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G1J 0C7

**SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

**Vendor/Firm Name and Address
Raison sociale et adresse du
fournisseur/de l'entrepreneur**

Issuing Office - Bureau de distribution
TPSGC-PWGSC
601-1550, Avenue d'Estimauville
Québec
Québec
G1J 0C7

Title - Sujet Nouveau havre à Harrington Harbour	
Solicitation No. - N° de l'invitation F3731-170101/A	Amendment No. - N° modif. 007
Client Reference No. - N° de référence du client F3731-170101	Date 2017-11-17
GETS Reference No. - N° de référence de SEAG PW-\$QCM-032-17241	
File No. - N° de dossier QCM-7-40184 (032)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2017-11-29	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Girard, Isabelle	Buyer Id - Id de l'acheteur qcm032
Telephone No. - N° de téléphone (418) 649-2847 ()	FAX No. - N° de FAX (418) 648-2209
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

AMENDMENT 007

Title: Development of a Fishing Harbour, Harrington Harbour

Included in the present amendment:

1. Questions and Answers 65 to 78
2. Amendment of Section 05 14 15
3. Amendment of Section 05 50 00

QUESTIONS AND ANSWERS:

Question 65 : Is it possible to have more details on the gangway and the railguard to allow the supplier to understand the design?

Answer 65 : Gangway

A diagram of the gangway is presented on page 12 of the plans and section 05 14 15 of the specifications has been updated (see the attached amended section).

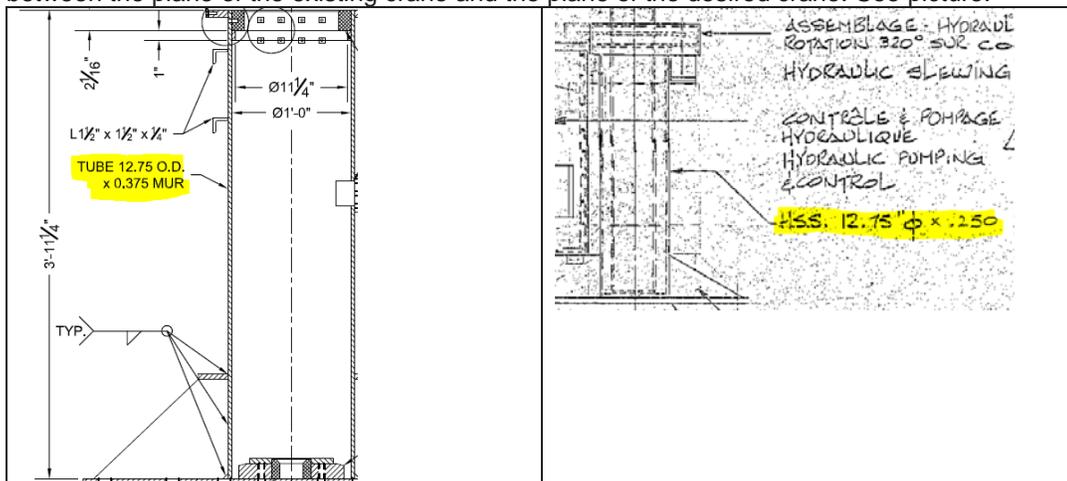
Railguard

A diagram of the railguard is presented on sheets 11 and 13 of the plans. Section 05 50 00 has been updated (see the attached amended section).

Question 66 : Following the picture of the power line provided in Addendum 1, we would like to have details regarding Hydro-Québec (HQ) for the connection of the new 600V input. Should we just wire the mast? Is this line private or HQ? Question to know if we must pass an aerial cable between the mast and this pole and then to the line of HQ ... If so please specify how far should we bring it?

Answer 66 : Contractor should install an aerial cable between the mast and the pole, and also between the pole and the HQ line. Consider a 50 m.l. cable in total. A good coordination must be in place with HQ for the connection. HQ is aware of this project and the DFO's Project Authority will follow up with the Contractor and HQ.

Question 67 : For the modifications of the crane, can we confirm that it is only necessary to replace the mat HSS 4 " x .313 (16' of range) by a HSS 6' 'x 4' 'x 3/8' 'of 23'-1' 'and 13 / 16th? Because there seems to be other differences between the plane of the existing crane and the plane of the desired crane. See picture:



Should we consider other modifications (pulleys, cable, etc.) for the work to be done? A description of the changes to be made would be appreciated.

Answer 67 : The plans provided for the work to be done on the crane during the initial call for tenders are incorrect. A thickness of 0.25 inch is the right thickness to consider. Additional specific plans and specifications of the work to be done are provided in the *Attachments* section of the Tender Notice. These are the original documents for works to undertake in Mingan, but the same documents and the same work can be applied to the current Harrington Harbor crane. In summary, a new boom must be built. The works consist of (see Devis technique):

- Build a new boom as shown on drawing 103518-M-002. The boom must be supplied assembled with pulleys and axles and all new hardware required.
- Provide a new boom suspension cable, steel cable type 6 x19 with steel core, diameter 3/8 ", length 75'-0 ". The cable has a lug with splice at one end only.
- Uninstall and reinstall the crane at its new location.
- Connect the electricity.
- Grease the necessary elements.
- Perform the functional tests and load tests.
- Adjust the pressures.

Question 68 : Section 06 03, Part 2 2.1.2.1 if the wood is SFI or PEFC certified or comes from Participating sawmill, would that be acceptable?

Answer 68 : We will accept SFI and PEFC certifications, as well as the FSC. We request that the wood be completely stamped with the label (see answer on the question # 72).

Question 69 : Section 06 03 Part 3, 3.1.2.1 and Section 06 40 00 Part 1, 1.4.2
If the wood is wrapped package by package (paper wrap) is it acceptable?

Answer 69 : Yes it is acceptable to wrap them in packages, as long as the chosen material is suitable.

Question 70 : Section 06 03 Part 3 3.2.8.1
The balls must have 200mm @ 250mm. At the smallest or the biggest end?

Answer 70 : 200 @ 250 mm at the biggest end.

Question 71 : Section 06 05 73 Part 1 1.3.1
Does the label on each packet indicating the " tally " and the load # for the treatment would be acceptable?

Answer 71 : If it is shown that all pieces of package were in the same batch of treatment, that will be acceptable.

Question 72 : Section 06 05 73 Part 1, 1.4.2.2
CSA 0322 relates to foundation wood, should it be taken into account?

Answer 72 : It is the stamping of wood that must comply with the stamping indicated in this standard.

Question 73 : Section 06 03 73 Part 1, 1.4.2.3.2 and Section 06 05 73 Part 3, 3.2.3
A process of fixing the ACC solution will be carried out after treatment (drying) but no report of the degree of humidity. Is it acceptable?

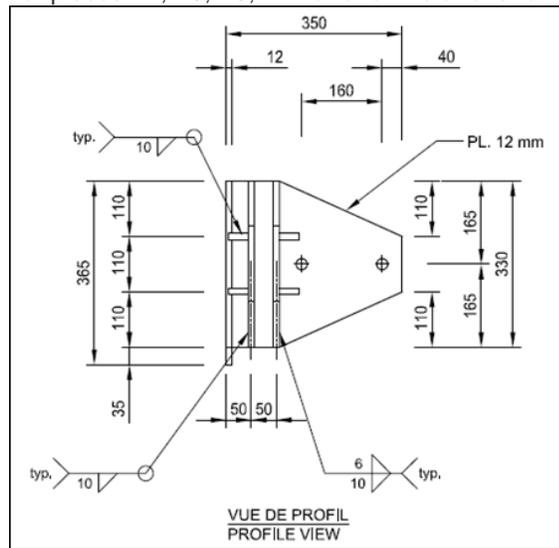
Answer 73 : An answer will follow shortly.

Question 74 : Section 06 05 73, Part 1, 1.5.1 Inspection report for processing will be made by our processing plant according to the ISO Quality System. Is it acceptable?

Answer 74 : Yes it is acceptable. Plant certification and inspector certification must be provided to the Department Representative prior to inspection to be acceptable.

Question 75 : Welding parts T1, T11 and T5 requires welding all around the 2 identical plates. The spacing between these 2 plates does not allow us to do it. Would it be possible to weld one all around, and the 2nd only outside with a 10mm solder?

Answer 75 : The inside weld of the second plate should be 6 mm (instead of 10 mm), which allows for the use of smaller equipment and smaller material between the two plates. See below the typical sketch to use for pieces T1, T5, T8, T11 and for the anchor arm plates (sheet 11).



Question 76 : In sections 6.3 and 6.7 of the bid form and on plan sheet 02, there appears to be only one aluminum bridge required for the project. By cons in the quote (see attached sheet), we speak of 2 bridges. Can you specify the exact quantity please?



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Answer 76 : There is only one gateway to provide and install. Section 05 14 15 will be amended accordingly (see the attached amended section).

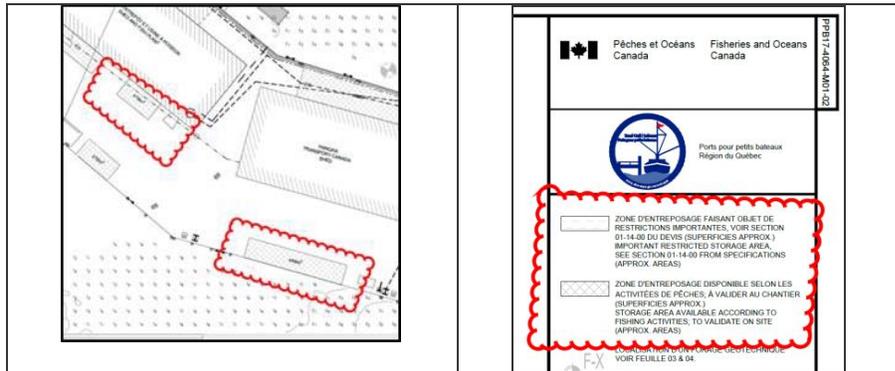
Question 77 : According to our calculations, the amount of protection stone 1 to 2 tm to put in the embankment would be rather 150 m³ rather than 450 m³. What is the exact quantity?

Answer 77 : Contractor should consider a quantity of 200 m³ (instead of 450 m³) for the price of item 5.2.

Question 78 : We did not find the drawing that would have allowed us to see the areas we can use for our facilities (see the attached page). Could you provide it to us?



Answer 78 : The zones are indicated on the 02 sheet; see cartridge.



AMENDMENT OF Section 05 14 15 :

“Section 05 14 15 Aluminum Gangway” of the specifications has been modified. Therefore you must :
DELETE “Section 05 14 15 Aluminum Gangway” in its entirety.
INSERT “Section 05 14 15 Aluminum Gangway” provided herein:

AMENDMENT OF Section 05 50 00 :

“Section 05 50 00 Metal Fabrications” of the specifications has been modified. Therefore you must :
DELETE “Section 05 50 00 Metal Fabrications” in its entirety.
INSERT “Section 05 50 00 Metal Fabrications” provided herein:

***** All the other clauses and conditions remain unchanged *****

PART 1 GENERAL

1.1 GENERAL

- .1 For this section, the Contractor must execute the design, fabrication, delivery and installation of one new gangway.

1.2 SECTIONS CONNEXES

- .1 Section 01 33 00 — Submittal Procedures
- .2 Section 01 61 00 — Common Product Requirements
- .3 Section 01 74 11 — Cleaning
- .4 Section 01 74 21 — Construction/Demolition Waste Management and Disposal
- .5 Section 35 51 25 – Floating Wharves

1.3 REFERENCES

- .1 Unless otherwise indicated, refer to the latest publication and amendments of the following standards prevailing on the effective date of the contract..
- .2 American Association for State Highway and Transportation Officials (AASHTO)
 - .1 AASHTO Standard Specifications for Highway Bridges.
 - .2 LFRD guide specifications for the pedestrian bridges.
- .3 ASTM International
 - .1 ASTM B85/B85M-14, Standard Specification for Aluminum-Alloy Die Castings.
 - .2 ASTM B108/B108M-15, Standard Specification for Aluminum –Alloy Permanent Mold castings.
 - .3 ASTM B209M-14, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (metric).
 - .4 ASTM B210M-12, Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes (metric).
 - .5 ASTM B211M-12e1, Standard Specification for Aluminum and Aluminum Alloy Rolled or Cold- Finished Bar, Rod and Wire (metric).
 - .6 ASTM B221M-13, Standard Specification for Aluminum and Aluminum –Alloy Extruded Bars, Rods, Wire, Profiles and Tubes. (metric)
 - .7 ASTM F593-13a, Standards Specification fort Stainless Steel Bolts, Hex Cap Screws, and Studs
 - .8 ASTM A123/A123M-15, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .4 CSA International
 - .1 CSA/CAN S6-F14, Canadian Code for the calculations of road bridges
 - .2 CSA W47.2-F11 (c20150, Certification of Companies for Fusion Welding of Aluminum.
 - .3 CSA W59.2-FM1995(c2013), Welded Aluminum Construction.

- .4 CSA W59-F13, Welded Steel Construction (metal arc welding).
- .5 CSA W178.1-F14, Certification of Welding Inspection Organizations
- .5 Aluminum Association (AA)
 - .1 AA DAF 45, Designation System for Aluminum Finishes.

1.4 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

- .1 Submit documents/samples required in accordance with Section 01 33 00 - Submittal Procedures.
- .2 The Contractor shall provide for approval (for each gangway):
 - .1 Full design brief of anchor block by an engineer, including the attachment with block and guide system on the floating docks.
- .2 Provide in a timely manner the loads transmitted to the floating docks and the guide details of the gangway.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements
- .2 Provide and implement protective wedges for transportation, lifting and storage of the elements.
 - .1 During the processing, transportation and installation, the necessary precautions must be taken to ensure that the gangway is not damaged.
 - .2 Do not encumber the shore with the elements.
 - .3 Do not subject the items to excessive stress
- .3 Mark the mass on each gangway and on items that weigh more than (3) tons.
- .4 Ensure that no aluminum parts come into contact with the ground.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- .1 New materials
 - .1 All materials used and provided to this project will be new materials.
 - .2 Any element manufactured will be a new construction.
 - .3 No used items will be accepted in this project
 - .4 Aluminum must comply with the 6401 standard of the Ministry of Transport of Quebec. The surface finish must be uniform and a shiny polished type "80 grit"
 - .5 Minimum thickness of aluminum:
 - .1 Aluminum Structure: profiles, plates and gussets of 6005-T5 alloy 6061-T6.
 - .6 Welding materials:
 - .1 Steel Structures: complies with CSA Standard W59;

- .2 Articles of aluminum: complies with CSA Standard W59.2.
 - .3 Fasteners: bolts, nuts, washers stainless steel 304;
 - .4 Decking screws: Stainless steel pedestal 304.
 - .5 Extrusions, round bars and steel plates: comply with the CAN / CSA-M G40.21, grade 300W
 - .6 Aluminum anti-slip decking "Grip-Span" or equivalent: Product to submit for approval of the Departmental Representative.
- .2 Materials
- .1 Provide all hardware needed to install the gangway as specified in the plans and information provided.
 - .2 Supply and install two new transition plates.
 - .3 Supply and install all material needed for gangway, for superior fastening system, for inferior rolling system.

2.2 GANGWAY DESIN CRITERIA

- .1 Criteria
- .1 Guardrails of gangway must be structural truss type and the lightest possible considering that only pedestrians will drive there.
 - .2 2.4 kPa (50 psf) bearing capacity
 - .3 The weight of gangway must be minimized.
 - .4 Design: Plans signed and sealed by a member of the OIQ.
 - .5 Provide all hardware necessary for the installation of the gangway as indicated in the plans and information provided.
 - .6 Contractor to design lower and upper guide plates, upper anchor and lower wheeling system.
 - .7 The Contractor must provide all necessary equipment for anchoring and rolling system of gangway.
 - .8 At the lower level, the gangway will be installed on a wheel system with a bearing plate and a transition plate. The contractor must design the wheel system and bottom plates.
 - .9 Consider that the floating dock receiving the gangway will undergo a transverse clearance of up to 1.0 m between high tide and low tide. Provide the upper fasteners and the bearing system accordingly. Oval holes could possibly be planned in the upper guide plates, but any other system can be proposed according to plans sealed by an engineer.
 - .10 Supply and install a new bearing plate and a bearing system at the bottom of the gangway. This system will be fixed on the inferior floating dock.
 - .11 The gangway guardrails must meet the actual design criteria for restraining systems.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: Before installing building elements, ensure that the state of the surfaces/materials previously implemented under other sections or contracts is acceptable and can perform the work in accordance with manufacturer's written instructions.
 - .1 Visually inspect surfaces materials in the presence of the Departmental Representative.
 - .2 Immediately inform the Departmental Representative of unacceptable conditions detected.
 - .3 Proceed with installation only after correcting the unacceptable conditions and written approval of the Departmental Representative.

3.2 PREPARATION

- .1 Remove from steel or aluminum surfaces, dirt and unwanted deposits to the satisfaction of the Departmental Representative.
- .2 Verify the location of the infrastructure components, the rating level of the connection points of the supporting elements and the location of the anchor bolts before mounting the gangway; if necessary, report any discrepancies to the Departmental Representative.
- .3 Working near riverbanks or fill slope must be performed in accordance with written instructions of the Departmental Representative.
- .4 During assembly, restrict pinning to the minimum necessary to bring the parts in position without enlarging or deforming the holes and without causing twisting, deformation or bending of the metal elements.
 - .1 Ream, if necessary, enlarge holes only if the Departmental Representative has given prior written authorization
 - .2 The diameter of the bore holes must not exceed by more than two (2) mm of the bolts used.
- .5 Form and install the bearing elements as indicated.

3.3 DELIVERY, HANDLING AND ERECTION

- .1 General
 - .1 The components of the structure must be handled carefully to avoid damage or deformation. The beams need to be raised by at least two (2) lifting points during handling and mounting operations.
 - .2 Aluminum structures must be cleaned of all dust and grease before leaving the factory.
 - .3 Unless otherwise specified in this Section or in the plans, assembly, installation of bolts and inspection of seams must be made in accordance with CAN / CSA S6 "Canadian Code of Highway Bridge calculations. "
 - .4 The location and elevation of the bearings should be checked by the Contractor, and any discrepancies must be corrected. The Contractor shall provide the Departmental Representative, at least seven (7) days before the placing of the beams, a location survey showing the location (longitudinally and transversely of the work), the elevation and leveling of each support unit in place and the corresponding values required on the plans.

- .5 To prevent water contacting unpainted steel surfaces and staining the seats and the adjacent surfaces of the foundation units, these units must be adequately protected before the installation of the work. All stains on the beams or foundation units, such as oil and grease stains, should be removed once the work is completed.
- .6 Galvanized steel surfaces to come in contact with each other at the time of assembly must be manually cleaned with a wire brush so as to remove the glossy appearance without altering the zinc coating zinc.

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.
- .3 Waste Management: separate waste materials for reuse/recycling in accordance with Section 01 74 21 -Construction/Demolition Waste Management and Disposal.
- .4 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by structural aluminum for buildings installation.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 45 00 – Quality Control.
- .3 Section 03 30 00 – Cast-In-Place Concrete
- .4 Section 35 59 29 – Mooring Devices

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM A53/A53M-12 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A269-15a - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for Generalities Service.
 - .3 ASTM A307-14 - Standard Specification for Carbon Steel Bolts and Studs and Threaded Rod, 60,000 PSI Tensile Strength.
 - .4 ASTM A325-14, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
 - .5 ASTM A123/A123M-15, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - .6 ASTM D2369 – 01, Standard Test Method for Volatile Content of Coatings
 - .7 ASTM D2371 - 85(2010), Standard Test Method for Pigment Content of Solvent-Reducible Paints
 - .8 ASTM E1475 – 13, Standard Guide for Data Fields for Computerized Transfer of Digital Radiological Examination Data
 - .9 ASTM D562-10(2014), Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer
 - .10 ASTM D2621-87(2011), Standard Test Method for Infrared Identification of Vehicle Solids From Solvent-Reducible Paints
 - .11 ASTM D4414-95(2013) Standard Practice for Measurement of Wet Film Thickness by Notch Gages
 - .12 ASTM D3359-09e2 Standard Test Methods for Measuring Adhesion by Tape Test
- .2 CSA International
 - .1 CSA G40.20/G40.21-f13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164-M92 (C2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA S16-f14, Design of Steel Structures.
 - .4 CSA W48-f14, Filler Metals and Allied Materials for Metal Arc Welding.
 - .5 CSA W59-f13, Welded Steel Construction (Metal Arc Welding).
- .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

- .1 Material Safety Data Sheets (MSDS).
- .4 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - current edition.

1.3 DOCUMENTS/SAMPLES TO SUBMIT FOR APPROVAL/INFORMATION

- .1 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for sections, plates, pipe, tubing, bolts, paints and primers. Include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Québec, Canada.
 - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.4 QUALITY ASSURANCE

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

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 in on the ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Steel sections and plates: to CSA G40.20/G40.21, Grade 300W or 350W.
- .2 Steel pipe: to ASTM A53/A53M Class B series.
- .3 Welding materials: to CSA W59.
- .4 Welding electrodes: to CSA W48 Series.
- .5 Bolts and anchor bolts: to ASTM A307, except where noted on drawings.
- .6 Framing Bolts: to ASTM A-325 and galvanized, except bolts for assembly bolts, A-325 non galvanized

- .7 Grout: non-shrink, non-metallic, flowable, 25 MPa at 24 hours.
- .8 Painting: data sheets for paints and primers must be submitted to the Department.
- .9 Aluminum guardrails:
 - .1 Grade 6005-T5 aluminum. Lines and posts: extruded tubes 38 mm in diameter or different if required. Fittings and accessories (elbows, T-profiles, brackets and rosettes): machined or cast. Mounting: supports and bases, with inserts made of steel for embedding in concrete or with walnut brackets in the masonry. Attachments: countersunk bolts or bolts, flush-mounted and suitable for guardrail model. Exterior aluminum surfaces: anodized finish if required. Concealed aluminum surfaces that come in contact with materials containing hydraulic binders or dissimilar materials shall be coated with one (1) coat of bituminous paint.

2.2 METAL FABRICATION- GENERAL

- .1 Fabricate work 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 or as indicated.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 ISOLATION COATING

- .1 Isolate aluminum from following components, by means of bituminous paint:
 - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
 - .2 Concrete, mortar and masonry.
 - .3 Wood.

2.4 SHOP PAINTING AND GALVANISING

- .1 When required, all components must be galvanized to CAN / CSA-G164 at a rate of 600 g / m², Provide all the construction arrangements for galvanization of the structure
- .2 If a paint system is required throughout the project, the following specs must be followed :
 - .1 Preparation of steel to SSPC-SP6, profile 1.5 mils minimum
 - .2 One coat intermediate: 2.6 to 7 mils dry, epoxy, high rate of solids
 - .3 One topcoat : 4-6 mils dry, finish epoxy polysiloxane base.
 - .4 Colour :
 - .1 Intermediate Color: medium gray
 - .2 Finish: Black
- .3 The Contractor shall select a paint system equivalent to that described above, subject to approval by the Departmental Representative

2.5 PLATES, BOLTS FOR FENDERS AND FENDER PLATES

- .1 As shown on drawings.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for metal fabrications installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of the Departmental Representative.
 - .2 Inform the Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from the Departmental Representative.

3.2 ERECTION

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to the Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Contractor is responsible for demonstrating that the anchors from the eyebolts to the seabed have a capacity of 12.0 tm. Load tests on the eyebolts will be at their expense and will be done in the presence of the Department's representative.
- .5 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .6 Supply components for work by other trades in accordance with shop drawings and schedule.
- .7 Make field connections with bolts to CSA S16 or as indicated.
- .8 Deliver items over for casting into concrete and building into masonry together with setting templates.

3.3 GALVANIZING AND PAINTING

- .1 General
 - .1 Implementation
 - .1 When the work is performed on site, the contractor shall provide the Departmental Representative a plan outlining the steps provided. The performance of metal surface protection work on a portion of the structure must not alter in any way the quality of that already carried out or in the process of being done on another part.
 - .2 The contractor must submit to the Departmental Representative a provisional work plan outlining the details of the design and construction of containment and the residue collection device from the surface preparation, paint services.

- .3 The study of this plan by the Departmental Representative deals only with the verification of the charges loaded on the gangway structure by the confinement and not on the design of scaffolding and platforms which constitute the exterior.
- .4 After the construction of the confinement and after inspection by an engineer member of the Ordre des ingénieurs du Québec, the contractor must submit to the Departmental Representative a written notice signed by the engineer indicating that the enclosure built complies with the submitted plan. This notice must be provided as each time the enclosure is moved or altered. The notice shall also state the date and time of the inspection.
- .5 Containment fences should be designed to support the weight of residue that can accumulate on the floor and not to cause stresses due to the wind that exceed the capacity of the structural system studied.
- .6 Provisional work plan should mention the vertical and lateral loads to support and the location of the fasteners on the platform deck
- .7 Containment zones
 - .1 The Contractor shall build the containment zone so as to confine the emission of dust inside the containment zone and allow recovery of all residues, such as abrasives, rust, old paint, zinc and fresh paint surplus, generated by the work surface preparation or painting.
 - .2 Where a total containment zone is stipulated in the plans and specifications, the contractor must install a negative pressure system with a dust collector in order to control dust and particles inside the enclosure. The negative pressure system must be operational for all the work of cleaning and surface preparation, including the final cleaning of the surfaces immediately prior to application of a protective coating.
 - .3 The containment zone should be watertight. The fabrics used for containing should be adequately strengthened to prevent their displacement or tearing when subjected to construction loads, wind forces or other environmental factors.
 - .4 Auxiliary lighting must be available and used as needed to improve visibility inside the containment zone. The minimum level of lighting should be 500 lux in areas where the work is performed.
 - .5 If the wind speed is too high to effectively confine the stripping residues inside the containment zone, the Contractor shall suspend stripping work.
 - .6 The Contractor must prevent leakage of dust and loss of residues from the floor or other containment components when they are moved or dismantled. The floor, walls and joints of the containment zone should be cleaned with a vacuum cleaner before moving or dismantling of the containment system.
 - .7 When abrasives are recycled, no leakage is allowed during installation, recycling, cleaning and dismantling work of the recycling system.
 - .8 Residues accumulating inside the containment zone must be recovered before proceeding or painting
 - .9 Management of Residues
 - .1 Consecutive residues in the work surface preparation or painting must be collected in sealed containers, stored temporarily on site, transported and

disposed.

- .2 The residues characterized as hazardous materials must be shipped by the contractor to a transfer, recycling, treatment or disposal station of hazardous materials authorized by the Ministry of Sustainable Development, Environment, Wildlife and Parks. Transportation must be done by a licensee on the transport of hazardous materials. Hazardous materials must be accompanied by a shipping document compliant with the Regulations on the transport of hazardous materials. A copy of this document completed and signed by the shipper, the carrier and the recipient must be given to the Departmental Representative to confirm the shipment of waste from the site and receipt to the authorized recipient.
- .3 Residues characterized as solid waste must be shipped by the contractor in a disposal or storage of solid waste authorized by the Ministry of Sustainable Development, Environment, Wildlife and Parks. A copy of the weighing coupons must be given to the Departmental Representative to confirm the receipt of residues to the authorised area.

.2 Galvanisation

.1 Certificate of Conformity

- .1 For each delivery of galvanized steel elements, the Contractor must provide the Departmental Representative a certificate of conformity with the following information:
 - .1 name of the galvanizing company;
 - .2 date and place of galvanizing;
 - .3 Coating thickness;
 - .4 Coating adhesion;
 - .5 Coating quality

.2 Receiving inspection

- .1 When receiving control is performed by the Departmental Representative, he is to make the tests for thickness, adhesion and coating quality according to the requirements of ASTM A123 / A123M "Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products."

.3 Surface Preparation

- .1 Surfaces to be galvanized must be clean, free of paint, grease, rust, etc. Deposits and residues from welding, carbon deposits and paint deposits or thick rust must be removed by an appropriate method. The final stripping must be done by immersion in a caustic solution followed by a clear water rinse and immersion in a bath of sulfuric or diluted hydrochloric acid. After stripping, the parts must be immersed in an aqueous solution of zinc chloride and ammonium.

.4 Galvanizing process

- .1 Galvanizing must be done according to ASTM A123 / A123M "Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products."
- .2 Steel surfaces of the bottom flange beams and bearings in contact with welds used to attach to the beams supporting devices must be ground after galvanizing

- .3 Minimal galvanizing thickness is 100 microns except in the case of HSS steel tubes, where the minimum thickness is 75 microns.
- .5 Protection of galvanized elements
 - .1 The contractor must protect galvanized parts against damage during handling and storage. .
 - .2 Member contacting with the lifting equipment, such as cables and chains, must be protected adequately.
 - .3 The storage of galvanized elements, with the exception of the reinforcements must be done so that air circulates between the parts, water does not accumulate and drains freely, and that there is no metal contact against galvanized metal parts. When installing galvanized elements of retainers, the Contractor has full responsibility to ensure that there is no white rust on these parts.
- .6 Repair after galvanizing
 - .1 Damaged surfaces with a width less than 2.5 cm must be repaired by applying by brush two coats of zinc-rich coating with a minimum content of 87% metallic zinc in the dry film. Moreover, on the same workpiece, the total area to be repaired by zinc-rich coating should be less than 0.5% of the total surface thereof. Damaged surfaces must be cleaned beforehand according to the requirements of the standard SSPC-SP 11 "Power Tool Cleaning to Bare Metal." The minimum total thickness of the dry film coating should be 130 µm..
 - .2 Damaged surfaces with a width greater than 2.5 cm and the area of the damaged parts totaling more than 0.5% of the total surface of the part to be repaired or re-galvanised by metallization. In this, the damaged surfaces must be cleaned beforehand according to the requirements of SSPC-SP standard 5/NACE No. 1 "White Metal Blast Cleaning" or SSPC-SP standard 11 "Power Tool Cleaning to Bare Metal." The minimum thickness of the metallized coating should be 130 µm.
- .3 Painting of Steel Surfaces
 - .1 Materials
 - .1 Paints and paint systems based on zinc and high performance of which must be consistent with the standards 10102 and 10104 of the Ministry of Transport of Quebec.
 - .2 Paint and organic paints and maintenance systems must be respectively consistent with standards 10103 and 10104 of the Ministry of Transport of Quebec.
 - .2 Quality Assurance
 - .1 Certificate of conformity
 - .1 For each delivery of paint, the contractor must provide the Departmental Representative a certificate of conformity containing the following information for each production:
 - The paint manufacturers name;
 - The paint name;
 - The lot number of production.

- .2 Production batch corresponds to a batch number. In terms of the zinc powder, a production lot corresponding to a manufacturer's code. The results of the following tests:
 - Non-volatile content (% by weight) according to the requirements of ASTM D2369 "Standard Test Method for Volatile Content of Coatings";
 - Pigment content (mass%) according to the requirements of ASTM D2371 Standard Test Method for Pigment Content of Solvent reducible Paints";
 - Density (kg / l) according to the requirements of ASTM D1475 ASTM D1475 « Standard Test Method for Density of Liquid Coatings, Inks, and Related Products »;
 - Consistency (Stormer) (KU) according to the requirements of ASTM D562 « Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer Type Viscometer ».
 - .3 The compliance test results are verified by reference to the values appearing on the homologation approval of lists of paint systems. A tolerance is associated with each value for accreditation.
 - .4 As additional verification of painting, the Contractor shall, at the request of the Departmental Representative, provide the infrared spectra of the components of the paint according to the requirements of ASTM D2621 "Standard Test Method for Infrared Identification of Vehicle Solids From Solvent reducible Paints ".
- .2 Reception
 - .1 The Departmental Representative performs an acceptance test on paints; sample collection consists of:
 - one-component paints and thinners, two (2) samples of 1 L each;
 - For paints of 2 constituents, two (2) samples of 1 L each non-mixed component and collected in the proportions recommended by the paint manufacturer;
 - When the paint system consists of paints with a moisture cure polyurethane resin component, the paint manufacturer must provide the Departmental Representative for each batch of samples two (2) 1 L of each painting and diluent in the original unopened containers previously
 - .2 The samples are placed in 1 L, sealed, high-density polyethylene or metal containers with enamel interior.
 - .3 Implementation
 - .1 Preparation of steel surfaces
 - .1 Steel surfaces to be painted should be blasted by dry abrasive blasting without crystalline silica. According to the stipulations on the plans and specifications, the minimum degree of surface preparation must match SSP 6.
 - .2 The degrees of rust on unpainted steel surfaces and degrees of preparation

abrasive blasting of steel corresponding to these degrees of rust surfaces are illustrated by a series of photographs contained in the SSPC standard -Vis 1-02 "Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning". These photographs should be used as examples only, and only to supplement the written descriptions of the types of care, which are the only provisions to be observed.

- .3 Inaccessible surfaces stripping by dry abrasive blasting must be stripped to obtain a minimum level of preparedness to meet the standard SSPC-SP 11 "Power Tool Cleaning to Bare Metal" if the type of care is stipulated in quotes SSPC-SP 10/NACE No. 2 or SSPC-SP standard 15 "Commercial Grade Power Tool Cleaning" if the type of care stipulated in the quote is SSPC-SP6/NACE No. 3. These degrees of preparation are shown through a series of photographs contained in SSPC-VIS Standard 3 "Visual Standard for Power and Hand Tool Cleaned Steel".
 - .4 Dust and other dirt on the surfaces to be covered as a result of stripping as well as the surfaces of floors, walls and joints of the painting containment zone should be removed using a compressed air jet or vacuum cleaner.
- .2 Painting
- .1 The contractor must submit to the Departmental Representative data sheets and MSDS of the paints and thinners he proposes to use
 - .2 The painting must be done according to the requirements of the technical data of the paint manufacturer. In the absence of indication in relation to a minimum surface profile of the steel to be respected, it must be between 38 microns is 75 microns.
- .3 Application Deadline
- .1 Any cleaned surface must be covered with a first coat of paint as soon as possible after the surface preparation and before the onset of surface rust, but not exceeding eight hours when a paint system zinc-based or high performance certified respectively according to standard 10102 or 10104 of the Ministry of Transport of Quebec is used, and 24 hours in the case of a system of certified organic or maintenance paints, respectively, according to standard 10103 or 10104 the Ministry of Transport of Quebec
 - .2 The topcoat should be applied as specified by the manufacturer's product data, without exceeding a maximum period of 7 days following the application of the first coat of paint.
- .4 Conditions of application
- .1 The paint should be applied on a moisture-free, dust-free surface:
 - The contractor must apply the paint when:
 - the air temperature and the surface to be coated is greater than 5 ° C;
 - The temperature of the surface to be coated is above the dew point plus 3;
 - The already applied paint layer is sufficiently hardened.
 - .2 When applying a paint hygroréactive (moisture-curing), the requirements for temperature and humidity must be those specified in the data sheets, and be confirmed by the manufacturer.

- .3 When applying a zinc-based paint and inorganic binder, the percentage of relative humidity should be greater than 40%.
- .5 Application
 - .1 Before applying each of the first two layers of the paint system, rivets, bolts and non- galvanized nuts, welds, joints of assembled parts and corners and sharp edges should be completely painted using a brush. The paints used for the brush painting must be the same as those used for the first two layers of the system. However, an organic zinc-based paint should be applied on the bolts if a zinc paint and inorganic binder is used as the first layer of the system.
 - .2 Each layer of paint should be applied uniformly with a spray gun. Where indicated in the data sheets, the paint must be continuously stirred during application. All streaks or other imperfections should be wiped away. All surfaces that cannot be adequately painted by spray gun must be brush painted.
 - .3 Contact surfaces of the parts to be bolted together must be painted with a primer only. The steel surfaces of the bottom flange beams contacting the welds used to attach devices to the support beams must not be painted.
 - .4 Where the main beams are shop painted, all surfaces of construction splice plates which will be exposed after assembly may only be coated with the primary coating (galvanizing or zinc-based paint of an approved system) in the fabrication shop.
 - .5 When horizontal and cross bracing diaphragms and curved bridges must be shop painted, all exposed surfaces of the assembly in contact and in the vicinity of the components of the assembled bolts (bolt, nut and washer) should only be coated with the primary coating (galvanizing or zinc-based paint of an approved system) at the factory.
 - .6 After assembly is completed and just before on-site painting, all surfaces covered in factory with a primary protection, and exposed surfaces of bolts, nuts and washers must be degreased and cleaned in order to have a clean surface, free of any contaminants, and according to paint manufacturer's recommendations, if necessary. When these surfaces are galvanized, preparation by abrasive blast in accordance with SSPC-SP standard 7/NACE No. 4 is required to obtain a minimum roughness. An abrasive low to medium hardness is required to avoid excessive damage to the zinc coating.
 - .7 The painting of all surfaces covered the factory with a primary protection, and exposed surfaces of bolts, nuts and washers must be completed on site in accordance with the requirements specified for the system to protect adjacent surfaces. The paint system and the color of the topcoat must be identical to those used in the factory.
 - .8 Surfaces of the metal parts in contact with the concrete must be painted over a 25 mm width around the entire perimeter.
 - .9 Dry film thickness of each layer of paint must in all respects, conform to minimum thickness specified by the paint manufacturer in the approval

process.

.6 Thickness Determination

- .1 The contractor must measure the thickness of the paint wet film during application to ensure obtaining, as the work progresses, the dry film thickness specified after drying.
- .2 The thickness of the wet film of the different layers of paint should be determined according to the requirements of ASTM D4414 "Standard Practice for Measurement of Wet Film Thicknesses by Notch Gages".
- .3 The thickness of the wet film thickness corresponding to the specified dry film is determined using the following formula:

$$H = T X \left(\frac{100 + D}{\text{—————}} \right) B$$

- $H = T \times ((100 + D) / B)$ H: wet film thickness (in μm)
- thickness specified dry film (in μm)
- Percentage volume of diluent added, if necessary
- volume percentage of non-volatile material material
- The dry film thickness of the various layers of paint should be determined according to requirements of the standard SSPC-PA 2 "Measurement of Dry Coating Thickness with Magnetic Gages".

.7 Adhesion

The film of the paint system must have a minimum adhesion of 3A according to the adhesion test "Test Method A - X Cut Tape Test" described in ASTM D3359 "Standard Test Method for Measuring Adhesion by Tape Test."

.8 Delivery and Handling

- .1 The contractor must take precautions so that the coating does not suffer any breakage during shipping and handling.

.9 Retouching

- .1 The contractor must take every precaution to minimize paint surfaces to retouch. .
- .2 Painted surfaces that are altered during the execution of the work must be cleaned so as to remove any damaged paint and other contaminants. After cleaning, dust and other dirt which cover the surface to be retouched must be removed.
- .3 Retouching must be done on each altered layer by applying paint under the original system, the thickness specified. However, the alterations to be performed on a zinc- based paint and inorganic binder must done by applying a zinc-based layer and organic binder 65 μm thick.
- .4 Existing painted surfaces altered during the execution of works of alteration or repair of a steel structure must be retouched using the following procedure:
 - Surfaces must be prepared by spraying dry abrasive-free crystalline silica or mechanical cleaning to obtain the minimum type of care SSPC-SP6/NACE No. 3 "Commercial Blast Cleaning" or SSPC-SP 15 "Commercial Grade Power Tool Cleaning ";

- After the preparation, dust and other dirt should be removed;
- Retouching is done by applying a system of hydroréactives paints, polyurethane resins to a component, to meet the following requirements :
 - a coat with polyurethane resins and aluminum pigments primer;
 - a coat with polyurethane resins topcoat; the color should be similar to that of the existing paint
 - a minimum total dry film thickness of 150 microns.-
- .5 Where indicated in the data sheets, retouches to be made on paint with polyurethane resins beyond a period of 72 hours after application as a top coat require a light sanding to areas adjacent to the surfaces to retouch.
- .6 Each layer must be dry before applying a subsequent layer.

3.4 CLEANING

- .1 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with the Departmental Representatives instructions.

3.5 PROTECTION

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

END OF SECTION