coating must provide an unbroken coating film equal to the original coating in accordance with this specification.
- .2 All welds on galvanized members, and where galvanizing has been damaged during erection and handling, are to be touched up with Galvafroid zinc rich paint.
- .3 All railing members, where powder-coating has been damaged during erection and handling, are to be touched up with a compatible product recommended by the powder coating subcontractor.

3.7 CLEANING

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

END OF SECTION