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**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
Public Works and Government Services Canada - Pacific
Region
800 Burrard Street, Room 219
800, rue Burrard, pièce 219
Vancouver
British C
V6Z 0B9

Title - Sujet Strengthening Bridge Design	
Solicitation No. - N° de l'invitation EZ899-210470/A	Amendment No. - N° modif. 002
Client Reference No. - N° de référence du client	Date 2020-09-10
GETS Reference No. - N° de référence de SEAG PW-\$PWY-019-8812	
File No. - N° de dossier PWY-0-43047 (019)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2020-09-18	Time Zone Fuseau horaire Pacific Daylight Saving Time PDT
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: Ngan, Ken (PWY)	Buyer Id - Id de l'acheteur pwy019
Telephone No. - N° de téléphone (604) 671-0219 ()	FAX No. - N° de FAX (604) 775-6633
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: PWGSC - Lower Liard River Bridge, km 763.3 – Alaska Highway, BC	

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

Solicitation No. - N° de l'invitation
EZ899-210470/A
Client Ref. No. - N° de réf. du client

Amd. No. - N° de la modif.
002
File No. - N° du dossier
pwy-0-43047

Buyer ID - Id de l'acheteur
pwy019
CCC No./N° CCC - FMS No/ N° VME

Les documents français seront disponibles sur demande.

This Solicitation Amendment 002 is raised to incorporate Addendum 002, and the associated revised Specifications.

Please find following Addendum 002.

All other terms and conditions remain unchanged.

The following changes in the tender documents are effective immediately. This addendum will form part of the Contract documents.

Question numbering is a continuation from previous Addendum(s).

Questions from Bidders and Responses

- Question 29: Are the areas included on the existing surfaces considered Faying Surfaces, if so, what class?
- Answer 29: The areas of existing steel surfaces that come in contact with new steel strengthening members will be considered faying surfaces. All steel surfaces for both existing and new steel should have a surface profile of 50 to 100 microns and be free of corrosion.
- Question 30: Is the owner open to alternate proposals during the tendering?
- Answer 30: No alternate proposals will be considered during the Tender period.
- Question 31: Is there a required warranty for the painting involved? If so, please specify.
- Answer 31: There is a 2 year warranty required for the painting.
- Question 32: Drawing 2, Procedure: Step 1 Part A, REFERS TO 2M² of surface area requiring power tool cleaning. Is this per piece of steel or total for the entire scope of work?
- Answer 32: The drawings indicate that an allowance of 2m² is required for field coating of areas with local corrosion on contact surfaces and is intended to be for the entire bridge. Any area of coating that is damaged and requires repair during steel erection will be considered incidental to the work and will not be included within the 2m² allowance.
- Question 33: The drawing # 02 of 14 Procedures Note 1b. calls for local corrosion to be power tooled to SSPC-SP3 and then painted in accordance with the contract specifications, The contract specifications call for an SF2 system of 3 coat system of zinc, epoxy, urethane. As this project has a significantly reduced schedule and zinc is not really recommended over an SSPC-SP3 power tooled substrate and the urethane is for ultraviolet protection. Would the owner consider allowing the contractor to apply 2 coats of the mid coat epoxy in areas that will be covered by the reinforcing steel?
- Answer 33: Refer to revised Specification Section 09 97 19 issued with Addendum 002.
- Question 34: What is the standard of surface preparation for the bolt heads and nuts?
- Answer 34: Means and methods shall be determined by the Contractor to meet the project requirements.
- Question 35: What is the standard of surface preparation for field welding?
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- Answer 35: Means and methods shall be determined by the Contractor to meet the project requirements.
- Question 36: As zinc is a product that does not necessarily overcoat onto existing coatings well and could lead to reduced service life would the owner consider replacing the zinc primer with the same product as the mid coat material or a surface tolerant epoxy such as Carbomastic 615?
- Answer 36: Proposed products will be reviewed by the Departmental Representative during construction.
- Question 37: Section 09 97 19 3.3.5.3 States regardless of pack rust all connection plates within the area to be painted shall be treated with an approved penetrant and caulked as described.
- Is the contractor required to caulk between the stitch welds detailed on drawing 02 Detail C & D & 03 Detail F
 - Is the contractor required to caulk the edges of the plate installed on the top side of the top chord as shown on drawing 02 Detail A & B
 - Would the plate on the bottom of the top chord in the detail above require caulking?
 - Is the contractor required to caulk the edges of the material installed on the side of the top chord as shown on drawing 03 Detail E & G.
 - If the above is required to be caulked would that only be the top edge that required caulking?
- Answer 37: Treatment of pack rust is not included in this contract.
- Caulking between all stitch welds is required including any stitch welds along a bottom edge or the lowest edge of a plate.
 - Caulking the edges of new steel strengthening members is required.
 - Strengthening plates located on the underside of the web for an existing wide flange beam do not need to be caulked.
 - The contact interface between existing steel and new steel strengthening members shall be caulked to form a water tight seal along the top edge and the two sides of members involved. The bottom edge or the lowest edge of the plate or member shall not be caulked.
- Refer to revised specification.
- Question 38: Section 09 97 19 3.3..5.3 “regardless of pack rust all connection plates within the area to be painted shall be treated”
- Can the definition of “the area to be painted be provided”?
 - Is this area only where the reinforcing plates are being bolted on?
 - Is the contractor to treat pack rust found in the connection plates from diagonal braces to top or bottom truss chord?
 - Is the contractor to treat pack rust found in connection plates from column to top or bottom chord?
 - If so please provide a quantity for all locations
- Answer 38: This is not intended to be a coating contract; however, coating is required to facilitate the structural steel strengthening. The drawings indicate that an allowance of 2m² is
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required for field coating of areas with local corrosion on contact surfaces. Coating repairs will not extend beyond the areas that are identified for strengthening. Any areas of coating that is damaged and require repair during steel erection will be considered incidental to the work and will not be included within the 2m² allowance. There has been no work identified with respect to treating pack rust under this Contract.

Question 39: In detail A and B on drawing 02 and 03 there is a plate shown underneath the horizontal wide flange that would be quite difficult to install. Would you consider altering design to incorporate reinforcement from above with a flat bar on edge or T section.

Answer 39: The design remains with a bottom plate to allow strengthening on both sides of the horizontal wide flange web.

Question 40: What is the anticipated award date? Based on the 18 week completion requirement it appears the intent is to have the work performed in the middle of winter, is that the case? Winter conditions would result in greater risk and costs. Are there reasons/factors to complete over the winter?

Answer 40: The revised project completion date will be July 15, 2021.

Question 41: Drawing 02 of 14 Procedure Note 1b states an approximate area of 2 m² of local corrosion to be removed. Is this quantity for the entire bridge? Please clarify.

Answer 41: The drawings indicate that an allowance of 2m² is required for field coating of areas with local corrosion on contact surfaces and is intended to be for the entire bridge. Any area of coating that is damaged and requires repair during steel erection will be considered incidental to the work and will not be included within the 2m² allowance.

Question 42: Please confirm that the Contractor will be allowed to set up laydown areas on each end of the bridge.

Answer 42: The Contractor may review the site for additional laydown locations during the Tender period. Owner will provide a laydown area of approximately 200m x 200m at the nearby maintenance yard south of the bridge. Requires minimum 48 hour notice before materials are to be delivered so maintenance contractor can be informed.

Question 43: Please confirm that a full-time Environmental Monitor is not required for this project.

Answer 43: Refer to Paragraph 1.27 Environmental Monitoring within the Amended Section 01 35 43 Environmental Protection special provision:

.1 At a minimum the environmental monitoring shall be completed by P.Biol, RPBio, or Qualified Environmental Professional (QEP). If a QEP completes the monitoring, the QEP must work under the direction of the P.Biol or RPBio who completes the Environmental Protection Plan.

.2 The monitoring program must be anticipatory and responsive to construction practices or environmental changes, reflecting the site-specific conditions, level of sensitivity of the receiving environment, potential adverse effects, and level of

environmental risk. Submitted documents regarding the proposed monitoring program should clearly identify how monitoring will adhere to this approach.
.3 The monitoring program shall satisfy all regulatory requirements and terms of these specifications. The onus is on the Contractor to monitor and ensure compliance, to identify arising problems, and to subsequently take responsibility and all necessary measures in response

Question 44: The specifications indicate that the bridge coating will be based on square meter unit basis, however the tender documents only show a lump sum amount to fill in. As we there is no way for the bidder to know how much coating will be required, could you revise the tender document showing an estimated quantity of coating instead of a lump sum?

Answer 44: This is not intended to be a coating contract; however, coating is required to facilitate the structural steel strengthening. The drawings indicate that an allowance of 2m² is required for field coating of areas with local corrosion on contact surfaces. Any areas of coating that is damaged and require repair during steel erection will be considered incidental to the work and will not be included within the 2m² allowance.

Question 45: In regard to the detail showing section C and D on drawing 2 of 14, it only shows welding requirement for one new angle iron. Please provide a welding detail or requirement for the other three angle irons as they will need to be different than the one that is shown in the drawing.

Answer 45: The drawings have been revised and re-issued in Addendum 001 to show an alternate bolting detail. The same welding details as indicated on the typical detail for Sections 'C', 'D' and 'F' shall be followed for all the angles. This is indicated with the typical "TYP." nomenclature.

Question 46: The bolt quantity tables shown on most of the drawing pages show the quantities but then there is a note that says that the bolt quantity is four times what is shown on the drawings. This is confusing. For example, the table on sheet 2 of 14 indicates that Plate A requires 122 bolts, but when I count it, that is exactly how many bolts that that plate needs plus another 122 on the other side of the bridge, either way it does not appear to me to be 4 times the amount. Could you please clarify.

Answer 46: Bolts quantities have been removed from the revised drawings issued in Addendum 001. Bolt spacings have been indicated where required. Based on the available details the quantities can be calculated by the bidder. Refer to Sheet 1 of 14 that highlights in elevation which elements need to be strengthened. The strengthening shall be applied to elements on both sides of the bridge centre line i.e east and west due to symmetry.

Question 47: What are the bolt diameter and sizes for fastening the plates and channels to the existing truss?

Answer 47: Refer to the notes mentioned in the dwg. sheet 2 of 14 for details of type of bolts to be used.

Question 48: Is an Emergency Transport Vehicle along with an ETV licensed operator required during the construction for this project?

Answer 48: The Contractor needs to determine and provide what is required to satisfy the environmental, health and safety requirements of the Contract.

Question 49: as the welding will be completed by a CWB certified shop, and due to the remoteness of this project, are we responsible for the to have the welding inspected by a certified inspector or will the inspection be completed by the consulting engineer or at Owner's cost?

Answer 49: Welding needs to be completed by CWB certified welders for the class of welding that is being performed. All welding shall be inspected by a certified inspector and the cost for this inspection is the responsibility of the Contractor. All inspection certificates shall be sent to the Departmental Representative. Refer to revised specifications in Addendum 002.

Question 50: in regards to the painting/coating requirements, please provide clarification. For example, is the coating required just on the visual surfaces of the new steel members? The drawings are not very clear in explaining the extent of the painting.

Answer 50: Refer to note-5 in sheet 2 of 14. This applies to all the surfaces of each new steel strengthening member. Furthermore, this is not intended to be a coating contract; however, coating is required to facilitate the structural steel strengthening. The drawings indicate that an allowance of 2m² is required for field coating of areas with local corrosion on contact surfaces. Coating repairs will not extend beyond the areas that are identified for strengthening. Any areas of coating that is damaged and require repair during steel erection (including areas that are field welded) will be considered incidental to the work and will not be included within the 2m² allowance. For all steel surfaces that are in full contact and bolted, a two (2) coat system will be permitted.

Question 51: Some of the requested metal sizes are not available without special fabrication and therefore additional costs. In particular the sizes that are not available are the following flat bars:

1. 16 thick X 320, which translates to 5/8 X 13"

12" wide is the widest this bar is available in

2. 19mm thick X 320, which translates into 3/4" X 13'

12" wide is the widest this bar is available in

3. 19mm thick X 230, which translates into 3/4" X 9"

9" is not an available bar width size, however 8" or 10" is an available size

Please confirm how you wish for us to base our tender on.

Answer 51: Using imperial equivalent thickness is acceptable such as 5/8" thick steel plate where 16mm plate is specified and 3/4" thick steel plate where 19mm plate is specified. As for the width of strengthening plates, the strengthening members can be cut from sheet steel. The design was not based on standard flat bar widths.

Question 52: Please confirm the diameter size of the bolts required.

- Answer 52: Refer to the notes mentioned in the dwg. sheet 2 of 14 for details of type of bolts to be used.
- Question 53: We have tried reaching out to Derek Loots without success... Was there an alternate contact we could reach out to regarding this portion of the tender?
- Answer 53: Question was withdrawn by Contractor
- Question 54: The coating scope of work has conflicting requirements, the drawings state that areas of corrosion on contact surfaces shall be power tool cleaned and coated with the contract specification. The contract specification states that all steel is to be abrasive blasted and coated with the Ministry of Transportation approved products list which is SF2- Organic Zinc, Epoxy, Urethane. Which project document takes precedence for surface prep?
- Answer 54: Areas of corrosion on contact surfaces shall be power tool cleaned and coated. Refer to the revised specification.
- Question 55: Does the faying surfaces between the bridge steelworks and the strengthening plates need to meet coating requirements for friction coatings as detailed in MOTI SS 216.12.01.02? If not what coatings shall be applied to the faying surfaces? Typically only a primer is used, or the steel is cleaned and left uncoated.
- Answer 55: The faying surfaces between the bridge steelworks and the strengthening plates does not need to meet coating requirements for friction coatings. For all steel surfaces that are in full contact and bolted, a two (2) coat system will be permitted. Refer to the revised specification.
- Question 56: Addendum #1 received, thank you. The clouded area drawn on bottom of revised drawings and shown as reference to notes 3 is blank. Is it intended to be any notes/comments in those closed areas?
- Answer 56: This clouded area identifies where the table for bolt quantities was on the previous issue of the drawings. This table has now been removed and it is each bidders responsibility to calculate the number of bolts.
- Question 57: On page 2, section C you will see that the angle iron requires a weld on the leg closest to the web of the member to be stiffened. It will be virtually impossible to complete this weld with the existing channel members in place. On most of these similar member where there is not a channel existing, it will be extremely difficult to complete this weld. Please advise.
- Answer 57: The revised drawings in Addendum 001 provides an alternate detail for a bolted connection.
- Question 58: Will angle grinders with vacuum attached hoses be permitted for the removal of the existing paint/corrosion?
- Answer 58: Means and methods shall be determined by the Contractor.
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PSPC

Strengthening Design, Lower Liard River Bridge, km 763.3
Alaska Highway, British Columbia.
Project No. R.017173.355

ADDENDUM 002

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Question 59: Regarding the plates that are 17.6m long – There are extremely long and small in width/thickness. Installing and handling these will be extremely difficult and are very likely to become damaged. Is there a possibility that these plates could be made shorter? Perhaps in half or thirds?

Answer 59: Refer to the drawings that were re-issued in Addendum 001.

LIST OF REVISED SPECIFICATIONS

01 35 43 Environmental Protection
09 97 19 Steel Coating

LIST OF REVISED DRAWINGS

Drawing Number	Drawing Title	Revision

END OF SECTION

PART 1 - GENERAL

1.1 Section Included	.1	Related Sections
	.2	Definitions
	.3	Measurement Procedures
	.4	Regulatory Overview
	.5	Submittals
	.6	Environmental Effects Evaluation
	.7	Site Access and Parking
	.8	Protection Work Limits
	.9	Erosion Control
	.10	Pollution Control
	.11	Equipment Maintenance, Fueling and Operation
	.12	Operation and Equipment
	.13	Managing Invasive Plant Vegetation
	.14	Fire Prevention and Control
	.15	Wildlife
	.16	Relics and Antiquities
	.17	Waste Materials Storage and Removal
	.18	Wastewater Discharge Criteria
	.19	Camp Wastewater Discharge Criteria
	.20	Drainage
	.21	Site Cleaning and Plant Protection
	.22	Blasting
	.23	Environmental Protection Supplies
	.24	Notification
	.25	Environmental Monitoring
1.2 Related Sections	.1	Section 01 33 00 – Submittal Procedures
	.2	Section 02 61 33 – Hazardous Waste Materials
1.3 Definition	.1	Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.
	.1	Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.
	.2	Environmental Protection Plan: is prepared by Contractor and describes in writing all the environmental protection and mitigation measures that will be applied throughout the life of the Project by the Contractor to avoid or minimize the potential

- effects on the environment associated with the Project.
- .3 Wetted Perimeter: area of stream where water is currently running or pooled.
- .4 In-stream Work: any work performed below the high-water mark, either within or above the Wetted Perimeter of any Fisheries Sensitive Zone.
- .5 Fisheries Sensitive Zone: in-stream aquatic habitats and out of stream habitat features such as side channels, wetlands, and riparian areas.
- .6 Invasive plants: are any alien plant species that have the potential to pose undesirable or detrimental impacts on humans, animals or ecosystems. Invasive plants have the capacity to establish quickly and easily on both disturbed and un-disturbed sites, and can cause widespread negative economic, social and environmental impacts.
- .7 Noxious weeds: are invasive plants that have been designated under the *BC Weed Control Act*. This legislation imposes a duty on all land occupiers to control a set list of identified invasive plants. See www.agf.gov.bc.ca/cropprot/noxious.htm.
- .8 Riparian area – for a stream, the 30m strip on both sides of the stream, measured from the high water mark, (b) for a ravine less than 60 m wide, a strip on both sides of the stream measured from the high water mark to a point that is 30 m beyond the top of the ravine bank, and for a ravine 60 m wide or greater, a strip on both sides of the stream measured from the high water mark to a point that is 10 m beyond the top of the ravine bank (Riparian Areas Regulation).
- .9 Species at risk: a species that has been defined as “at risk” [of extirpation] by either the federal or provincial government.
- .10 Timing windows: periods when human activities are least likely to cause damage to species and ecosystems.
- .11 Culturally Modified Trees (CMTs): a CMT is a tree that has been altered by aboriginal people as part of their traditional use of the forest. For more information please see *the Handbook for the Identification and Recording of Culturally Modified Trees* prepared by the Archaeology Branch B.C. Ministry of Business, Tourism and Culture
- .1 Qualified Environmental Professional (QEP): Individuals that may act as QEPs under the Riparian Areas Protection Regulation are defined under Section 21 of the regulation. The QEP must be acting under their professional association’s code of ethics and subject to the organization’s disciplinary action. QEPs may hold the following designations: Agrologist, Applied technologist or technician, Professional biologist, Professional engineer, Professional forester, Professional geoscientist or Registered forest technologist. QEPs can conduct assessments as individuals or together with other qualified environmental professionals. They must have an area of expertise that is recognized in the
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- regulation as one that is acceptable for the purpose of providing all or part of an assessment report for the particular development proposal that is being assessed. They will only be considered a QEP for that portion of the assessment that is within their area of expertise, as identified in the regulation.
- 1.4 Measurement Procedures** .1 Preparation and implementation of the Environmental Protection Plan (EPP) in accordance with this Section 01 35 43 – Environmental Protection will not be measured separately for payment and will be considered incidental to work.
- 1.5 Regulatory Overview** .1 Comply with all applicable environmental laws, regulations and requirements of Federal, Provincial, and other regional authorities, and acquire and comply with such permits, approvals and authorizations as may be required.
- .2 Comply with and be subject to those permits and approvals obtained from Departmental Representative to conduct the Work.
- .3 Pay specific attention to the provincial BC Land Use Permit, Water License and Quarry Permit.
- .4 Pay specific attention to the most current version of the *Migratory Birds Convention Act*.
- .5 Pay specific attention to the most current version of the provincial BC guidelines under Northeast Region: Terms and Conditions and Timing Windows.
- .6 Pay specific attention to most current version of the provincial BC ENV guidelines in Standards and Best Practices for Instream Works.
- .7 Pay specific attention to most current version of the ENV Develop with Care Northeast Region.
- .8 Where in-water work is conducted, pay specific attention to the most current version of the BC Water Quality Guidelines.
- 1.6 Submittals** .1 The Contractor is required to prepare an Environmental Protection Plan (EPP) in accordance with Section 01 33 00 – Submittal Procedures. The EPP should include all relevant environmental impacts/issues at the site as indicated by the completion of the EPP Checklist. Prior to commencing construction activities or delivery of materials to site, submit the EPP (See Appendices for Checklist) for review and approval by the Departmental Representative. The EPP will require the Contractor to carefully think through the entire project, including identifying what activities as works will be occurring, both generally and at specific sites, and by what methods. The Environmental Protection Plan shall be completed by a P.Biol or RPBio, or other qualified professional, and shall, at a minimum include the following:
1. The specifics of a detailed monitoring program. This includes details and rationale concerning sampling locations, timing, duration, and methods, and
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- identification of the person(s) who will be carrying out the monitoring program.
2. The process and protocol for ensuring that supervisors and individual staff employed by the Contractor are very clear on which environmental standards need to be achieved, how they will be achieved, and establishing how the Contractor will ensure that this is successfully occurring.
 3. Erosion, drainage, and sediment control plan which identifies type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with the requirements of the applicable ENV Approval or Notification for instream work or under ENV guidelines, and all other applicable regulations including the requirements of these specifications.
 4. Drawings should show locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of any excess or spoil materials including methods to control runoff and to contain materials on-site.
 5. Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized work areas.
 6. Spill Control Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 7. Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
 8. Contaminant prevention plan that: identifies 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.
 9. Outline the avoidance and mitigate measures which the Contractor will undertake and implement to ensure compliance with the environmental regulations applicable to the project (which may include requirements provided in ENV Approval or Notifications for Instream Work, NWPA Approval for
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- Instream Work etc.) and these contract specifications.
10. The procedures for stopping the work and implementing changes to the construction methods should the Contractor not be achieving the environmental requirements as outlined in these specifications.
 11. The procedures for stopping work should the Contractor encounter archaeological anomalies or human remains.
- .2 All submittals in accordance with Section 01 33 00 – Submittal Procedures.
- 1.7 Environmental Effects Evaluation** .1
- 1.8 Site Access and Parking** .1 The Contractor shall review both short and long-term access requirements with the Departmental Representative, both at the start-up and on an on-going basis. In consultation with the Departmental Representative, the contractor shall formulate an agreement for worker transportation to and from the work site and where workers shall park their private vehicles. Generally, personal vehicles shall be parked at least 15 meters distance from any watercourse.
- .2 The Contractor shall ensure that the environment beyond the work limits is not negatively impacted or damaged by workers' vehicles or construction machinery and shall instruct workers so that the "footprint" of the project is kept within defined boundaries.
- 1.9 Protection of Work Limits** .1 The Contractor shall include in the Environmental Protection Plan (EPP) details on the work limits, how these shall be marked and what procedures will be employed to ensure trespass outside these limits does not occur, to the satisfaction of the Departmental Representative.
- 1.10 Erosion Control** .1 Erosion control measures that prevent sediment from entering any waterway, water body or wetland in the vicinity of the construction site are a critical element of the project and shall be implemented by the Contractor.
- .2 All applicable on-site sediment control measures shall be constructed and functional prior to initiating activities associated with the construction activities. The Contractor shall prepare an Erosion Control Plan, to be part of the EPP, to the satisfaction of the Departmental Representative.
- .3 The regular monitoring and maintenance of all erosion control measures shall be the responsibility of the Contractor. If the design of the control measures is not functioning effectively they are to be replaced. The Departmental Representative will monitor the Contractor's erosion control performance.
- .4 Erosion control measures must be in compliance with both
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Federal and Provincial legislation. Contractors should be referencing the provincial ENV Standards and Best Practices for Instream Works (2004).

1.11 Pollution Control

- .1 The Contractor shall prevent any deleterious and objectionable materials from entering streams, rivers, wetlands, water bodies or watercourses that would result in damage to aquatic and riparian habitat. Hazardous or toxic products shall be stored no closer than 100 meters to any surface water.
 - .2 A Spill Response Plan will be prepared as part of the EPP and shall detail the containment and storage, security, handling, use and disposal of empty containers, surplus product or waste generated in the application of these products, to the satisfaction of the Departmental Representative, and in accordance with all applicable federal and provincial legislation. The EPP shall include a list of products and materials to be used or brought to the construction site that are considered or defined as hazardous or toxic to the environment. Such products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, hot poured rubber membrane materials, asphalt cement and sand blasting agents.
 - .3 The containment, storage, security, handling, use, unique spill response requirements and disposal of empty containers, surplus product or waste generated in the use of any hazardous or toxic products shall be in accordance with all applicable federal and provincial legislation. Hazardous products shall be stored no closer than 100 meters from any surface water.
 - .4 An impervious berm shall be constructed around fuel tanks and any other potential spill area. The berms shall be capable of holding 110% of tank storage volumes and shall be to the satisfaction of the Departmental Representative. Measures such as collection/drip trays and berms lined with occlusive material such as plastic and a layer of sand, and double lined fuel tanks can prevent spills into the environment.
 - .5 The Contractor shall prevent blowing dust and debris by covering and/or providing dust control for temporary roads and on-site work such as rock drilling and blasting by methods that are approved by the Departmental Representative.
 - .6 The Contractor shall provide spill kits, to the satisfaction of the Departmental Representative, at re-fuelling, lubrication and repair locations that will be capable of dealing with 110% of the largest potential spill and shall be maintained in good working order on the construction site. The Contractor and site staff shall be informed of the location of the spill response kit(s) and be trained in its use.
 - .7 Timely and effective actions shall be taken to stop, contain and clean-up all spills as long as the site is safe to enter. The
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Departmental Representative shall be notified immediately of any spill as well as the provincial authorities. Basic instructions and phone numbers shall be part of the Contractor's EPP.

- .8 In the event of a major spill, the Contractor shall prioritize the cleanup and all other work shall be stopped, where appropriate, and personnel devoted to spill containment and clean up.
- .9 The costs involved in a major spill incident (control, clean up, disposal of contaminants, and site remediation to pre-spill conditions), shall be the responsibility of the Contractor. The site will be inspected to ensure completion to the pre-spill condition to the satisfaction of the Departmental Representative and all relevant inspection agencies (ENV/DFO authorities).

1.12 Equipment Maintenance, Fueling and Operation

- .1 The Contractor shall ensure that all soil, seeds and any debris attached to construction equipment to be used on the project site shall be removed (e.g. power washing, wheel wash etc.) before delivery to the work site.
 - .2 Equipment fuelling sites will be identified by the Contractor to the satisfaction of the Departmental Representative. Except for chain saws, any fuelling closer than 100 meters to any surface water (streams, wetlands, water bodies or watercourses) shall require discussion and prior agreement with the Departmental Representative.
 - .3 Diesel and gasoline delivery vehicles, including bulk tankers shall be parked more than 30 meters from any surface water. Gravity fed fuel systems are not allowed. Manual or electric pump delivery systems shall be used. Fuelling personnel shall maintain a presence at with immediate attention to the fuelling operations.
 - .4 Mobile fuel containers (e.g. slip tanks, small fuel carboys) shall remain in the service vehicle at all times. Protection and containment of approved fuel storage sites is addressed in 1.11.4 of Pollution Control.
 - .5 Equipment use on the project shall be fuelled with E10, and low sulphur diesel fuels where available, and shall conform to local emission requirements. The Contractor is to ensure that unnecessary idling of the vehicles is avoided.
 - .6 Oil changes, lubricant changes, greasing and machinery repairs shall be performed at locations satisfactory to the Departmental Representative. Waste lubrication product (e.g. oil filters, used containers, used oil, etc.) shall be secured in spill-proof containers and properly recycled or disposed of at an approved facility. No waste petroleum, lubricant products or related materials are to be discarded, buried or disposed of in borrow pits, turnouts, picnic areas, viewpoints, etc. or anywhere within the work area.
 - .7 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working condition. Equipment left on-Site overnight should be equipped with a drip
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tray.

- .8 Fuel containers and lubricant products shall be stored only in secure locations to the satisfaction of the Departmental Representative. Fuel tanks or other potential deleterious substance containers shall be secured to ensure they are tamperproof and cannot be drained by vandals when left overnight. Alternatively, the Contractor may hire a security person employed to prevent vandalism.

1.13 Operation of Equipment

- .1 Equipment movements shall be restricted to the “footprint” of the construction area. The work limits shall be identified by stake and ribbon or other methods to the satisfaction of the Departmental Representative. No machinery will enter, work in or cross over streams, rivers, wetlands, water bodies or watercourse, nor damage aquatic and riparian habitat or trees and plant communities. Where construction activities require working close to surface water, the Contractor is required to describe measures to be employed to ensure fugitive materials (e.g. rocks, soil, branches) and especially deleterious substances (e.g. chemicals) does not enter any surface water areas.
- .2 The Contractor shall instruct workers to prevent pushing, placement, raveling, storage or stockpiling of any materials (e.g. slash, rock, fill or top soils) in the trees bordering the right-of-way or into surface water.
- .3 When, in the opinion of PSPC, negligence on the part of the Contractor results in damage or destruction of vegetation, or other environmental or aesthetic features beyond the designated work area, the Contractor shall be responsible, at his or her expense, for complete restoration including the replacement of trees, shrubs, topsoil, grass, etc. to the satisfaction of the Departmental Representative.
- .4 Restrict vehicle movements to the work limits.
- .5 Workers vehicles are to remain within the construction footprint.

1.14 Managing Invasive Plant Vegetation

- .1 Keep equipment clean and avoid parking, turning around or staging equipment in known invasive species infested areas, or mow prior to use.
- .2 Wash equipment prior to mobilization to site.
- .3 Minimize unnecessary disturbance of roadside aggregates or soil, and retain desirable roadside vegetation whenever possible.
- .4 Where possible, begin mowing or brushing in “invasive plant free” areas and end in infested areas.
- .5 Where possible, use only clean fill material from an “invasive plant free” source.
- .6 Whenever possible, re-seed with grass mixtures that are free of weeds, locally adapted, non-invasive, and quick to establish. Spread seed in the early spring or late fall to ensure successful
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establishment

1.15 Fire Prevention and Control

- .1 A fire extinguisher shall be carried and available for use on each machine and at locations within the project footprint in the event of fire. Basic firefighting equipment recommended (e.g. a water truck; minimum 2276 litres with 150m of fire hose and a pump capable of producing 172.3 kPa water pressure at the nozzle, three shovels, two Pulaski's, and two five gallon backpack pumps) shall be maintained at the construction site at a location known and easily accessible to all Contractors' staff. Contactor's staff shall receive basic training in early response to wildfire events during the "environmental briefing".
- .2 Construction equipment shall be operated in a manner and with all original manufacturers' safety devices to prevent ignition of flammable materials in the area.
- .3 Care shall be taken while smoking on the construction site to ensure that the accidental ignition of any flammable material is prevented. An area, sufficiently away from any flammable materials, shall be designated as the smoking area.
- .4 In case of fire, the Contractor or worker shall take immediate action to extinguish the fire provided it is safe to do so. The Departmental Representative shall be notified of any fire immediately as well as the applicable Provincial Authorities. Basic instruction and phone numbers will be provided on-site by the Contractor and will be discussed in the project start-up meeting.
- .5 Fires or burning of waste materials is not permitted.
- .6 Where fires or burning is permitted, prevent staining or smoke damage to structures, materials or vegetation which is to be preserved. Restore, clean and return to new condition stained or damaged Work.
- .7 Provide supervision, attendance and fire protection measures as directed.

1.16 Wildlife

- .1 Obtain all required permits from the province
Avoid or terminate activities on site that attract or disturb wildlife and vacate the area and stay away from bears, cougars, wolves, elk, buffalo or moose that display aggressive behavior or persistent intrusion. Extra care to control materials that might attract wildlife (e.g. lunches and food scraps) must be exercised at all times.
- .2 Notify the Departmental Representative immediately about dens, litters, nests. Carcasses (road kills), bear activity or encounters on or around the site or crew accommodations. Other wildlife related encounters are to be reported within 24 hours

1.17 Relics and Antiquities

- .1 Artifacts, relics, antiquities, and items of historical interest such as cornerstones, commemorative plaques, inscribed tablets and any objects found on the work site that may be considered
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- artifacts shall be reported to the Departmental Representative immediately. The Contractor and workers shall wait for instruction before proceeding with their work.
- .2 All historical or archaeological objects found on the Project site are protected under Federal and Provincial Acts and regulations. The Contractor and workers shall protect any articles found and request direction from the Departmental Representative
- 1.18 Waste Materials Storage and Removal**
- .1 The Contractor and workers shall dispose of hazardous wastes in conformance with the applicable federal and provincial regulations and should be part of the EPP.
- .2 All wastes originating from construction, trade, hazardous and domestic sources, shall not be mixed, but will be kept separate.
- .3 Construction, trade, hazardous waste and domestic waste materials shall not be burned, buried, or discarded at the construction site. These wastes shall be contained and removed in a timely and approved manner by the Contractor and workers, and disposed of at an appropriate waste landfill site located outside the work area.
- .4 A concerted effort shall be made by the Contractor and workers to reduce, reuse and recycle materials where possible.
- .5 Sanitary facilities, such as portable container toilets, shall be provided by the Contractor and maintained in a clean condition
- 1.19 Wastewater Discharge Criteria**
- .1 Any waste water discharged to the ground will conform to the discharge requirements set out in the provincial *Water Act*, or per any Permit obtained for this Project. Any suspect contaminated wastewater or groundwater should be contained and tested for potential contaminants to determine appropriate measures of discharge or removal.
- .2 Contractor must obtain approval from the provincial *Water Act* Officer prior to discharging any treated wastewater.
- 1.20 Camp Wastewater Discharge Criteria**
- .1 Camp wastewater will be released onto the ground at a location that is a minimum of 30 meters from natural drainage courses and 100 meters from fish bearing waters and conform to the discharge requirements set out in the provincial *Water Act* or applicable Permits.
- .2 If unable to meet the discharge criteria, provide additional storage and/or treatment necessary to meet criteria prior to discharge.
- .3 Treat all camp wastewater to conform to the discharge requirements set out in the *Water Act* Permit.
- .4 No direct discharge is allowed to wetland or surface waters.
- .5 Contractor must obtain approval from the *Water Act* Officer prior to discharging treated wastewater.
- 1.21 Drainage**
- .1 Provide temporary drainage and pumping as necessary to keep
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- excavations and site free from water. Management of drainage should be part of the EPP.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
 - .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements such as the provincial *Water Act*.
 - .4 Where required, water quality should be tested for potential contaminants (turbidity) and the results compared to the BC Water quality Guidelines for aquatic life.
 - .5 Provide an erosion and sediment control plan that identifies type and location of erosion and sediment controls to be provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
 - .6 Submit an Erosion, Sediment and Drainage Control Plan to Departmental Representative for review and approval prior to commencing Work in fisheries sensitive areas or in areas that may affect fisheries sensitive areas and specifically address the protection of water bodies, water courses, and the following:
 - .1 Details of grading Work to prevent surface drainage into or out of Work areas.
 - .2 Details of erosion control works and materials to be used, including the deployment of silt fencing, floating silt curtains and containment booms during construction and excavation activities.
 - .3 Work Schedule including the sequence and duration of all related Work activities.
 - .4 The treatment of site runoff to prevent siltation of watercourses.
 - .5 Dewatering procedures for excavated materials including silt removal procedures prior to discharge.
 - .6 Stabilizing procedures during excavation.
 - .7 Maintenance of filters and sedimentation traps.
 - .7 Any dewatering activities will be released onto the ground at a location that is a minimum of 30 meters from natural drainage courses and 100 meters from fish bearing waters.
 - .8 Have on hand sufficient pumping equipment, machinery, and tankage in good working condition for ordinary emergencies, including power outage, and competent workers for operation of pumping equipment.
- 1.22 Site Clearing and Plant Protection**
- .1 Protect trees and plants on site and adjacent properties where indicated.
 - .2 Wrap in burlap, trees and shrubs adjacent to construction Work, storage areas and trucking lanes, and encase with protective wood
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framework from grade level to height of 2 m.

- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas indicated or designated by Departmental Representative.
- .6 Vegetation clearing should be conducted outside of the least-risk timing window for nesting birds, as per federal Nesting Zone B.
- .7 The Contractor should be aware that BC has culturally modified trees (CMTs) that are protected under the Heritage Act. If a CMT is encountered, stop work immediately and contact the Departmental Representative

1.23 Blasting

- .1 The Departmental Representative will identify a magazine location for explosives should a factory site or 'ready to use' explosive site be required.
- .2 The sweep of the blast area shall include looking for wildlife that may be in the area. If any are found, they shall be hazed out of the area by the Environmental Monitoring personnel.
- .3 The Contractor shall ensure that all work activities meet or exceed the standards outlined in DFO's "Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters"; Canadian Technical Report of Fisheries and Aquatic Sciences 2107, 1998.
- .4 The Contractor shall, whenever explosives are used, use the Provincial and Workers Compensation Laws and Regulations, and all respective Agencies Having Jurisdiction over them, such as DFO.
- .5 Steps shall be taken to minimize fly-rock and dust. Vegetation outside of the designated area shall not be damaged or destroyed.
- .6 In order to stabilize slopes of the cut, these shall be scaled of all loose material. Ditches shall be formed and cleaned upon the completion of the blasting, and the natural drainage shall be restored as specified by the Contract or as directed by the Departmental Representative.
- .7 The Contractor shall describe the proposed type and quantities of explosives to be used on the project, to the satisfaction of the Departmental Representative. Some blasting products – such as those very high in nitrogen, may have some limitations imposed for environmental protection purposes

1.24 Environmental Protection Supplies

- .1 Comply with federal and provincial fisheries and environmental protection legislation, including preventing the loss or destruction of fish habitat, and minimizing the impact of sedimentation, siltation or otherwise causing a degradation in water quality.
 - .2 Provide a minimum of 30 m or more and as required of polypropylene silt fence (typical height of 0.9 m) and the necessary stakes for installation. This will be used as necessary to
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- .3 prevent sediment transport into water bodies.
Provide a minimum of 50 lineal meters or more and as required of 200 mm diameter hydrophobic, sorbent booms. This will be used as necessary to prevent the migration of hydrocarbons.
- .4 Supply, transport, install and maintain erosion, sediment and drainage controls necessary to complete the Work in accordance with the requirements of Departmental Representative.
- .5 At the completion of construction, dispose of used silt fence off-site as non-Hazardous Waste. Dispose of used absorbent boom in accordance with Section 02 61 33 - Hazardous Waste Material.
- .6 Unused Erosion, Sediment and Drainage Control supplies will remain the property of Departmental Representative until the completion of the Contract.
- .7 Provide inventory of environmental protection supplies prior to mobilization

1.25 Notification

- .1 Departmental Representative will notify Contractor in writing of observed non-compliance with Federal, Provincial or Municipal environmental laws or regulations, permits, etc.
- .2 Contractor: after receipt of such notice, shall inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of Work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions

1.27 Environmental Monitoring

- .1 At a minimum the environmental monitoring shall be completed by P.Biol, RPBio, or Qualified Environmental Professional (QEP). If a QEP completes the monitoring, the QEP must work under the direction of the P.Biol or RPBio who completes the Environmental Protection Plan.
- .2 The monitoring program must be anticipatory and responsive to construction practices or environmental changes, reflecting the site-specific conditions, level of sensitivity of the receiving environment, potential adverse effects, and level of environmental risk. Submitted documents regarding the proposed monitoring program should clearly identify how monitoring will adhere to this approach.
- .3 The monitoring program shall satisfy all regulatory requirements and terms of these specifications. The onus is on the Contractor to monitor and ensure compliance, to identify arising problems, and to subsequently take responsibility and all necessary measures in response

PART 2 - PRODUCTS**2.1 Not Used**

- .1 Not used.
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PART 3 - EXECUTION**3.1 Not Used**

.1 Not used.

END OF SECTION

1. GENERAL**1.1 REFERENCES**

- .1 British Columbia Ministry of Transportation and Infrastructure
 - .1 Approved Paint Systems shall be in accordance with the most recent edition of the Recognized Products List published by the British Columbia Ministry of Transportation and Infrastructure.
- .2 Federal Standard (FS).
 - .1 FS-595B-Current Edition, Paint Colors.
- .3 Society for Protective Coatings (SSPC).
 - .1 SSPC-SP-1, Solvent Cleaning.
 - .2 SSPC-SP 6/NACE No. 3, Commercial Blast Cleaning.
 - .3 SSPC-Vis-1, Visual Standard for Abrasive Blast Cleaned Steel (Standard Reference Photographs) Editorial Changes September 1, 2000 (Steel Structures Painting Manual, Chapter 2 - Surface Preparation Specs.).
 - .4 SSPC-Guide 15, Field Methods for Retrieval and Analysis of Soluble Salts on Substrates.
 - .5 SSPC-PA2, Measurement of Dry Coat Thickness with Magnetic Gauges.
 - .6 SSPC Good Painting Practices, Volume 1, 4th Edition.
 - .7 SSPC-Guide 6, Guide for Containing Debris Generated During Paint Removal Operations
- .4 Transportation of Dangerous Goods Act (TDG Act) 1992, (T-19.01).
- .5 Transportation of Dangerous Goods Regulations (TDGR), (SOR/85-77, SOR/85-585, SOR/85-609, SOR/86-526).
- .6 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .7 Province of British Columbia
 - .1 Workers Compensation Act, RSBC 1996 –Updated 2006.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Lower Liard River Bridge, km 763.3
 - .1 All coating required under this Contract, including coating of new structural steel strengthening members and localized re-coating of existing members with corrosion, will be paid on a Lump Sum basis in accordance with the unit price

table under Item 4 Paint Repairs. Included in this pay item the Contractor shall allow for two (2) square metres of localized re-coating of existing members with corrosion. Localized re-coating will be limited to existing steel members that are designated for strengthening and have local corrosion on the surface in contact with a new structural steel strengthening member. The two (2) square metres shall be assumed to be distributed throughout the entire bridge. Individual areas that require re-coating will not be smaller than 100mm x 200mm.

- .2 Cleaning and preparation of existing structural steel and components, supply of paint, application of paint, erection and maintenance of containment structures and all incidental work will be included in this pay item under the Lump Sum amount, which shall include full compensation for the cost of furnishing all labor, materials, equipment, tools and incidentals necessary to complete the work including, but not limited to, permitting, project preparation, traffic control, installation and maintenance of all necessary scaffolding, enclosures, and blast media collection systems, heating and hording systems and other systems for maintenance of favourable coating application conditions within the enclosure, surface preparation of structural steel, lead abatement and disposal of lead contaminated material, quality control, supply and installation of coating systems, curing and correction of coating deficiencies, and site cleanup and for any other work not included in other sections of the specifications.
- .2 Progress payments will be made monthly and will be based on the percentage of the total estimated area satisfactorily cleaned and coated as determined by the Departmental Representative.
- .3 Payment will not be made for areas which do not have the specified number of coats for the paint system used nor for areas which are complete but have designated repairs outstanding.

1.3 SUBMITTALS

- .1 Product Data.
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's for paint.
 - .3 Paints that do not appear on the "British Columbia Ministry of Transportation and Infrastructure Recognized Product List" (available at: http://www2.gov.bc.ca/assets/gov/driving-and-transportation/transportation-infrastructure/engineering-standards-and-guidelines/recognized-products-list/recognized_products_list.pdf), Type B for the Lower Liard River Bridge, System Application SF2, will not be accepted.
 - .4 Contractor shall not change to another approved system once the initial paint system has been applied to any portion of the structure.

- .2 Test Reports.
 - .1 For each batch, the Contractor shall carry out the necessary testing prior to usage, to ensure the paint being supplied meets British Columbia Ministry of Transportation and Infrastructure requirements for:
 - .1 Colour
 - .2 Gloss
 - .3 Solids content
 - .4 IR (Infra-red analysis for comparison with the original approval testing).
- .3 Samples.
 - .1 Enable Departmental Representative to take one (1) - 1 L samples of each batch of paint delivered to site from manufacturer's containers.
 - .2 Departmental Representative will test the samples to assure the paint complies with the original approval testing.
- .4 Manufacturer's Instructions.
 - .1 Submit manufacturer's installation instructions.
- .5 Scaffold and Enclosure Drawings.
 - .1 Submit drawings for scaffold and enclosure in accordance to Section 01 33 00 - Submittal Procedures. Drawings for scaffold and enclosure shall be sealed by a Professional Engineer registered in the Province of British Columbia.

1.4 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
 - .1 Test reports shall be submitted in accordance with Section 01 33 00 –Submittal Procedures.
- .2 Pre-Installation Meetings:
 - .1 Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
 - .2 Site is to be examined to become completely familiar with every detail and intent of both this specification and the scope of work to be performed as detailed in the Contract.
 - .3 Site and surrounding area is to be examined to become familiar with all restrictions or possible restrictions, public traffic, and the property of others.
 - .4 Consultant may conduct pre-installation site testing to verify the blasting required and the lead content that may be expected in the blasting spoil. Any site testing must be pre-approved by Departmental Representative.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 35 43 - Environmental Protection and Section 02 81 01 - Hazardous Materials.
- .2 Divert unused coating materials from landfill through disposal at a special wastes depot.

2. PRODUCTS**2.1 MATERIALS**

- .1 Blasting Media.
 - .1 Contractor may choose the type of abrasive intended for use, taking into consideration the abrasive disposal and worker's health implications of each type.
 - .2 Blasting grit shall be free of corrosion producing contaminants and shall be free of any moisture, oils, greases or other elements which will reduce the adhesion of paint coatings.
 - .3 The blast cleaning abrasive used shall produce the minimum surface profile required by the paint manufacturer.
- .2 Paint.
 - .1 To British Columbia Ministry of Transportation and Infrastructure's "Recognized Products List" for coating systems Type B2 – deck truss for Lower Liard River
 - .2 If changes, additions or deletions are made to this Approved list prior to project initiation, current edition of the Approved list shall be used.
 - .3 Topcoat Colour in accordance with Section 3.6 –Special Procedures.
 - .4 The primer shall be tinted to a Colour that contrasts from the prepared steel and from the intermediate coat.
 - .5 The intermediate coat shall be tinted to be readily distinguished from the primer and the topcoat.
 - .6 Paint shall be safely stored by the Contractor in a location which keeps its temperature in the range of 10°C to 25°C.

3. Execution**3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 AREAS TO BE PAINTED

- .1 The areas to be painted shall be in accordance with the Project Drawings.

- .2 If decking and/or fencing or other appurtenances require removal to provide proper access to the structural steel, this shall be performed by the Contractor at the Contractor's expense. No measurement or additional payment will be made for this work.
- .3 Galvanized steel shall not be prepared, damaged, or painted.
- .4 There are no known areas that are inaccessible for painting on these bridges, however, if in the opinion of the Departmental Representative, an area is deemed to be truly inaccessible (e.g. back to back angle irons), the area shall be cleaned, primed, and painted to the best of the Contractor's ability and to the satisfaction of the Departmental Representative.
- .5 Areas on the interior (enclosed) side of the built-up section comprising the top chord shall not be recoated.

3.3 PREPARATION

- .1 Washing
 - .1 Before any blast cleaning operations commence, the Contractor shall carry out surface cleaning operations on all steel designated to receive a coating system.
 - .2 All organic materials such as bird droppings and any other non-structural items or pollutants attached to the steel are to be removed by hand cleaning operations.
 - .3 All oil, grease and road tar shall be removed manually with solvent cleaning as per SSPC Specification SP1. Any area contaminated with oil or grease shall be cleaned with an approved biodegradable detergent. The detergent is to be environmentally friendly. The Contractor shall supply copies of the applicable MSDS sheets to the Departmental Representative prior to using the material.
 - .4 The entire area to be coated shall be washed clean of road spatter, chlorides and other surface contaminants using water of sufficient pressure and volume to flush the chlorides free of the structure.
- .2 Surface Preparation.
 - .1 Clean all surfaces so they are free from rust, mill scale, welding slag, dirt, oil, grease and other foreign substances.
For areas that require re-coating power tool clean to be free of all visible oil, grease, dirt, dust, mill scale, rust and paint.
 - .2 Compressed air to be free of water and oil before reaching nozzle. Prior to abrasive blast cleaning, the Contractor shall demonstrate to the Inspector that the air is moisture free.
 - .3 Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, by blowing with clean dry compressed air, or by vacuum cleaning.
 - .4 Contractor shall prepare only as much surface as can be coated with primer the same day. If unusual circumstances occur which prevent all prepared surfaces from being primed the same day, a light blast cleaning will be required over all

- unprimed surfaces prior to recommencement of painting.
- .5 The surface profile (anchor pattern) in the blasted steel shall be as recommended by the Paint Manufacturer.
- .3 Examination of Prepared Surfaces
- .1 Do not apply paint until prepared surfaces have been accepted by the Departmental Representative.
- .2 Prior to commencing paint application, the degree of cleanliness of surfaces to be in accordance with SSPC-Vis1 to the satisfaction of the Departmental Representative.
- .3 Prepared surfaces shall be inspected by testing for chloride ion levels on the cleaned steel by Departmental Representative. Chloride ion contamination of the cleaned surface shall be less than $7 \mu\text{g}/\text{cm}^2$ as measured by Kitigawa fast salinity test (Chlor-Test).
- .4 Any prepared surfaces which do not meet the chloride ion limit criteria shall be re-washed using a chloride ion extractor such as Chlor-Rid or approved equivalent until these specifications are met.
- .5 Prepared surfaces shall be inspected by testing for ferrous ions and sulfates on the cleaned steel by Departmental Representative. Ferrous ion contamination of the cleaned surface shall be less than $10 \mu\text{g}/\text{cm}^2$ when tested by SSPC-Guide 15 swabbing extraction method. Sulfate contamination of the cleaned surface shall be less than $17 \mu\text{g}/\text{cm}^2$ when tested by SSPC-Guide 15 swabbing extraction method.
- .6 Any prepared surface that do not meet the ferrous ion and sulfate limit criteria shall be re-washed.
- .7 Surface profile shall be approved by Inspector based on results obtained by testing with Testex tape or surface profilometer gauge.
- .4 Protection of surfaces.
- .1 Protect surfaces not to be painted and if damaged, clean and restore such surfaces as directed by Departmental Representative.
- .2 Apply primer, paint, or pre-treatment after surface has been cleaned and before deterioration of surface occurs.
- .3 Clean surfaces again to satisfaction of Inspector if flash rusting occurs after completion of surface preparation.
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats of paint. Remove contaminants from surface and apply paint immediately.
- .5 Protect cleaned and freshly painted surfaces from dust and damage from ongoing Contractor operations to approval of Engineer.
- .6 Contractor shall protect and maintain the painted surfaces until acceptance of the entire project.
- .7 The Contractor shall take due precaution against damaging or disfiguring any

portion of the bridge with:

- .1 Spatter,
 - .2 Spray fog,
 - .3 Splashes,
 - .4 Smirches of paint or associated painting materials including the fuel and lubricants used with his equipment.
 - .5 Tarps, polyethylene or other covering material shall be used to protect deck, sidewalks, piers, abutments, slope protection and other portions of the structure adjacent to areas being painted and subject to paint or other damage.
 - .6 Any inadvertent damage or disfigurement which may occur by reason of the Contractor's operations shall immediately be repaired to the satisfaction of the Departmental Representative.
- .5 Caulking joints.
- .1 The contact interface between existing steel and new steel strengthening members shall be caulked to form a water tight seal along the top edge and the two sides of members involved. The bottom edge or the lowest edge of the plate or member shall not be caulked.
 - .2 Caulking between all stitch welds is required including any stitch welds along a bottom edge or the lowest edge of a plate.
 - .3 Strengthening plates located on the underside of the web for an existing wide flange beam do not need to be caulked.
 - .4 The type of caulking used must be compatible with the paint system used and shall be applied according to the Manufacturer's instructions. No caulking shall be used which has not been reviewed by the Departmental Representative.
 - .5 All costs associated with the caulking will be considered incidental to the work and no separate or additional payment will be made.
- .6 Mixing paint.
- .1 Do not dilute or thin paint for brush application; use as received from manufacturer.
 - .2 Mix ingredients in container before and during use and ensure breaking up of lumps, complete dispersion of settled pigment, and uniform composition.
 - .3 Do not mix or keep paint in suspension by means of air bubbling through paint.
 - .4 Thin paint for spraying according to manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Departmental Representative.
 - .5 Paint shall not remain in spray pots, painter's buckets etc. overnight.
 - .6 Multi-component paints that have been mixed and the Manufacturer's recommended pot-life has been exceeded shall be properly disposed of.
- .7 Paint coats.

- .1 As specified by Coating Manufacturer and as on Recognized Products List.
- .2 Paint thickness shall be to the Manufacturer's specifications.
- .3 Stripe painting of primer and intermediate coats is required for the following areas:
 - .1 Bolt heads
 - .2 Edges of plates
 - .3 90° corners on any steel (interior/exterior)
 - .4 Sharp corners of structural steel
- .4 Stripe painting shall be performed with primer to full specified primer thickness and to Manufacturer's specifications for primer material prior to the application of the full primer coat to the satisfaction of the Departmental Representative.
- .5 Stripe painting shall be performed with intermediate coat to full specified intermediate material thickness and to Manufacturer's specifications for intermediate material prior to the application of the full intermediate coat to the satisfaction of the Departmental Representative.
- .6 Stripe painting of the top coat is not required.
- .7 As a result of stripe painting, additional film thickness will be built up around edges, bolts, etc. Variation from Manufacturer's recommended thicknesses will be allowed in these areas provided that runs, sags, drips, excessive buildup or other defects are not rejected by the Departmental Representative.

3.4 APPLICATION

- .1 Apply paint by spraying, brushing, or combination of both using application procedures and equipment in accordance with the Manufacturer's instructions. Use sheepskins or daubers when no other method is practical in places of difficult access.
- .2 Where surface is to be painted, do not apply paint without special precautions and provisions including heating and hording when:
 - .1 Environmental conditions do not meet Manufacturer's recommendations.
 - .2 Air temperature is below 4 degrees C or when temperature is expected to drop to 0 degrees C before paint has dried.
 - .3 Temperature of surface is or will be over 50 degrees C before the paint has cured unless paint is specifically formulated for application at high temperatures.
 - .4 Painting shall not commence unless the ambient temperature exceeds the dew point temperature by more than 5°C and the ambient temperature is rising.
 - .5 Fog or mist occur at site; it is raining or snowing; there is danger of rain or snow; relative humidity is above 85%.
 - .6 Surface to be painted is wet, damp or frosted.
 - .7 Previous coat is not fully cured to the satisfaction of the Departmental Representative.
- .3 Provide cover when paint must be applied in damp or cold weather. Protect, shelter, or heat surface and surrounding air to comply with temperature and humidity conditions

- specified in 3.4.2. Protect until paint is dry or until weather conditions are suitable.
- .4 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.
 - .5 Apply each coat of paint as continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
 - .6 Contractor shall use wet film thickness gauges frequently to verify full application of coatings.
 - .7 Brush application.
 - .1 Work paint into cracks, crevices and corners and paint surfaces not accessible to brushes by spray, daubers or sheepskins specifically designed for this purpose.
 - .2 Brush out runs and sags.
 - .3 Remove runs, sags and brush marks from finished work and repaint.
 - .8 Spray application.
 - .1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - .2 Provide traps or separators to remove oil and water from compressed air and drain periodically during operations.
 - .3 Keep paint ingredients properly mixed in spray pots or containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
 - .4 Apply paint in uniform layer, with overlapping at edges of spray pattern.
 - .5 Brush out immediately runs and sags.
 - .6 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray. In areas not accessible to spray gun, use brushes, daubers or sheepskins.
 - .7 Remove runs, sags and brush marks from finished work and repaint.
 - .9 Handling painted metal.
 - .1 Do not handle painted metal until paint has dried, except for necessary handling for painting or stacking for drying.
 - .2 Scrape off and touch up paint which is damaged in handling, with same number of coats and kinds of paint as were previously applied to metal.

3.5 FIELD QUALITY CONTROL

- .1 Site Tests, Inspections.
 - .1 Upon completion of the each of the prime, intermediate and topcoats, test for dry film reading and evaluate the results as per SSPC PA2, to be verified in conjunction with Inspector.

- .2 Any newly painted surfaces will be rejected if any of the following defects are apparent:
 - .1 Runs, sags, holidays or shadowing caused by inefficient application methods.
 - .2 Evidence of poor coverage at bolts, plate edges, lap joints, crevices, pockets, corners and re-entrant angles.
 - .3 Surfaces which have been struck, scraped, spotted by rain or otherwise damaged.
 - .4 Surfaces which exhibit an objectionable texture such as orange peel, mud cracking, fish eyes, etc.
 - .5 Surfaces damaged by overspray.
- .3 Repair areas, as determined by the Departmental Representative, shall be cleaned of all damaged paint and the system re-applied using all coats typical to the specified paint system. Each coat shall be thoroughly dry before applying subsequent coats.
- .4 The Contractor shall carry out all repairs at no additional cost to PSPC.

3.6 SPECIAL PROCEDURES

- .1 Lower Liard River Bridge Alaska Highway km 763.3.
 - .1 Paint.
 - .1 To British Columbia Ministry of Transportation and Infrastructure's "Recognized Products List" for coating systems Type B2 –deck truss.
 - .2 If changes, additions or deletions are made to this Recognized Products List prior to project initiation, current edition of the Recognized Products List shall be used.
 - .3 Topcoat Colour to match existing coating.
 - .2 Areas to be painted.
 - .1 Paint the structural steel elements as indicated in the Project Drawings.
 - .3 Scaffolding and Enclosures
 - .1 Scaffolding and enclosure construction shall conform to the requirements of Z797-09 (R2014) - Code of Practice for Access Scaffold.
 - .2 Working Drawings for scaffold shall be submitted 30 days in advance of date of planned erection work.
 - .3 Payment for Scaffolding and Enclosure will be included within the items for Surface Preparation and Painting and no separate or additional payment will be made.

END OF SECTION