Public Works and Government Services Canada

Requisition No. EZ899-152072 /A

SPECIFICATIONS
For
Painting Jackfish Creek (Km424.8) & Peterson Creek
(Km 678.6) Bridge, Alaska Highway, B.C.

Project No. R.017173.703 Jan, 2015

APPROVED BY:

Alaska Hwy Program Manager, EASS — Date: Jan-26-2015

Construction Safety Coordinator — Date: 2015.01.15

TENDER:

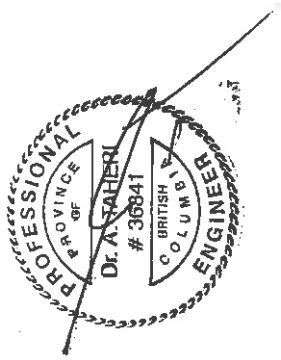
Project Manager — Date: Jan/26/2015

Real Property Services Branch, Professional and Technical Services, Pacific Region
Room 219 - 800 Burrard Street, Vancouver, B.C., V6Z 0B9

Project Title

Painting Jackfish Creek & Peterson Creek Bridges
Alaska Highway in B.C.
Locations:

Jackfish Creek Bridge	km 424.8
Peterson Creek Bridge	km 678.6



AS-BUILT 11x17 DRAWINGS

Jackfish Creek Bridge

113-7-1	General Layout
113-7-4	120' - 0 Pony Truss Structural Steel
113-7-5	Bearings and Steel Schedule
113-8-E1	Erection Diagram
113-8-1	Bottom Chord
113-8-2	Bottom Chord
113-8-3	Top Chord
113-8-4	Top Chord
113-8-5	Top Chord
113-8-6	Web Members
113-8-9	Bracing
113-8-10	Beams
113-9-1	General Layout and Bottom Chord - 1992 Modifications
113-9-2	Top Chord - 1992 Modifications

Peterson Creek Bridge

2135-11	Layout of Replacement Bridge
2135-15	62' Composite I-Beam Plan

Supplementary Documentation

1. DFO Bridge Maintenance Standard Operating Procedures, available on-line at:

http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/qc/pdf/bridge_e.pdf

2. BC Provincial Government, MOE: Standards and Best Practices for in stream WorksAvailable on-line at: http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf

3. (EPP) Environmental Protection Plan - Checklist

4. Environmental Effects Evaluation (EEE) Report

5. DFO Bridge POE, available on-line at

http://www.dfo-mpo.gc.ca/pnw-ppe/pathways-sequences/index-eng.html

6. Post-Accident Inspection of the Jackfish Creek Bridge, Alaska Highway, BC

PHOTOS (unnumbered)

Jackfish Creek Bridge	4 pages
Peterson Creek Bridge	4 pages

1. GENERAL

1.1 REFERENCES

.1 Society for Protective Coatings (SSPC)

.1 SSPC-QP1 - Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Industrial Structures)

.2 SSPC-QP2 - Standard Procedure for the Qualification of Painting Contractors (Field Removal of Hazardous Coatings from Complex Structures)

.2 SSPC specifications are available from:

The Society for Protective Coatings
40 – 24th Street, 6th Floor
Pittsburgh, PA 15222-4656
USA

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 Without limiting the scope of work, the work of this Contract generally is comprised of the following:

.1 Jackfish Creek Bridge, km 424.8 - Full bridge paint removal and repainting.

.2 Peterson Creek Bridge, km 678.6 - Clean and touch up girder bottoms.

.3 Mobilization to sites and all site preparation.

.4 Traffic management during construction.

.5 Staged construction as required.

.6 All shoring and temporary supports.

.7 Protection of utilities.

.8 Construction of containment structures.

.9 Washing of bridge components.

.10 Testing of existing coating to determine existence of polychlorinated biphenyls (PCB's).

.11 Removal of existing lead based paint.

.12 Surface preparation of structural steel components and bearings.

.13 Recoating structural steel and bearings with an approved coating product.

.14 Design, installation and removal of all formwork, false work, and containment structures.

.15 Demobilization.

.16 Provide for 5 year warranty.

.17 Grind smooth five (5) collision damage notches based on the Post-Accident Inspection of the Jackfish Creek Bridge.

.18 Rehabilitate collision damaged spall concrete in the NE bridge barrier of the Jackfish Creek Bridge.

.2 In preparation for and during this work, an "Environmental Protection Plan" (EPP) is to be prepared by the successful Contractor to meet the requirements of Section 01 35 43 - Environmental Procedures to ensure that minimal adverse effects are achieved. The Contractor's EPP must be approved by the Departmental Representative prior to the commencement of construction. The Departmental Representative will refer to the approved EPP in determining compliance with the plan and contract specifications. The EPP will form part of this contract.

1.3 WORK BY OTHERS

.1 Where it is necessary that work is to proceed in areas of this project common to both the Contractor and forces of others, the Contractor shall cooperate with the other Contractors, sharing his work space, and shall coordinate his operations with the other Contractors, including traffic management.

.2 Contractor shall coordinate his operations with the requirements of the National Association of Corrosion Engineers (NACE) International Certified Coatings Inspector (the "Inspector").

1.4 WORK COMPLETION

.1 Complete all work by September 15, 2015.

1.5 WORK SEQUENCE

.1 Construct Work in stages to accommodate Public's continued use of premises during construction.

.2 Maintain fire access/control.

1.6 CONTRACTOR USE OF PREMISES

.1 Contractor shall limit use of premises for Work, for storage, and for access.

.2 Assume full responsibility for protection and safekeeping of products under this Contract.

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

1.7 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy each document as follows:

- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Reviewed Shop Drawings.
- .5 List of Outstanding Shop Drawings.
- .6 Change Orders.
- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Environmental Protection Plan.
- .12 Other documents as specified.

END OF SECTION

1. GENERAL

1.1 APPLICATIONS FOR PROGRESS PAYMENT

.1 Submit to Departmental Representative, at least 14 days before first application for payment Cost Breakdown, in detail as directed by Departmental Representative, for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment. After approval by Departmental Representative, Cost Breakdown will be used as basis for progress payments.

.2 Support claims for products delivered to Place of Work but not yet incorporated into Work by such evidence as Departmental Representative may reasonably require to establish value and delivery of products.

1.2 BASIS OF PAYMENT

.1 General

.1 Any work called for in the specifications or shown on the drawings but not specifically mentioned as an item for which payment will be made, is considered necessary but incidental to the item of work and no additional payment will be made for this incidental work.

.2 All equipment, materials and labour necessary to complete any item of work is included in the cost of that work.

.3 Cost of all Work associated with Division 1, with the exception of Mobilization and Traffic Control, is included in the cost of all Work.

.4 Payment for material will only be made after it has been acceptably incorporated in the work. Payment will not be made for material ordered or delivered to the site and not incorporated in the Work.

.2 Mobilization

.1 Payment for Mobilization will be made on the basis of the lump sum price bid for each structure and includes all costs associated with the movement of personnel, equipment, supplies and incidentals to/from the Work, the establishment of offices, camps and other facilities necessary to undertake the Work, for costs incurred for other work and operations which must be performed prior to the commencement of the Work and for all costs incurred for clean up and project completion.

.2 Payment for this item will be made at the lump sum price per bridge and will be scheduled as follows:

.1	50%	at the beginning of construction when mobilization is complete
.2	50%	at the completion of the work at each bridge site

.3 Traffic Control

.1 Payment for Traffic Control will be made on the basis of the lump sum price bid for each structure. This payment will include all costs associated with Traffic Control including signs, equipment and personnel.

.2 Payment for this item of the lump sum price per bridge will be scheduled as follows:

.1 50% at the beginning of construction at each site
.2 50% at completion of work at each site.

.4 Other

.1 Refer to a respective specification for other Divisions for applicable Measurement for Payment requirements.

END OF SECTION

1. GENERAL

1.1 ADMINISTRATIVE

.1 Contractor shall:

.1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting seven days in advance of meeting date to Departmental Representative.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants, affected parties not in attendance and Departmental Representative.

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

1.2 PRECONSTRUCTION MEETING

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

.2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.

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

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with Section 01 32 16.07 - Construction Progress Schedules.

.3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.

.5 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.6 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

.7 Take-over procedures, acceptance, warranties in accordance with Section 01 77 00 – Closeout Procedures and Section 01 78 00 - Closeout Submittals.

.8 Monthly progress claims, administrative procedures, photographs, and hold backs.

.9 Appointment of inspection and testing agencies or firms in accordance with Section 01 45 00 – Quality Control.

.10 Environmental procedures.

.11 Occupational Health and Safety.

.12 Insurances, transcript of policies.

1.2 PROGRESS MEETINGS

.1 During course of Work and two weeks prior to project completion, schedule progress meetings as directed by Departmental Representative.

.2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.

.3 Notify parties in writing minimum five days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within three days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for affect on construction schedule and on completion date.

.12 Other business.

END OF SECTION

1. GENERAL

1.1 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

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

.2 Submit to Departmental Representative within five working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

.3 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

1.4 PROJECT MILESTONES

.1 Provide project milestones for interim targets for Project Schedule.

.1 Jackfish Creek Bridge completed.

.2 Peterson Creek Bridge completed.

1.5 MASTER PLAN

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

.2 Departmental Representative will review and return revised schedules within 5 working days.

.3 Revise impractical schedule and resubmit within 5 working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.6 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.1 Award.

.2 Shop Drawings, Samples.

.3 Permits.

.4 Mobilization.

.5 Environmental Protection Plan (EPP), design, review and implementation.

.6 Construction staging.

.7 Construct containment structure(s).

.8 Surface preparation, define areas.

.9 Primer application, define areas.

.10 Topcoat application, define areas.

.11 Testing and commissioning.

1.7 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.8 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays with their remedial measures will be discussed and negotiated.

END OF SECTION

1. GENERAL

1.1 ADMINISTRATIVE

.1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work until review is complete.

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

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

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

.6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work is coordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.

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

1.2 SHOP DRAWINGS AND PRODUCT DATA

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

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

.3 Allow 5 days for Departmental Representative's review of each submission.

.4 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.

.5 Accompany submissions with transmittal letter, in duplicate, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.6 Submissions shall include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Relationship to adjacent work.

.7 After Departmental Representative's review, distribute copies.

.8 Submit an electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.9 Submit 6 copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.10 Delete information not applicable to project.

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

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

.13 The review of shop drawings by the Department Representative is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.3 SAMPLES

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Departmental Representative's site office.

.3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 REQUIRED CONTRACTOR SUBMITTALS

.1 General

.1 This Clause identifies the plans, programs, and documentation required prior to mobilization on site and during the construction phase.

.2 Pre-Award Submittals

.1 Contractor and Paint Manufacturer shall jointly execute the form entitled "Agreement to Provide a 5 Year Warranty" prior to award of Contract.

.3 Pre-Mobilization Submittals

.1 Submit the following plans and programs to the Departmental Representative for review a minimum of fifteen (15) days prior to mobilization to the project site. The Contractor shall not begin any site Work until the Departmental Representative has authorized acceptance of the submittals in writing. The Contractor shall not construe the Departmental Representative authorization of the submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. Authorization of the programs shall not relieve the Contractor from the responsibility to conduct the Work in strict accordance with the requirements of Federal, Provincial or Municipal regulations, this specification, or to adequately protect the health and safety of all workers involved in the project and any members of the public who may be affected by the project. The Contractor shall remain solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

.1 Project Schedule, detailing the schedule of the workdays and manpower required to complete each phase of the project (e.g., mobilization, construction sequencing, removal of deteriorated material, surface preparation, painting and demobilization). Submission shall include both a paper copy of the schedule and an electronic copy in Microsoft Projects format.

.2 Contractor Chain of Command, listing key Contractor personnel, including names and positions, addresses, telephone, cellular telephone and/or pager numbers. The list shall include the names and telephone/cellular telephone/pager numbers for contact persons who are available on a 24-hour basis in the event of emergencies.

.3 Work Plan, describing the Contractor's intended methods of construction including but not limited to the environmental mitigation strategies and projected number of personnel on site.

.4 Work Plan shall include report, stamped by the Contractor's Departmental Representative, which clearly identifies the loads imposed on the trestle by containment structures, where the loads will be transferred to the trestle, and the Contractor's Departmental Representative assessment of the ability of the trestle to accommodate these loads. The Contractor's Engineer shall be a Professional Engineer licensed to practice engineering in the Province of British Columbia or approved by the Departmental Representative.

.5 Work Plan shall clearly identify all intended appurtenances and attachments to the trestle regardless of intended purpose.

.6 Work Plan including wind load analysis is considered incidental to the Work and no separate or additional payment will be made.

.7 Quality Control Plan in accordance with Section 01 45 00 – Quality Control.

.8 Traffic Management Plan, in accordance with the requirements of Section 01 35 00.06 - Special Procedures for Traffic Control.

.9 Environmental Protection Plans (EPP) and Environmental Construction Operations Plans (ECO Plans) which shall meet the requirements of Section 01 35 43 - Environmental Procedures.

.10 Site Access Plan which shall include but not be limited to, engineering Drawings and procedures for accessing all areas of the Work.

.11 Health And Safety Plan - The Contractor shall have a Certificate of Recognition (COR) or Registered Safety Plan (RSP) including a site specific Health and Safety Plan acceptable to the Departmental Representative. The Contractor shall implement and maintain the Health and Safety Plan during the Work.

.12 Health and Safety Plan must include all information as outlined in Section 01 35 29.06 - Health and Safety Requirements.

.13 Submit copies of Material Safety Data Sheets (MSDS).

.14 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.

.15 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

.2 The Contractor shall not begin any site Work until the Departmental Representative has authorized acceptance of the submittals in writing.

.4 Construction Phase Submittals

.1 PCB analysis test results.

.2 Weekly Progress Reports that outline the Work completed to date as well as the anticipated Work to be performed for the following week on a day-by-day basis.

.3 Quality Control Inspection Reports - The Contractor shall maintain a daily inspection report that itemizes the results of all Quality Control inspections conducted by the Contractor. The reports shall be made available for review by the Departmental Representative upon request. A summary of all Quality Control inspections conducted to date shall be submitted by the Contractor with each request for payment.

.4 Quality Control paint material test reports as outlined in Section 09 97 19 – Painting Exterior Metal Surfaces.

.5 Blast spoil leachate test results, and other waste disposal documentation as outlined in Section 01 35 43 – Environmental Procedures.

.6 Submit four (4) copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and authority having jurisdiction weekly.

.7 Submit copies of reports or directions issued by Federal, Provincial and Municipal health and safety inspectors.

.8 Submit copies of incident and accident reports.

.5 Project Completion Submittals

,1 Record Drawings -The Contractor shall submit copies of all Contractor's Drawings revised as necessary to record all as-built changes to the Work and the Contractor shall submit a set of Contract Drawings clearly marked to record as-built changes to the Work.

.2 Quality Control Records – The Contractor shall submit a bound and itemized set of project quality control.

2. PRODUCTS

.1 Not Used.

3. EXECUTION

.1 Not Used.

END OF SECTION

1. GENERAL

1.1 REFERENCES

.1 Traffic Control Manual for Work on Roadways (distributed by Province of British Columbia, Ministry of Transportation and Highways; use latest revision).

1.2 PROTECTION OF PUBLIC TRAFFIC

.1 Comply with current requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.

.2 When working on travelled way:

.1 Position equipment to present minimum of interference and hazard to travelling public.

.2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.

.3 Do not leave equipment on travelled way overnight.

.3 Do not close any lanes of road or highway without consulting Departmental Representative. Before re-routing traffic erect suitable signs and devices in accordance with instructions contained in Traffic Control Manual for Work on Roadways.

.4 Keep travelled way graded, free of potholes and of sufficient width for required number of lanes of traffic.

.1 Provide dedicated minimum 7.0 m wide temporary roadway for traffic in two-way sections through Work and on detours. Widen roadway as necessary in curves to provide adequate room for transport trucks to meet safely.

.2 When it is not possible to provide for two-way traffic as stipulated above, provide dedicated minimum 4.0 m wide temporary roadway for one-way traffic through Work and on detours.

.5 Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, unless other means of road access exists that meet approval of Departmental Representative.

.6 Traffic Accommodation Plan shall be provided for each bridge location for review and approval by Departmental Representative.

1.3 INFORMATIONAL AND WARNING DEVICES

.1 Provide, erect, and maintain signs, flashing warning lights, and other devices required to indicate construction activities and other temporary and unusual conditions resulting from project work which require road user response as specified in Traffic Control Manual for Work on Roadways.

.2 Supply signs, delineators, barricades, traffic cones, and miscellaneous warning devices except those shown on plans as supplied by others as specified in Traffic Control Manual for Work on Roadways.

.3 Place signs and other devices in locations recommended in Traffic Control Manual for Work on Roadways.

.4 Erect, at either end of project, signs as indicated. Coordinate these signs with existing permanent signs and with construction signs installed by other Contractors.

.5 Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list and review with Departmental Representative.

.6 Continually maintain traffic control devices in use by:

.1 Checking signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.

.2 Removing or covering signs which do not apply to conditions existing from day to day.

.7 Provide Type D traffic cones as specified in Traffic Control Manual for Work on Roadways.

.8 Ensure that necessary traffic cones and signs are in place prior to interference with traffic on existing roadways.

1.4 CONTROL OF PUBLIC TRAFFIC

.1 Provide traffic control in accordance with Traffic Control Manual for Work on Roadways. Ensure that current copy of manual is available on site at all times.

.2 Flagpersons:

.1 Provide trained, competent flagpersons with proof of certification from recognized training program on traffic control procedures through construction zones.

.2 Provide flagpersons with proper equipment and clothing as specified in Traffic Control Manual for Work on Roadways.

.3 Flagpersons are required in following situations:

.1 When public traffic is required to pass working vehicles or equipment which block all or part of travelled roadway.

.2 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.

.3 When workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.

.4 When temporary protection is required while other traffic control devices are being erected or taken down.

.5 For emergency protection when other traffic control devices are not readily available.

.6 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.

.7 When construction traffic is crossing roadway.

.4 Maintain existing conditions for traffic crossing right-of-way except when required for construction. With approval of Departmental Representative, existing conditions for cross traffic restricted as follows:

.1 Delays to public traffic: maximum 15 minutes.

.5 Provide temporary lane control system where roadway carrying two-way traffic is to be restricted to one lane for 24 h per day. Adjust, as necessary, and regularly maintain system during period of restriction. Signal system to meet requirements of Traffic Control Manual for Work on Roadways.

.6 Changes to traffic control operation are to be reviewed by Departmental Representative.

.7 Safely control traffic through unique or varied construction situations.

1.5 WEIGHT RESTRICTIONS

.1 British Columbia Highway Traffic Act, pertaining to registered weight limits and vehicle size will control loads to be hauled over highway within contract limits.

.1 END OF SECTION

1. GENERAL

1.1 REFERENCES

.1 Government of Canada.

- .1 Canada Labour Code - Part II.
- .2 Canada Occupational Health and Safety Regulations.
- .3 Surface Coating Materials Regulations, SOR/2005-109, Hazardous Products Act.
- .4 Transportation of Dangerous Goods Regulations, SOR/2008-34, Transportation of Dangerous Goods Act.

.2 National Building Code of Canada (NBC):

- .1 Part 8, Safety Measures at Construction and Demolition Sites.

.3 Canadian Standards Association (CSA) as amended:

- .1 CSA Z797-2009 Code of Practice for Access Scaffold.
- .2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes.
- .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures.

.4 Fire Protection Engineering Services, HRSDC:

- .1 FCC No. 301, Standard for Construction Operations.
- .2 FCC No. 302, Standard for Welding and Cutting.

.5 American National Standards Institute (ANSI):

- .1 ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.

.6 Province of British Columbia:

- .1 Workers Compensation Act Part 3-Occupational Health and Safety.
- .2 Work Safe BC OH&S Regulations Part 5 and Part 6.
- .3 Work Safe BC Policy Item R5.54-1 "Chemical and Biological Substances - Controlling Exposure - Exposure Control Plan".

1.2 WORKERS' COMPENSATION BOARD COVERAGE

.1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.

.2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.3 COMPLIANCE WITH REGULATIONS

.1 PWGSC may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.

.2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

1.4 SUBMITTALS

.1 Submit to Departmental Representative submittals listed for review in accordance with Section 01 33 00.

.2 Work affected by submittal shall not proceed until review is complete.

.3 Submit the following:

- .1 Health and Safety Plan.
- .2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .3 Copies of incident and accident reports.
- .4 Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
- .5 Emergency Procedures.

.4 The Departmental Representative will review the Contractor's site-specific project Health and Safety Plan and emergency procedures, and provide comments to the Contractor within five (5) days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.

.5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.

.6 Submission of the Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:

- .1 Be construed to imply approval by the Departmental Representative.
- .2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
- .3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.5 RESPONSIBILITY

.1 Assume responsibility as the Prime Contractor for work under this contract.

.2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.3 Comply with and enforce compliance by employees with safety requirements of Contract documents, applicable Federal, Provincial, Territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.6 HEALTH AND SAFETY COORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:

.1 Have a minimum of two (2) years' site-related working experience specific to activities associated with bridge construction.

.2 Have working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.5 Be on site during execution of Work and report directly to and be under direction of the site supervisor.

1.7 GENERAL CONDITIONS

.1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.

.2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.

.1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.

.2 Secure site at night time to protect site against entry.

1.8 PROJECT/SITE CONDITIONS

.1 The Contractor will also consider the following hazards for the preparation of Project Health and Safety Plans and emergency procedures:

.1 Working from heights;

.2 Known and unknown chemical and biological agents;

.3 Bears and other wildlife in the area;

.4 Adverse climate;

.5 Remote location;

.6 Running water in stream;

.7 Driver's fatigue or project is spread over 140 km length; and

.8 Highway traffic.

1.9 REGULATORY REQUIREMENTS

.1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.

.2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

1.10 WORK PERMITS

.1 Obtain specialty permits if required for this project.

1.11 FILING OF NOTICE

.1 The Contractor is to complete and submit a Notice of Project as required by Provincial authorities.

.2 Provide copies of all notices to the Departmental Representative.

1.12 HEALTH AND SAFETY PLAN

.1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.

.2 Health and Safety Plan shall meet all the requirements of WorkSafe BC OHS Guideline 5 and, in particular, Policy Item R5.54-1 "Chemical and Biological Substances - Controlling Exposure - Exposure Control Plan". These are guidelines that have been referenced.

.3 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:

.1 Primary requirements:

.2 Contractor's safety policy.

.3 Identification of applicable compliance obligations.

.4 Definition of responsibilities for project safety/organization chart for project.

.5 General safety rules for project.

.6 Job-specific safe work, procedures.

.7 Inspection policy and procedures.

.8 Incident reporting and investigation policy and procedures.

.9 Occupational Health and Safety Committee/Representative procedures.

.10 Occupational Health and Safety meetings.
.11 Occupational Health and Safety communications and record keeping procedures.
.12 Contingency Plan for presence of PCBs in existing coating.

.2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.

.3 List hazardous materials to be brought on site as required by work.

.4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.

.5 Identify personal protective equipment (PPE) to be used by workers.

.6 Identify personnel and alternates responsible for site safety and health.

.7 Identify personnel training requirements and training plan, including site orientation for new workers.

.4 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.

.5 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.

.6 Departmental Representative's review: the review of Health and Safety Plan by Public Works and Government Services Canada (PWGSC) shall not relieve the Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

1.13 EMERGENCY PROCEDURES

.1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:

.1 Designated personnel from own company.

.2 Regulatory agencies applicable to work and as per legislated regulations.

.3 Local emergency resources.

.4 Departmental Representative.

.2 Include the following provisions in the emergency procedures:

.1 Notify workers and the first-aid attendant, of the nature and location of the emergency.

.2 Evacuate all workers safely.

.3 Check and confirm the safe evacuation of all workers.

.4 Notify the fire department or other emergency responders.

.5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.

.6 Notify Departmental Representative.

.3 Provide written rescue/evacuation procedures as required for, but not limited to:

.1 Work at high angles.

.2 Work in confined spaces or where there is a risk of entrapment.

.3 Work with hazardous substances.

.4 Underground work.

.5 Work on, over, under and adjacent to water.

.6 Workplaces where there are persons who require physical assistance to be moved.

.4 Design and mark emergency exit routes to provide quick and unimpeded exit.

.5 Revise and update emergency procedures as required and re-submit to the Departmental Representative.

1.14 HAZARDOUS PRODUCTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.

.2 Where use of hazardous and toxic products cannot be avoided:

.1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 01 33 00.

1.15 REMOVAL OF LEAD-CONTAINING PAINTS

.1 All paints containing TCLP lead concentrations above 5 ppm are classified as hazardous.

.2 Carry out demolition activities involving lead-containing paints in accordance with applicable Provincial regulations.

1.16 FLUORESCENT LIGHTING

.1 Mercury containing fluorescent lights and ballasts which contain polychlorinated biphenyls (PCBs) are classified as hazardous waste.

.2 Remove, handle, transport and dispose of as indicated in Section 02 81 01.

1.17 OVERLOADING

.1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.18 FALSEWORK

.1 Design and construct falsework in accordance with CSA S269.1- 1975 (R2003).

1.19 SCAFFOLDING

.1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797-2009 and B.C. Occupational Health and Safety Regulations.

1.20 CONFINED SPACES

.1 Carry out work in confined spaces in compliance with Provincial regulations.

1.21 FIRE SAFETY AND HOT WORK

.1 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.

.2 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

1.22 FIRE SAFETY REQUIREMENTS

.1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.23 UNFORESEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

1.24 POSTED DOCUMENTS

.1 Post legible versions of the following documents on site:

- .1 Health and Safety Plan.
- .2 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
- .3 Workplace Hazardous Materials Information System (WHMIS) documents.
- .4 Material Safety Data Sheets (MSDS).
- .5 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.

.2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.

.3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

1.25 MEETINGS

.1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

1.26 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.

.2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.

.3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The Contractor will be responsible for any costs arising from such a "stop work order".

END OF SECTION

1. GENERAL

SECTION INCLUDES

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 of 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 Clearing and Plant Protection
22 Blasting
23 Environmental Protection Supplies
24 Notification
25 Environmental Monitoring

1.1 SECTION INCLUDES

1 Section 01 33 00 – Submittal Procedures
2 Section 02 81 01– Hazardous Material

1.2 DEFINITIONS

1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

2 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.

3 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.

4 Wetted Perimeter: area of stream where water is currently running or pooled.

5 In-stream Work: any work performed below the high water mark, either within or above the Wetted Perimeter of any Fisheries Sensitive Zone.

6 Fisheries Sensitive Zone: in-stream aquatic habitats and out of stream habitat features such as side channels, wetlands, and riparian areas.

7 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.

8 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.

9 Riparian area – for a steam, the 30 m 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 steam 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).

10 Species at risk: a species that has been defined as "at risk" [of extirpation] by either the federal or provincial government.

11 Timing windows: periods when human activities are least likely to cause damage to species and ecosystems.

12 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

1.3 MEASURE 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.

1.4 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 Migratory Birds Convention Act, as amended in 1994.

5 Pay specific attention to the provincial BC guidelines under Peace Region Least Risk Timing Windows: Biological Rational (2009).

6 Pay specific attention to provincial BC MOE guidelines in Standards and Best Practices for Instream Works (2004).

7 Pay specific attention to MOE Develop With Care NE Region 2014

8 Where inwater work is conducted, pay specific attention to the B.C. Water Quality Guidelines.

1.5 SUBMITTAL

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. Review of the PWGSC Environmental Effects Evaluation (EEE) will assist in completing this document. 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 rational concerning sampling locations, timing, duration, and methods, and 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 MOE Approval or Notification for instream work or under MOE 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 MOE Approval or Notifications for Instream Work, NWPA Approval for 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.

1.6 ENVIRONMENTAL EFFECTS EVALUATION

1 Execution of the work is subject to the provisions within the Environmental Effects Evaluation (EEE) completed by a PWGSC Environmental Services Representative for the project. See appendices for a copy of the EEE. NOTE: not all projects are subject to an EEE.

2 Pursuant to the expectations of the EEE, EPPs are the next step to achieve the desired results of minimal adverse environmental effect, as the project is constructed.

3 Failure to comply with or observe environmental protection measures as identified in these specifications may result in the work being suspended by the Departmental Representative pending rectification of the problems.

1.7 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 10 metres 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.

1.8 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.

1.9 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 Federal and Provincial legislation. Contractors should be referencing the provincial MOE Standards and Best Practices for Instream Works (2004).

1.10 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 metres 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 metres 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 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 clean up 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 (MOE/DFO authorities).

1.11 EQUIPMENT MAINTENANCE, FUELLING 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) 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 metres

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 metres 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.

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.

1.12 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 PWGSC, 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.

1.13 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 establishment.

1.14 FIRE PREVENTION AND CONTROL

1 A fire extinguisher shall be carried and available for use on each machine and at locations within the quarry 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.

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.

8 Obtain all required permits from the province.

1.15 WILDLIFE

1 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.

1.16 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 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.

3 Human remains must be reported immediately to the local RCMP.

1.17 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.

1.18 WASTEWATER DISCHARGE CRITERIA

1 Wash water, melt water collection, rinse water resulting from the cleaning of fuel tanks and pipelines, contaminated groundwater, and/or any other liquid effluent stream will be

released onto the ground at a location that is a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters, and will conform to the discharge requirements set out in the provincial Water Act Permit.

2 Contractor must obtain approval from the provincial Water Act Officer prior to discharging any treated wastewater.

1.19 CAMP WASTEWATER DISCHARGE CRITERIA

1 Camp wastewater will be released onto the ground at a location that is a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters and conform to the discharge requirements set out in the provincial Water Act Permit.

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 If unable to meet the discharge criteria, provide additional storage and/or treatment necessary to meet criteria prior to discharge.

5 No direct discharge is allowed to wetland or surface waters.

6 Contractor must obtain approval from the Water Act Officer prior to discharging treated wastewater.

1.20 DRAINAGE

1 Provide temporary drainage and pumping as necessary to keep 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 B.C. 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 metres from natural drainage courses and 100 metres 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.

1.21 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 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 The Contractor should be aware that B.C. 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.

1.22 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.

1.23 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 prevent sediment transport into water bodies.

3 Provide a minimum of 50 lineal metres 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.

1.24 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.

1.25 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.

2. PRODUCTS

2.1 Not Used

3. EXECUTION

3.1 Not Used

END OF SECTION

1. GENERAL

1.2 INSPECTION

.1 In order to ensure quality control on-site, a National Association of Corrosion Engineers (NACE) International Certified Coating Inspector - Level III (Peer Reviewed) (the "Inspector") will be appointed at the Pre-Construction Meeting and shall be on-site during all critical stages of surface preparation and painting operations.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.3 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

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

.5 Departmental Representative will order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

1.3 INDEPENDENT INSPECTION AGENCIES

.1 Appoint and pay for services of a certified testing agency to provide full material testing services for this project.

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

.3 Provide equipment required for executing inspection and testing by appointed agencies.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for re-testing and re-inspection.

.5 Independent Inspection/Testing Agencies will be engaged by the Contractor, at his cost, for all material tests.

.6 Provide equipment required for executing inspection and testing by appointed agencies.

.7 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.8 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

1.4 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

.1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.7 REPORTS

.1 Submit 4 copies of inspection and test reports to Departmental Representative.

.2 Provide copies to subcontractor of work being inspected or tested.

1.8 CONTRACTOR'S RESPONSIBILITIES

.1 Furnish labour and facilities to:

.1 Provide access to work to be inspected and tested.

.2 Carry out inspections and tests.

.2 Where materials are specified to be tested, deliver representative samples in required quantity to testing agency's laboratory.

.3 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and reviewed by the Departmental Representative.

.4 Issue copies of all test results to the Departmental Representative.

1.9 TESTS AND MIX DESIGNS

.1 Furnish test results as may be requested.

END OF SECTION

1. GENERAL

1.1 SUBMITTALS

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

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.3 DEWATERING

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

1.4 WATER SUPPLY

.1 Arrange for continuous supply of potable water for construction use and pay all associated costs.

1.5 TEMPORARY HEATING AND VENTILATION

.1 Provide temporary heat and ventilation in enclosed areas as required to:

.1 Facilitate progress of Work.

.2 Protect Work and products against dampness and cold.

.3 Prevent moisture condensation on surfaces.

.4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.

.5 Provide adequate ventilation to meet health regulations for safe working environment.

.2 Maintain temperature of minimum of 20 degrees C in areas where construction is in progress.

.3 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.

.1 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.2 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.3 Ventilate storage spaces containing hazardous or volatile materials.

.4 Ventilate temporary sanitary facilities.

.5 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

1.6 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

.2 Burning rubbish and construction waste materials is not permitted on site.

END OF SECTION

1. GENERAL

1.1 SUBMITTALS

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

1.2 INSTALLATION AND REMOVAL

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

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

.4 Provide construction facilities in order to execute work expeditiously.

.5 Remove from site all such work after use.

1.3 SCAFFOLDING

.1 Provide and maintain scaffolding, ladders, swing staging, and platforms.

1.4 HOISTING

.1 Provide, operate and maintain hoists or cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractor for use thereof.

.2 Hoists and cranes shall be operated by qualified operator.

1.5 SITE STORAGE/LOADING

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.6 SECURITY

.1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.7 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

1.8 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

END OF SECTION

1. GENERAL

1.1 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

.2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.

.2 Canadian Standards Association (CSA International)

.1 CSA-O121-M1978(R2003), Douglas Fir Plywood.

.3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

.4 Society for Protective Coatings (SSPC)

.1 SSPC-Guide 6, Guide for Containing Debris Generated During Paint Removal Operations.

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.3 CONTAINMENT SYSTEM

.1 Contractor shall consult with Transport Canada, Navigable Waterways Protection Branch to determine whether containment system can be excluded under the "Minor Works and Waters Order" under the "Navigable Waters Protection Act".

.2 The containment system and its operation shall meet or exceed the requirements of the applicable sections of this specification as well as SSPC - Guide 6 containment Class 3A.

.3 SSPC-Guide 6, Class 3A containment will consist of:

.1 Containment materials shall meet Type A1-Rigid or A2-Flexible.

.2 Air penetrability of the containment materials shall meet Type B1- Air impenetrable

.3 The support structure shall meet Type C1-Rigid or C2-Flexible

.4 Joints in the containment materials shall meet Type D1-Full Seal or D2-Partial Seal

.5 Entryways shall meet Type E3-Overlap

.6 Air make-up points shall meet Type F1-Controlled or F2-Open

.7 Input air flow shall meet Type G1-Forced or G2-Natural

.8 Air pressure verification inside the containment shall meet Type H3-Not Required

.9 Air movement inside containment shall meet Type I2-Not Specified

.10 Exhaust air/dust filtration shall meet Type J1-Air filtration, although Type J2-No Controls may be accepted at the Departmental Representative discretion.

.4 The air movement shall be adequate for visibility of the work surfaces and protection of the workers from health hazards such as lead. The Contractor shall ensure that adequate air movement is sustained to meet this requirement.

.5 Monitoring and acceptance criteria to monitor the quantity of emissions escaping the enclosure shall be Method "A", Visible Emissions: General Surveillance – Level 2.

.1 Random emissions of a cumulative duration of no more than 5% of the work done (e.g. 24 minutes in an 8 hour work day).

.6 Observations of visible emissions from the work area shall be used to provide immediate feedback on the performance of the containment system.

.7 Visible emissions are permitted provided that 95% recovery of blast cleaning material and paint particles is achieved.

.8 Contractor shall seal joints, breaks, leaks, cracks and other defects in the system which contribute to avoidable losses. Contractor shall monitor for breaks in the system then upgrade containment to improve recovery of spoil blast material and of paint particles.

.9 The Departmental Representative will also monitor containment including any breaks in the system as indicated by avoidable losses. The Contractor shall promptly repair or upgrade the containment system to eliminate defects that are identified.

.10 The Departmental Representative's decision concerning defects in the containment system is final.

.11 Contractor shall verify that containment structures do not create wind loads in excess of the capacity of the bridge structure. The Contractor is advised that this requirement may limit the extent of containment structure that can be used at any one time.

.12 All materials used for containment structures shall be adequately reinforced to prevent tearing or displacement when subjected to construction, wind or other environmental loads and their related conditions.

.13 Contractor shall engage a Professional Engineer, licensed to practice in the Province of British Columbia, who shall identify any loadings imposed on the bridge during the Work including but not limited to any containment system, scaffolding, platforms or swing stages, personnel, equipment and wind loads.

.14 Contractor shall submit a report, stamped by the Contractor's Engineer, which clearly identifies the loads, where the loads will be transferred to the bridge, and the Departmental Representative assessment of the ability of the bridge to accommodate these loads. This report shall be submitted to the Departmental Representative as part of the Contractor's work proposal.

.15 If the wind velocity is too excessive to effectively contain the blast debris within the enclosure, the Contractor shall suspend blast cleaning operations and protect the existing blasting spoil from the wind.

.16 The Contractor shall take whatever measures are necessary to prevent the release of dust or spent material from the ground tarpaulins and other components of the containment enclosure during moving or removal.

.17 Debris collected on temporary work platforms or ground cloths shall be removed each workday with a vacuum system equipped with high efficiency particulate air (HEPA) filters adequately sized to collect all spent material.

.18 The Contractor shall maintain the containment system while work is in progress and shall not deviate from the approved containment system without prior acceptance of the Departmental Representative.

.19 If, at any time during execution of the work, the containment system fails to function properly, the Contractor shall immediately suspend surface preparation until modifications can be made to correct the deficiency.

1.4 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations.

1.5 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.6 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

2. PRODUCTS

.1 Not Used.

3. EXECUTION

.1 Not Used.

END OF SECTION

1. GENERAL

1.1 REFERENCES

.1 Conform to reference standards, located within the text of the specifications, in whole or in part as specifically requested in specifications.

.2 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

.3 The cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

.4 Conform to latest date of issue of referenced standards in effect on date of submission of Tenders, except where specific date or issue is specifically noted.

1.2 QUALITY

.1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand or other blasting media clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Paint shall be delivered in sealed, original, labeled containers, bearing the Manufacturer's name, type of paint, brand name, colour designation, batch number and instructions for mixing and/or thinning.

.9 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

.10 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over nameplates.

1.5 TRANSPORTATION

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

1.6 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative may establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.8 CO-ORDINATION

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.10 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.11 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.12 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of any part of building. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

1.13 EXISTING UTILITIES

.1 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

END OF SECTION

1. GENERAL

1.1 SUBMITTALS

.1 Submit written request in advance of cutting or alteration which affects:

- .1 Structural integrity of any element of Project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of any operational element.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Departmental Representative or separate contractor.

.2 Include in request:

- .1 Identification of Project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.2 MATERIALS

.1 Required for original installation.

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

1.3 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.6 Restore work with new products in accordance with requirements of Contract Documents.

.7 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

END OF SECTION

2. GENERAL

1.5 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

.3 Clear snow and ice from access to construction sites.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Provide on-site containers for collection of waste materials and debris.

.6 Provide and use clearly marked separate bins for recycling.

.7 Remove waste material and debris from site and deposit in waste container at end of each working day.

.8 Dispose of waste materials and debris off site.

.9 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.

.10 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.6 FINAL CLEANING

.1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.3 Prior to final review, remove surplus products, tools, construction machinery and equipment.

.4 Remove waste products and debris.

.5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

.6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.7 Sweep and wash clean paved areas.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 List significant generic types of products, work, or requirements specified. Do not include procedure, process, preparatory work, or final adjusting and cleaning. Include Waste Audit, Waste Reduction Work Plan, Materials Source Separation Program, Cost/Revenue Analysis Work Plan and Hazardous Waste Containment/Disposal Plan.

1.2 Precedence

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 Definitions

.1 Waste Audit (WA): Relates to projected waste generation. Involves measuring and estimating quantity and composition of waste, reasons for waste generation, and operational factors which contribute to waste.

.2 Waste Reduction Work Plan (WRW): Written report which addresses opportunities for reduction, reuse, or recycling of materials. WRW is based on information acquired from WA.

.3 Demolition Waste Audit (DWA): Relates to actual waste generated from project.

.4 Materials Source Separation Program (MSSP): Consists of a series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.

.5 Cost/Revenue Analysis Work Plan (CRAW):Based on information from WRW, and intended as financial tracking tool for determining economic status of waste management practices.

.6 Hazardous Waste Containment/Disposal Plan: For lead-containing spent abrasive blast media which may be generated. Note: The paint on the bridges contains lead. This plan includes specification of the containment system, monitoring of the containment efficiency during use and overall, removal of the potential special waste, testing of the material to determine the special waste status, storage of the material on-site, final disposal including documentation. It also includes obtaining a waste generator permit or other permits as necessary. The containment must meet the requirements of WCB, Environmental and Fisheries agencies, and PWGSC prior to work commencing on- site.

.7 Waste Management Coordinator (WMC): Designate individual who is in attendance on-site, full-time. Designate, or have designated, individuals from each Subcontractor to be responsible for waste management related to their trade and for coordinating activities with WMC.

.8 Separate Condition: Refers to waste sorted into individual types.

1.4 Documents

.1 Maintain at job site, one copy of following documents:
- .1 Waste Audit
- .2 Waste Reduction Work Plan
- .3 Material Source Separation Plan
- .4 Schedules as per 1.7.2 below shall be completed for the project.
- .5 Hazardous Waste Management Plan

1.5 Use of Site and Facilities

.1 Execute work with least possible interference or disturbance to normal use of site.

1.6 Submittal

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

.2 Prepare and submit the following submittals prior to project start-up:
- .1 Submit 2 copies of completed Waste Audit (WA): Schedule A.
- .2 Submit 2 copies of completed Waste Reduction Work Plan (WRW): Schedule B.
- .3 Submit 2 copies of completed Demolition Waste Audit (DWA): Schedule C.
- .4 Submit 2 copies of Cost/Revenue Analysis Work Plan (CRAW): Schedule D.
- .5 Submit 2 copies of Materials Source Separation Program (MSSP).
- .6 Submit 2 copies of the Hazardous Waste Management Plan.

1.7 Waste Audit

.1 Conduct WA prior to project start-up.

.2 Prepare Waste Audit: Schedule A.

.3 Record, on Waste Audit - Schedule A, extent to which materials or products used consist of recycled or reused materials or products.

1.8 Waste Reduction Work Plan

.1 Prepare WRW: Schedule B, prior to project start-up.

.2 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.

.3 Describes management of waste.

.4 Identify opportunities for reduction, reuse, and/or recycling (3Rs) of materials based on information acquired from WA.

.5 Post work plan or summary where workers at site are able to review its content.

1.9 Demolition Waste Audit

.1 Prepare Demolition Waste Audit (DWA) prior to project start-up: Schedule B.

.2 Complete Demolition Waste Audit (DWA): Schedule C.

1.10 Cost/Revenue Analysis Work Plan

.1 Prepare CRAW: Schedule D.

1.11 Materials Source Separation Program

.1 Prepare MSSP and have ready for use prior to project start-up.

.2 Implement MSSP for waste generated on project in compliance with approved methods and as approved by Departmental Representative.

.3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and/or recyclable materials.

.4 Provide containers to deposit reusable and/or recyclable materials.

.5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

.6 Locate separated materials in areas which minimize material damage.

.7 Collect, handle, store on-site, and transport off- site, salvaged materials in separate condition. Transport to approved and authorized recycling facility or to users of material for recycling.

.8 Collect, handle, store on-site, and transport off- site, salvaged materials in combined condition. Ship materials to site operating under Certificate of Approval. Materials must be immediately separated into required categories for reuse or recycling.

.9 Waste materials that are or may be special waste shall be segregated and treated as per the Hazardous Waste Containment/Disposal Plan.

1.12 Hazardous Waste Containment/ Disposal Plan

.1 The paint on the structures contains lead. The Contractor shall meet all the Ministry of Water, Land and Air Protection (WLAP) regulations pertaining to the generation, storage and disposal of waste from this work.

.2 Enclosure: Completely contain in an enclosure the cleaning and abrasive blasting of all existing painted steelwork such that no material from these operations is released into the surrounding environment. The enclosure system shall be required for all paints regardless of whether or not they contain lead,chromium or other toxic metals. Containment shall conform to SSPC-Guide 6, Class 2A, B1, D1, E2 with air controls of F1, G1, H2, J1, and air movement that meets the BC WLAP and WCB requirements for abrasive blasting enclosures using silica sand. The enclosure system shall operate at constant negative pressure.

In addition, the enclosure shall also contain and control effluent from all washing and cleaning.

.3 Submit a plan for hazardous waste containment/disposal. The plan shall include:

.1 Enclosure plan sufficient to accomplish 1.12.2 above.

.2 Application for a BC WLAP permit.

.3 If the waste material is to be stored on site for more than the WLAP recommended interval, plans for making a hazardous waste storage facility, and closing it at project completion.

.4 Plan for testing waste sand generated from the coating removal process for inclusion/exclusion as special waste.

.5 Plans for disposal of the waste as feed stock for the cement making process or hazardous waste or other disposal method approved by WLAP and the PWGSC Departmental Representative.

.6 Plan for following the waste material from generation to ultimate environmentally sensitive disposal, including documentation to trace the ultimate disposal.

.7 The Contractor shall ensure that all debris generated during the work is properly disposed of according to WLAP and any local regulations and that the work site is completely cleaned up prior to completion.

1.13 Waste Processing Sites	.1	Contractor to notify Departmental Representative of proposed sites.
1.14 Disposal of Wastes	.1	Burying of rubbish and waste materials is prohibited unless approved by Departmental Representative.
	.2	Disposal of waste volatile materials, mineral spirits, oil, paint thinner and like materials into waterways, storm, or sanitary sewers is prohibited.
	.3	Special Waste or potential Special Waste shall be collected and disposed of according to the Hazardous Waste Containment/Disposal Plan.
1.15 Storage, Handling and Protection	.1	Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
	.2	Unless specified otherwise, materials for removal become the Contractor's property.
	.3	Protect, stockpile, store and catalogue salvaged items.
	.4	Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
	.5	Protect structural components not removed for demolition from movement or damage.
	.6	Support affected structures. If safety of structure is endangered, cease operations and immediately notify Departmental Representative.
	.7	Protect surface drainage, mechanical and electrical from damage and blockage.
1.16 Method of Measurement and Payment	.1	No measurement will be made. Payment for Waste Management and Disposal is included in the payment for Mobilization and Demobilization item.
	.2	Payment for the enclosure system is included in the payment for Surface Preparation and Painting item.

PART 2 - EXECUTION

2.1 Application

.1 Do work in compliance with WRW.

.2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

2.2 Cleaning

.1 Remove tools and waste materials on completion of work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

2.3 Diversion of Materials

.1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, to approval of Departmental Representative, and consistent with applicable fire regulations. Mark containers or stockpile areas. Provide instruction on disposal practices.

.2 On-site sale of salvaged materials is permitted.

.3 Demolition Waste

Demolition Waste		
Material Type	Recommended Diversion (%)	Actual Diversion (%)
Spent Blast Media	100	
Metals	100	
Rubble	100	
Wood (uncontaminated)	100	
Other		

.4 Construction Waste

Construction Waste		
Material Type	Recommended Diversion (%)	Actual Diversion (%)
Cardboard	100	
Plastic Packaging	100	
Rubble	100	
Metals	100	
Wood (uncontaminated)	100	
Other		

2.4 Waste Audit .1 Schedule A: Waste Audit (WA)

Schedule A: Waste Audit						
Material Category	Material Quantity (unit)	Estimated Waste (%)	Total Quantity of Waste	Generated on Site	Percent Recycled	Percent Reused
Cardboard						
Plastic Packaging						
Rubble						
Metals						
Wood						
Spent Blast Media						
Other						

2.5 Waste Reduction Work Plan .1 Schedule B: Waste Reduction Work Plan (WRW)

Schedule B: Waste Reduction Work Plan					
			Actual	Actual	
Material Category	Person Responsible	Total Quantity of Waste	Reused Amount Projected	Recycled Amount Projected	Materials Destination(s)
Cardboard					
Plastic Packaging					
Rubble					
Metals					
Wood					
Spent Blast Media					
Other					

2.6 Demolition Waste Audit .1 Schedule C: Demolition Waste Audit (DWA)

Schedule C: Demolition Waste Audit						
Material Description	Quantity	Units	Total	Volume (m^3)	Weight (m^3)	Remarks and Assumptions
Cardboard						
Plastic Packaging						
Rubble						
Metals						
Wood						
Spent Blast Media						
Other						

2.7 Cost/Revenue Analysis Work Plan .1 Schedule D: Cost/Revenue Analysis Work Plan (CRAW)

Schedule D: Cost/Revenue Analysis Work Plan						
Material Description	Total Quantity (unit)	Volume (m^3)	Weight (kg)	Disposal Cost/Credit $(+/-)	Category Sub-Total $(+/-)	Cost(-) / Revenue(+)
Cardboard						
Plastic Packaging						
Rubble						
Metals						
Wood						
Spent Blast Media						
Other						

2.8 Canadian Governmental Departments Chiefly Responsibility for the Environment

.1 Schedule E: Environmental Contacts In Government

Schedule E: Environmental Contacts in Government

Province	Addre	Department	Phone	Fax
Alberta	Industrial and Hazardous Waste Bob Rippon Science and Standards Division 4th Floor, Oxbridge Place 9820 – 106 Street Edmonton, AB T5K 2J6	Alberta Environmental Protection	(780) 427-0606	(780) 422-4192
British Columbia	Environmental Protection Division Ministry of Water, Land and Air Protection 325 - 1011-4th Avenue Prince George BC V2L 3H9	Ministry of Water Land and Air Protection	(250) 565-6155	(250) 565-6629
Yukon Territory	Environmental Protection & Assessment Branch Department of Environment Government of Yukon Box 2703 Whitehorse, Yukon Canada Y1A 2C6	Department of Environment	(867) 667-5683	(867) 393-6213

END OF SECTION

1. GENERAL

1.1 INSPECTION AND DECLARATION

.1 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.

.2 Request Departmental Representative's Inspection.

.2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Work is complete and ready for Final Inspection.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative, and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

1.2 WARRANTY

.1 The Contractor and the Paint Manufacturer shall jointly execute the form entitled "Agreement to Provide a 5 Year Bridge Painting Warranty". The completed form shall be provided to the PWGSC, prior to award of Contract.

.2 During the warranty period, the Departmental Representative will inspect the coating system, at least sixty days prior to warranty expiration, and will advise the Contractors, the Manufacturer, and the Surety in writing of any defects or repairs that are required. Intermediate inspections may be made and warranty repairs claimed and completed by the Contractor each year of the five year warranty period.

.3 Failure of the coating system shall include but not be limited to:

.1 Any de-bonding or failure of adhesion of the coating either to the structural steel or lack of inter-coat adhesion.

.2 The appearance of any rust stains on the structure due to loss of paint or due to leaking from joints between structural members.

.3 Any loss of normal gloss or rapid change of colour of the coating.

.4 Damage to the coating due to vehicle impact or snow removal equipment will not constitute failure of the system.

.4 Repair under warranty includes the cost to supply material, labour, and equipment necessary to restore the coating to acceptable condition as judged by the Departmental Representative.

.5 Warranty repairs shall be completed within 45 days of notification, or if this would place the repair work in winter weather conditions, by the following May 30.

2. Products

.1 Not Used.

3. Execution

.1 AGREEMENT TO PROVIDE 5 YEAR BRIDGE PAINTING WARRANTY

_____
(Name of Paint Manufacturer)
manufacturer of

_____
(Paint System Name)

and _____
(Contractor/Applicator's Company Name)

who is an approved paint Applicator of the paint system, hereby certify that in the event that the Contractor is awarded the painting contract for

_____
(Contract Number)

_____
(Bridge File Number and Name)

the undersigned parties jointly agree to provide a 5 year warranty for the work. Warranty period will commence at the completion of the work. The Warranty shall include all repair costs needed within the 5 year period.

.1 MANUFACTURER:

_____	_____	_____
(Name of Company Officer)	(Corporate Position)	(Signature of Company Officer)
_____	_____	_____
(Name of Witness)	(Signature of Witness)	(Date)

.2 CONTRACTOR/APPLICATOR:

_____	_____	_____
(Name of Company Officer)	(Corporate Position)	(Signature of Company Officer)
_____	_____	_____
(Name of Witness)	(Signature of Witness)	(Date)

END OF SECTION

1. GENERAL

1.1 MEASUREMENT PROCEDURES

.1 The work under this section is incidental and no extra payment shall be made.

1.2 SUBMITTALS

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

.2 Furnish evidence, if requested, for type, source and quality of products provided.

.3 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

1.3 AS-BUILTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, one record copy of:

- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Change Orders and other modifications to the Contract.
- .5 Reviewed shop drawings, product data, and samples.
- .6 Field test records.
- .7 Inspection certificates.
- .8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

.3 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.4 Keep record documents and samples available for inspection by Departmental Representative.

1.4 WARRANTIES AND BONDS

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.

.4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.

.5 Verify that documents are in proper form, contain full information, and are notarized.

.6 Co-execute submittals when required.

.7 Retain warranties and bonds until time specified for submittal.

1.5 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on set of blue or black line opaque drawings provided by Departmental Representative.

.2 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.3 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:

.1 Field changes of dimension and detail.

.2 Changes made by Addenda.

.3 Changes made by change orders.

.4 References to related shop drawings and modifications.

.4 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.5 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

END OF SECTION

PART 1 – GENERAL

1.1 Related Sections

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 35 43 – Environmental Procedures

1.2 References

.1 Export and Import of Hazardous Waste Regulations (EIHW Regulations), SOR/92637.

.2 National Fire Code of Canada 1995

.3 Transportation of Dangerous Goods Act (TDG Act) 1992, (T19.01).

.4 Transportation of Dangerous Goods Regulations (TDGR), (SOR/8577, SOR/85585, SOR/85609, SOR/86526).

1.3 Definitions

.1 Dangerous Goods: Product, substance, or organism that specifically listed or meets the hazard criteria established in Transportation of Dangerous Goods Regulations.

.2 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.

.3 Hazardous Waste: Any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal. For this project, the following are designated as "hazardous" in accordance with Transportation of Dangerous Goods Act (TDGA), Transportation of Dangerous Goods Regulations (TDGR), and the Canadian Environmental Protection Act (CEPA):

- Leachable lead paint material
- Hazardous PCB-amended painted material
- Soil, concrete or lead paint chips containing PCBs concentrations in excess of provincial/federal regulations 50ppm (mg/kg) and/or leachable lead in excess of 5 mg/L.

.4 Workplace Hazardous Materials Information System (WHMIS): A Canada wide system designed to give employers and workers information about hazardous materials used in the workplace. Under WHMIS, information on hazardous materials is to be provided on container labels, material safety data sheets (MSDS), and worker education programs. WHMIS is put into effect by a combination of federal and provincial laws.

1.4 Submittals

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

.2 Submit to Departmental Representative current Material Safety Data Sheet (MSDS) for each hazardous material required prior to

bringing hazardous material on site.

.3 Submit hazardous materials management plan to Departmental Representative that identifies all hazardous materials, their use, their location, personal protective equipment requirements, and disposal arrangements.

1.5 Storage and Handling

.1 Coordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labeling and storage of materials and wastes.

.2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

Temporary Storage Area – must be a designated area approved by Departmental Representative for the storage of containerized contaminated waste prior to transport off-site. The following are the requirements for a Temporary Storage Area:

- Area free of standing water
- Surface run-on to the area must be minimized. The area must not be subject to flooding, excessive snow drifting and/or seasonal saturation.
- Size the area sufficiently so that it will accommodate all temporary storage of wastes.
- More than 30m away from any water body or drainage course.
- On stable ground
- More than 30 m away from flammable materials.
- Keep storage containers locked or equivalently secured to prevent unauthorized access to stored waste materials.

.3 Store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.

.4 Observe smoking regulations at all times. Smoking is prohibited in any area where hazardous materials are stored, used, or handled.

.5 Abide by the following storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:

.1 Store hazardous materials and wastes in closed and sealed containers that are in good condition.

.2 Label containers of hazardous materials and wastes in accordance with WHMIS.

.3 Store hazardous materials and wastes in containers compatible with that material or waste.

.4 Segregate incompatible materials and wastes.

.5 Ensure that different hazardous materials or hazardous wastes are not mixed.

.6 Store hazardous materials and wastes in a secure storage area with controlled access.

.7 Maintain a clear egress from storage area.

.8 Store hazardous materials and wastes in a manner and location that shall prevent them from spilling into the environment.

.9 Have appropriate emergency spill response equipment available near the storage area, including personal protective equipment.

.10 Maintain an inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.

.6 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

Only contractor's personnel capable of demonstrating a history of satisfactory experience in the area of hazardous water management and can satisfy the provincial and federal requirement will be permitted to supervise and direct the work of this section.

Contractor's personnel trained as described in this section are to instruct and direct the workers with respect to the waste management procedures and labour safety practices to be followed in carrying out the work.

Provide workers with protection appropriate to the potential type and level of exposure. Establish specific safety protocols prior to commencing cleanup activities.

Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) documentation and recording requirements.

.7 Report spills or accidents immediately to Departmental Representative and the ESO. Submit a written spill report to Departmental Representative within 24 hours of incident.

1.6 Transportation

.1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.

.2 If exporting hazardous waste to another country, ensure compliance with federal Export and Import of Hazardous Waste Regulations.

.3 If hazardous waste is generated on site:

.1 Coordinate transportation and disposal with Departmental Representative.

.2 Ensure compliance with applicable provincial laws and regulations for generators of hazardous waste.

.3 Use only a licensed carrier authorized by provincial authorities to accept subject material.

.4 Prior to shipping material, obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept this material.

.5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.

.6 Ensure that only trained personnel handle, offer for transport, or transport dangerous goods.

.7 Provide a photocopy of all shipping documents and waste manifests to Departmental Representative.

.8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to Departmental Representative.

.9 Report any discharge, emission, or escape of hazardous materials immediately to the Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

PART 2 - PRODUCTS

2.1 Materials

.1 Only bring on site the quantity of hazardous materials required to perform work.

.2 Maintain MSDSs in proximity to where the materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

PART 3 - EXECUTION

3.1 Disposal

.1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.

.2 Recycle hazardous wastes for which there is an approved, cost effective recycling process available.

.3 Send hazardous wastes only to authorized hazardous waste disposal treatment facilities.

.4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.

.5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.

.6 Dispose of hazardous wastes in a timely fashion in accordance with applicable provincial regulations.

END OF SECTION

1. GENERAL

1.1 REFERENCES

.1 Export and Import of Hazardous Waste Regulations (EIHW Regulations), SOR/92-637.

.2 National Fire Code of Canada 1995.

.3 Transportation of Dangerous Goods Act (TDG Act), 1999.

.4 Transportation of Dangerous Goods Regulations (TDGR), (SOR/85-77, SOR/85-585, SOR/85-609, SOR/86-526, SOR/2008-34).

.5 Surface Coatings Materials Regulations, SOR/2005-109, Hazardous Products Act.

.6 BC Spill Reporting Regulation.

1.2 DEFINITIONS

.1 Dangerous Goods: Product, substance, or organism that is specifically listed or meets the hazard criteria established in Transportation of Dangerous Goods Regulations.

.2 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.

.3 Hazardous Waste: Any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal.

.4 Workplace Hazardous Materials Information System (WHMIS): A Canada-wide system designed to give employers and workers information about hazardous materials used in the workplace. Under WHMIS, information on hazardous materials is to be provided on container labels, material safety data sheets (MSDS), and worker education programs. WHMIS is put into effect by a combination of federal and provincial laws.

1.3 SUBMITTALS

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

.2 Submit to Departmental Representative current Material Safety Data Sheet (MSDS) for each hazardous material required prior to bringing hazardous material on site.

.3 Submit hazardous materials management plan to Departmental Representative that identifies all hazardous materials, their use, their location, personal protective equipment requirements, and disposal arrangements.

1.4 STORAGE AND HANDLING

.1 Coordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labeling and storage of materials and wastes.

.2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.3 Store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.

.4 Observe smoking regulations at all times. Smoking is prohibited in any area where hazardous materials are stored, used, or handled.

.5 Abide by the following storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:

- .1 Store hazardous materials and wastes in closed and sealed containers which are in good condition.
- .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
- .3 Store hazardous materials and wastes in containers compatible with that material or waste.
- .4 Segregate incompatible materials and wastes.
- .5 Ensure that different hazardous materials or hazardous wastes are not mixed.
- .6 Store hazardous materials and wastes in a secure storage area with controlled access.
- .7 Maintain a clear egress from storage area.
- .8 Store hazardous materials and wastes in a manner and location which will prevent them from spilling into the environment.
- .9 Have appropriate emergency spill response equipment available near the storage area, including personal protective equipment.
- .10 Maintain an inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.

.6 Ensure all personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

.7 Report spills or accidents immediately to the Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.

.8 All spills of hazardous materials (including fuel) must be reported to the Provincial Emergency Program (PEP) by calling 1-800-663-3456 in accordance with the "BC Spill Reporting Regulation".

.9 The person in possession, charge or control of the spilled substance must take all reasonable and practical action to stop, contain and minimize the effects of the spill.

1.5 TRANSPORTATION

.1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.

.2 If exporting hazardous waste to another country, ensure compliance with federal Export and Import of Hazardous Waste Regulations.

.3 If hazardous waste is generated on site:

.1 Coordinate transportation and disposal with Departmental Representative.

.2 Ensure compliance with applicable provincial laws and regulations for generators of hazardous waste.

.3 Use only a licensed carrier authorized by provincial authorities to accept subject material.

.4 Prior to shipping material, obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept this material.

.5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.

.6 Ensure that only trained personnel handle, offer for transport, or transport dangerous goods.

.7 Provide a photocopy of all shipping documents and waste manifests to Departmental Representative.

.8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to Departmental Representative.

.9 Report any discharge, emission, or escape of hazardous materials immediately to Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

2. PRODUCTS

2.1 MATERIALS

.1 Only bring on site the quantity of hazardous materials required to perform work.

.2 Maintain MSDS's in proximity to where the materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

3. EXECUTION

3.1 DISPOSAL

.1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.

.2 Recycle hazardous wastes for which there is an approved, cost effective recycling process available.

.3 Send hazardous wastes only to authorized hazardous waste disposal or treatment facilities.

.4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is absolutely prohibited.

.5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is absolutely prohibited.

.6 Dispose of hazardous wastes in a timely fashion in accordance with applicable provincial regulations.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes
.1 Cast-in-place Concrete

1.2 Related Sections
.1 Not used

1.3 Price and Payment Procedures
.1 Payment Procedures: in accordance with Section 01 29 00 – Payment Procedures.

1.4 References
.1 Abbreviations and Acronyms:

.1 Portland Cement: Type GU - General use cement.

.2 Fly ash: Type F - with CaO content less than 15%.

.3 GGBFS – Ground, granulated blast-furnace slag.

.2 Reference Standards

.1 CSA International

.1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA A283-06, Qualification Code for Concrete Testing Laboratories.

.3 CSA A3000-08, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

1.4 Administrative Requirements
.1 Convene pre-installation meeting one week prior to beginning concrete works.

.2 .1 Ensure key personnel, site supervisor, Departmental Representative, Consultant, concrete producer and testing laboratories attend.

.1 Verify project requirements.

1.5 Action and Informational Submittals
.1 Provide in accordance with Section 01 33 00 - Submittal Procedures.

.2 At least 4 weeks prior to beginning Work, the Contractor must provide Departmental Representative with samples of materials proposed for use as follows:

.1 5 L of curing compound.
.2 3 kg of each type of supplementary cementing

material.

.3 5 kg of each admixture.

.4 10 kg of each fine and coarse aggregate.

.3 Provide test results and inspection reports for review by Departmental Representative and do not proceed without written approval when deviations from mix design or parameters are found.

.4 Concrete pours: provide accurate records of all poured items indicating date, location, quality, air temperature and test samples taken as described in PART 3 - FIELD QUALITY CONTROL.

1.6 Quality Assurance

.1 Provide in accordance with Section 01 45 00 - Quality Control.

.2 Provide a valid and recognized certificate from plant delivering concrete to Departmental Representative a minimum of 4 weeks prior to starting concrete work.

.1 Provide test data and certification by qualified independent inspection and testing laboratory that materials and mix designs used in concrete mixture will meet specified requirements.

.3 Minimum 4 weeks prior to starting concrete work, provide proposed quality control procedures for review by Departmental Representative on following items:

.1 Falsework erection.
.2 Hot weather concrete.
.3 Cold weather concrete.
.4 Curing.
.5 Finishes.
.6 Formwork removal joints.

.4 Quality Control Plan: provide written report to Departmental Representative verifying compliance that concrete in place meets performance requirements established in PART 2 – PRODUCTS.

1.7 Delivery, Storage and Handling

.1 Delivery and Acceptance Requirements

.1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.

.1 Do not modify maximum time limit without receipt of prior written agreement from Departmental Representative and concrete producer as described in CSA A23.1/A23.2.

.2 Deviations to be submitted for review by Departmental Representative.

.2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

PART 2 - PRODUCTS

2.1 Design Criteria

.1 Performance: to CSA A23.1/A23.2 and as described in MIXES of PART 2 – PRODUCTS.

2.2 Performance Criteria

.1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established by Departmental Representative and provide verification of compliance as described in PART 1 - QUALITY ASSURANCE.

.1 Portland Cement: to CSA A3001, Type GU.
.2 Water: to CSA A23.1/A23.2
.3 Aggregates: to CSA A23.1/A23.2.
.4 Admixtures:

.1 Air entraining admixture: to ASTM C260.
.2 Chemical admixture: to ASTM C494.
.3 Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.

2.3 Mixes

.1 Concrete mixes shall be proportioned to provide a workable mix suitable for the complexity of that class of work without segregation or bleeding.

.2 Proportion normal density concrete in accordance with CSA A23.1

.3 Slump shall be measured at time and point of discharge. Slump indicated is without superplasticizer. Concrete shall be placed at the lowest possible slump possible with conditions of placement.

.4 Preparation of normal density concrete in accordance with CSA A23.1 to following requirements:

.1 Cement: Type GU
.2 Minimum compressive strength at 28 days: 45 MPa
.3 Fly ash: 20% of cementitious materials
.4 Class of exposure: C-1
.5 Nominal size of coarse aggregate: 20 mm
.6 Slump at time and point of discharge: 90 – 150 m
.7 Air content: 5 – 8%
.8 Chemical admixtures: To manufacturer's recommended dosages in accordance with ASTM C494.
.9 Air-dry density: 2300 kg/m^3
.10 Maximum water/cement ratio: 0.38
.11 Chloride ion penetration requirements and age of test: >1500 Coulombs within 56 days.

.5 Special requirements for normal density concrete:

.1 Mix Design and curing for concrete shall comply with CSA A23.1-09, Clause 8.7 for HVSC-2 Concrete.

.2 The concrete mix shall be proportioned to minimize drying shrinkage. Measures shall include appropriate aggregate gradation, proportioning and use of admixtures to reduce the water content of the mix as approved by the Departmental Representative.

.3 Concrete thermal gradients shall be controlled to prevent cracking in accordance with CSA A23.1-09, Clause 7.4.1.3.

PART 3 - EXECUTION

3.1 Preparation

.1 Provide Departmental 24 hours minimum notice before each concrete pour.

.2 Concrete mix design, initial concrete temperature, placing procedure, formwork and insulation shall be employed to ensure that the maximum temperature differential over the cross-section of any reinforced concrete element does not exceed 20°C.

.3 During concreting operations:

.1 Development of cold joints not allowed unless approved by Departmental Representative.

.2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.

.3 Ensure reinforcement and inserts are not disturbed during concrete placement.

.4 Prior to placing of concrete, obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing.

.5 Protect previous Work from staining, and remove existing stains prior to application of concrete finishes.

.6 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

3.2 Installation/Application

.1 Do cast-in-place concrete work to CSA A23.1/A23.2.

.2 Cast in sleeves, anchors, reinforcement, bolts, joint fillers and other inserts are required to be built in.

.3 Adhesive set anchor rods:

.1 Drill holes are to be drilled with percussion drill using a template to locate hole and guide alignment. Hole diameters to match anchor manufacturer's recommendations.

.2 Ream holes with a wire brush and blow clean with compressed air immediately before grouting. Ensure compressed air is free of oil or other deleterious material detrimental to the bonding of the epoxy. Install anchor dowels in accordance with manufacturer's instructions.

.3 Inject adhesive into the prepared holes from a nozzle-mix injection tube. Fill each hole with adhesive before inserting the anchor dowel.

.4 Twist the anchor after inserting it into the epoxy and "bottom" it in the hole in accordance with the

manufacturer's instructions.

.5 Take appropriate measures to prevent excess epoxy material from contaminating adjacent surfaces.

.4 Drainage holes and weep holes:

.1 Install weep hole tubes and drains as indicated.

.2 Weep holes in existing concrete walls installed as detailed on drawings.

3.3 Finishes

.1 Formed surfaces exposed to view: smooth form finish in accordance with CSA A23.1/A23.2.

.2 Use procedures as reviewed by Departmental Representative or those noted in CSA A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.

.3 Use curing compounds compatible with applied finish on concrete surfaces. Provide written declaration that compounds used are compatible.

.4 Provide broom finish unless otherwise indicated.

.5 Supply and apply high performance penetrating sealers on new concrete surface in accordance with manufacturer's recommendations.

3.4 Curing

.1 Leave forms in place for 7 days and cover the top of wall with wet burlap and polyethylene and cure in accordance with CSA A23.1/A23.2.

3.5 Site Tolerances

.1 Concrete finishing tolerance in accordance with CSA A23.1/A23.2.

3.4 Field Quality Control

.1 Site tests: conduct tests as follows and submit report as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.

.1 Concrete pours.
.2 Slump.
.3 Air content.
.4 Compressive strength at 7 and 28 days.
.5 Air and concrete temperature.

.2 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by Departmental Representative for review to CSA

A23.1/A23.2.

.3 Ensure testing laboratory is certified to CSA A283.

.4 Contractor will pay for costs of tests.

.5 Contractor will take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.

.6 Non-Destructive Methods for Testing Concrete: to CSA A23.1/A23.2.

.7 Inspection or testing by Departmental Representative will not augment or replace Contractor quality control nor relieve Contractor of his contractual responsibility.

.8 A Quality Control plan approved by the Departmental Representative shall be implemented throughout the concrete production in accordance with the requirements of CSA A23.1.

The Quality Control Plan shall include, but is not limited to, the following:

.1 Based on mix design, determine by lab testing the adiabatic heat generation for concrete mix to be used.

.2 Provide information on temperature sensing and recording equipment to be used. Include details of installation locations of the temperature probes for each planned mass concrete placement.

.3 Provide Monitoring Plan to control temperature gradient. Include proposed methods for early identification of trends in concrete properties and for taking corrective actions. This includes identifying internal and external concrete temperatures during the curing process to ensure temperatures are within limits set by CSA A23.1-09.

.4 Details of proposed protective systems and procedures for placing and curing concrete, including situations where ambient temperatures are less than 5°C or over 25°C, and the influences of tide levels on the underside of the foundation.

.5 Identify how corrective actions will be performed to maintain acceptable differential temperatures in

accordance with CSA A23.1-09.

.6 Proposed Quality Control Plan to be certified by a qualified Professional Engineer registered in the Province of British Columbia, Canada.

3.5 Cleaning

.1 Clean in accordance with Section 01 74 11 – Site Cleaning

.2 Designate cleaning area for tools to manage water use and runoff in accordance with Section 01 35 43 – Environmental Protection.

.3 Coordinate appropriate area on site where concrete trucks can be safely washed with Departmental Representative.

.4 Waste Management: separate waste materials for reuse and recycling.

.1 Divert unused concrete materials from landfill to local facility after receipt of written approval from Departmental Representative.

.2 Divert unused admixtures and additive materials from landfill to official hazardous material collections site after receipt of written approval from Departmental Representative.

.3 Do not dispose of unused admixtures and additive materials into sewer systems, into lakes, streams, onto ground or in other location where it will pose a health or environmental hazard.

.4 Prevent admixtures and additive materials from entering drinking water supplies or streams.

.5 Using appropriate safety precautions, collect liquid or solidify liquid with inert, noncombustible material and remove for disposal. Dispose of waste in accordance with applicable local, Provincial/Territorial and National regulations.

END OF SECTION

1. GENERAL

1.1 REFERENCES

.1 British Columbia Ministry of Transportation and Infrastructure

- .1 Approved Paint Systems (www.th.gov.bc.ca/publications/eng-publications/geotech/Recognized_Products_Book.pdf).

.2 Federal Standard (FS).

- .1 FS-595B-Current Edition, Paint Colours.

.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 PROCEDURES

.1 Jackfish Creek, km 424.8

- .1 Cleaning and preparation of structural steel and components, supply of paint, application of paint, excavation of materials where required to provide proper access for painting, full enclosure for Blasting and Coating, design, erection and maintenance of containment/enclosure structures and all incidental work will be measured as one lump sum and payment will be made on the basis of the lump sum price bid for "Surface Preparation and Painting", which shall include full

compensation for the cost of furnishing all labor, materials, equipment, tools and incidentals necessary to complete the work.

.2 Peterson Creek Bridge, km 678.6

.1 Cleaning and preparation of structural steel and components, supply of paint, application of paint, full enclosure for Blasting and Coating, design, erection and maintenance of containment/enclosure structures and all incidental work will be measured as one lump sum and payment will be made on the basis of the lump sum price bid for "Surface Preparation and Painting", which shall include full compensation for the cost of furnishing all labor, materials, equipment, tools and incidentals necessary to complete the work.

.3 Progress payments will be made on a monthly basis and will be based on the percentage of the total estimated area satisfactorily cleaned and coated as determined by the Departmental Representative.

.4 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 "CPTP Recognized Products List for Alberta Transportation and British Columbia Ministry of Transportation and Infrastructure" (available at: http://www.th.gov.bc.ca/publications/eng_publications/geotech/Recognized_Products_Book.pdf) Type B1 for the Jackfish Creek Bridge, and Type B3 for the Peterson Creek Bridge 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 sample from 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.

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 NACE LIII (PR) Coating Inspector (the "Inspector") shall attend the Pre-Installation Meeting.

.3 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.

.4 Site and surrounding area is to be examined to become familiar with all restrictions or possible restrictions, public traffic, and the property of others.

.5 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 Procedures, Section 01 74 19 - Waste Management and Disposal and Section 02 61 33 - Hazardous Materials.

.2 Divert unused coating materials from landfill through disposal at a special wastes depot.

.3 All existing paint shall be handled, stored and transported as hazardous waste.

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 B1 – through/pony truss for Jackfish Creek Bridge, and B3 – girder/river for Petersen Creek Bridge.

.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 Section 3.6 "Special Procedures".

.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 painted.

.4 There are no known areas that are inaccessible for painting on these bridges, however, if in the opinion of the Departmental Representative and the Inspector, 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.

3.3 PREPARATION

.1 Washing

.1 Cleaning that would result in contaminated (e.g. lead paint chips) or dirty wash water, or dust and debris falling into the water body under the bridge would contravene the "Fisheries Act", Subsection 35(1) and may require a permit under Subsection 35(2) from DFO.

.2 Before any blast cleaning operations commence, the Contractor shall carry out surface cleaning operations on all steel designated to receive a coating system.

.1 When working with accumulated droppings, workers shall wear a NIOSH approved full face respirator with high efficiency particulate air (HEPA) filters capable of excluding particles of 0.3 micron size or a supplied air respirator with full face piece.

.2 Workers shall wear disposable coveralls, gloves, boots and hats to protect personal clothing from contamination with infective organisms. Seal the glove/sleeve and boot/leg interfaces with duct tape before entering the worksite. Before leaving the worksite, vacuum the protective coveralls, boots and gloves using a HEPA vacuum, then walk to an excrement free area, remove the protective clothing, and place it in plastic bags prior to removing respiratory protection. Treat disposable clothing believed to be contaminated with disease agents as an infectious waste.

.3 If nests belong to migratory birds and are occupied or contain eggs they may not be disturbed or destroyed under the "Migratory Birds Convention Act". Environment Canada must be consulted as to the window when migratory birds are active (usually April 15 - July 31).

.4 Although droppings are usually easier to clean up when they are dry and crusted, saturating them with water prior to removal is recommended to prevent the debris and any pathogens from becoming airborne. This should be done with a low velocity mist spray.

.3 All organic materials such as bird droppings, nests and any other non-structural items or pollutants attached to the steel are to be removed by hand cleaning operations.

.4 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 and the Inspector prior to using the material.

.1 Wash water shall not be allowed to drain off directly into the water body. If it is contaminated it must be contained, handled and disposed of as hazardous waste. Otherwise it must be filtered through vegetation or a silt fence before being allowed to enter the water body.

.5 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 by removing paint, rust, mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with following.

.1 Commercial blast cleaning: SSPC-SP 6, 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 Inspector.

.2 Prior to commencing paint application the degree of cleanliness of surfaces to be in accordance with SSPC-Vis1 to the satisfaction of the Inspector.

.3 Prepared surfaces shall be inspected by testing for chloride ion levels on the cleaned steel by Inspector. Chloride ion contamination of the cleaned surface shall be less than 7 $\mu g/cm^2$ 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 Inspector. Ferrous ion contamination of the cleaned surface shall be less than 10 $\mu g/cm^2$ when tested by SSPC-Guide 15 swabbing extraction method. Sulfate contamination of the cleaned surface shall be less than 17 $\mu g/cm^2$ 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 on the basis of 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 pretreatment 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 Inspector.

.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 and Inspector.

.5 Pack rust.

.1 Pack rust that forces plates or structural sections apart to form a gap of 2 mm or greater shall be cleaned to a depth of one half of the gap width, to a maximum depth of 6.0 mm, treated with an approved penetrant and caulked to form a water tight seal along the top edge and the two sides of plate involved. The bottom edge or the lowest edge of the plate or member shall not be caulked.

.2 The type of penetrant and caulking used must be compatible with the paint system used and shall be applied according to the Manufacturer's instructions. No penetrant or caulking shall be used which has not been accepted by the Departmental Representative. When caulking joints where only one plate edge is exposed, a fillet of caulking shall be formed which is not less than 3 mm or the width of the pack rust gap. The fillet is not required where there is no separation of the plates due to pack rust.

.3 Regardless of whether pack rust is evident or not, all connection plates within the areas to be painted shall be treated with an approved penetrant and caulked as described. All costs associated with the penetrant treatment and 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 Inspector and 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 Inspector and 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 Inspector and 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 Inspector or 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 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 Inspector or 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 Inspector or 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 PWGSC.

3.6 SPECIAL PROCEDURES

.1 Jackfish Creek Bridge Alaska Highway km 424.8

.1 Paint

.1 To British Columbia Ministry of Transportation and Infrastructure's "Recognized Products List" or equivalent products approved by Departmental Representative for coating systems Type B1 – through/pony 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 be silver FS-595B 17178.

Alberta Transportation and British Columbia Transportation and Infrastructure – Bridge Coating Systems for SP6 Prepared Surfaces – Type B1 (Oct 10, 2009) – Equivalent products can be used subject to acceptance by Departmental Representative

Manufacturer	No. of Coats	Product Name	Generic Description	Supplier
Amercoat Canada	3	Amercoat 68HS	Organic Zn Primer	General Paint 780-468-1558 604-253-3131
		Amercoat 240	Epoxy Midcoat	
		Amercoat 450H	Polyurethane Topcoat	
ICI-Devoe	3	Cathacoat 315	Organic Zn Primer	ICI-Devoe 778-838-4579 780-465-3600
		Bar Rust 231	Epoxy Midcoat	
		Devthane 349	Polyurethane Topcoat	
International Paint	3	Intersinc 315B	Organic Zn Primer	International Paint 604-988-7191
		Intergard 475HS	Epoxy Midcoat	
		Interthane 870UHS	Polyurethane Topcoat	
Sherwin Williams	3	Zinc Clad III HS	Organic Zn Primer	Sherwin Williams 780-454-7800 604-253-5424
		Macropoxy 646 Fast Cure	Epoxy Midcoat	
		Acrolon 218 HS Polyurethane	Polyurethane Topcoat	
Termarust Technologies	3	Termazinc 1100	Organic Zn Primer	Termarust Technologies 888-279-5497
		Termapoxy 2330	Epoxy Midcoat	
		Termathane 2400	Polyurethane Topcoat	
ICI-Devoe	2	Cathacoat 315	Organic Zn Primer	ICI-Devoe 778-838-4579 780-465-3600
		Devthane 349	Polyurethane Topcoat	
Sherwin Williams	2	Zinc Clad III HS	Organic Zn Primer	Sherwin Williams 780-454-7800 604-253-5424
		Polysiloxane XLE-80	PolySiloxane Topcoat	
International Paint	3	Interzinc 315B	Organic Zn Primer	International Paint 604-988-7191
		Intergard 475HS	Epoxy Midcoat	
		Interfine 878	Acrylic Polysiloxane Topcoat	

.2 Areas to be painted

.1 All structural steel is to be painted.

.2 Removal of soil to expose lower structural members is required. Removal of soil and debris to expose all structural members for proper access for painting is considered incidental to the Unit Price Items and no additional payment will be made.

.3 All removed soil will be removed and relocated to a location acceptable to the Departmental Representative.

.4 The surface area of the structural steel to be painted is estimated to be:

Estimated Surface Area – Jackfish Creek Bridge (m^2)	
Top Truss Chord	136
Bottom Truss Chord	245
Diagonal Truss Members	59
Vertical Truss Members	97
Truss Connections	27
Beams	291
Stringers	266
Bracing	94
Total:	**1215**

.5 All bridge bearings to be painted.

Bearings – Jackfish Creek Bridge		
Type	Quantity	Estimated Surface Area (m^2)
Expansion – Sliding Plates	2	1.62
Fixed – Rocker Bar	2	1.62
Total:	**4**	**3.24**

.2 Petersen Creek Bridge Alaska Highway km 678.6

.1 Paint

.1 To British Columbia Ministry of Transportation and Infrastructure's "Recognized Products List" or equivalent approved by Departmental Representative for coating systems Type B3 – girder/river.

.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.

Alberta Transportation and British Columbia Transportation and Infrastructure – Bridge Coating Systems for SP6 Prepared Surfaces – Type B3 (Oct 10, 2009) – Equivalent products can be used subject to acceptance by Departmental Representative				
Manufacturer	**No. of Coats**	**Product Name**	**Generic Description**	**Supplier**
Amercoat Canada	3	Amercoat 68HS	Organic Zn Primer	General Paint 780-468-1558 604-253-3131
		Amercoat 240	Epoxy Midcoat	
		Amercoat 450H	Polyurethane Topcoat	
ICI-Devoe	3	Cathacoat 315	Organic Zn Primer	ICI-Devoe 778-838-4579 780-465-3600
		Bar Rust 231	Epoxy Midcoat	
		Devthane 349	Polyurethane Topcoat	
International Paint	3	Intersinc 315B	Organic Zn Primer	International Paint 604-988-7191
		Intergard 475HS	Epoxy Midcoat	
		Interthane 870UHS	Polyurethane Topcoat	
Sherwin Williams	3	Zinc Clad III HS	Organic Zn Primer	Sherwin Williams 780-454-7800 604-253-5424
		Macropoxy 646 Fast Cure	Epoxy Midcoat	
		Acrolon 218 HS Polyurethane	Polyurethane Topcoat	
Termarust Technologies	3	Termazinc 1100	Organic Zn Primer	Termarust Technologies 888-279-5497
		Termapoxy 2330	Epoxy Midcoat	
		Termathane 2400	Polyurethane Topcoat	
ICI-Devoe	2	Cathacoat 315	Organic Zn Primer	ICI-Devoe 778-838-4579 780-465-3600
		Devthane 349	Polyurethane Topcoat	
Sherwin Williams	2	Zinc Clad III HS	Organic Zn Primer	Sherwin Williams 780-454-7800 604-253-5424
		Polysiloxane XLE-80	PolySiloxane Topcoat	
Amercoat Canada	3	Amercoat 68HS	Organic Zn Primer	General Paint 780-468-1558 604-253-3131
		Amercoat 240	Epoxy Midcoat	
		PSX 1001	Polysiloxane Topcoat	
Cloverdale Paint	3	ClovaZinc 3	Organic Zn Primer	Cloverdale Paint Inc. 780-453-5700 604-596-1736
		ClovaMastic 83110	Epoxy Midcoat	
		Cloverdale SiloxyCoat	Acrylic Polysiloxane	
International Paint	3	Interzinc 315B	Organic Zn Primer	International Paint 604-988-7191
		Intergard 475HS	Epoxy Midcoat	
		Interfine 878	Acrylic Polysiloxane Topcoat	
Cloverdale Paint	2	ClovaCorr 83183	Sealer	Cloverdale Paint Inc. 780-453-5700 604-596-1736
		ClovaCorr 83180	CaSulphonate Alkyd Topcoat	
Termarust Technologies	2	TR2200LV	Sealer	Termarust Technologies 888-279-5497
		TR 2100	CaSulphonate Alkyd Topcoat	
Watson Coatings Inc.	1	Armor-Shield AS8301	CaSulphonate Alkyd Topcoat	Watson Coatings 314-521-2000
Sherwin Williams	3	Corothane I Galvapack 1K	MCZn Primer	Sherwin Williams 780-454-7800 604-253-5424
		Corothane 1 IronOx B	MCU Midcoat	
		Corothan 1 IronOx A HS	MCU Topcoat	

.2 Areas to be painted

.1 Paint all girder bottom flanges.

.2 The exterior side of the webs of the exterior girders is to be painted from the bottom of the web to a distance of 0.30 m up from the top of the bottom flange.

.3 Paint the full height of the web of the south side of the south exterior girder at the east abutment to a distance of 3.0 m from the east end of the girder.

.4 The bottom 0.50 m of the deck drainage pipes are to be painted.

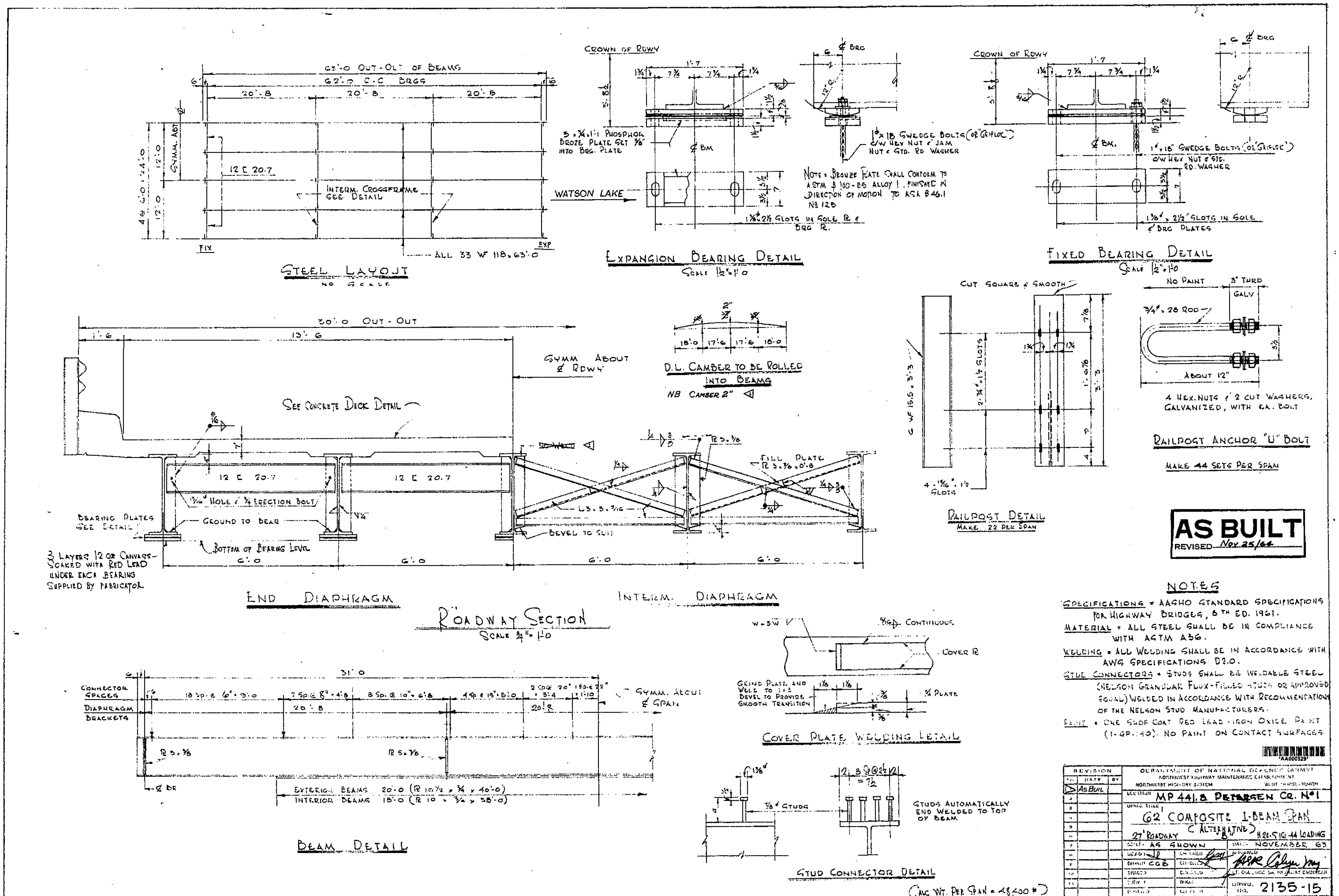
.5 The surface area of the structural steel to be painted is estimated to be:

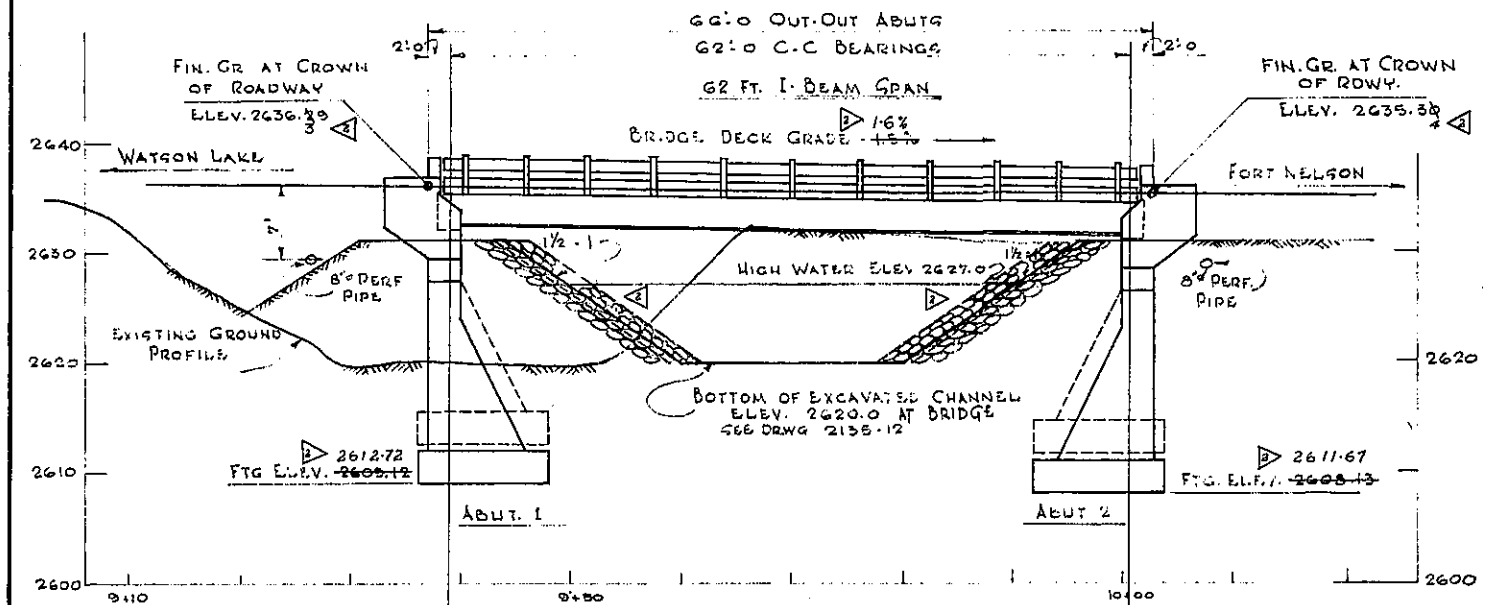
Estimated Surface Area – Peterson Creek Bridge (m^2)	
Girder Bottom Flange	59.1
Exterior Girder Web	10.6
South Girder Full Depth	2.8
Deck Drainage Pipes	0.6
Total:	**73.2**

.6 All bridge bearings are to be painted.

Bearings – Peterson Creek Bridge		
Type	Quantity	Estimated Surface Area (m^2)
Expansion – Sliding Plates	5	1.79
Fixed – Rocker	5	1.79
Total:	**10**	**3.58**

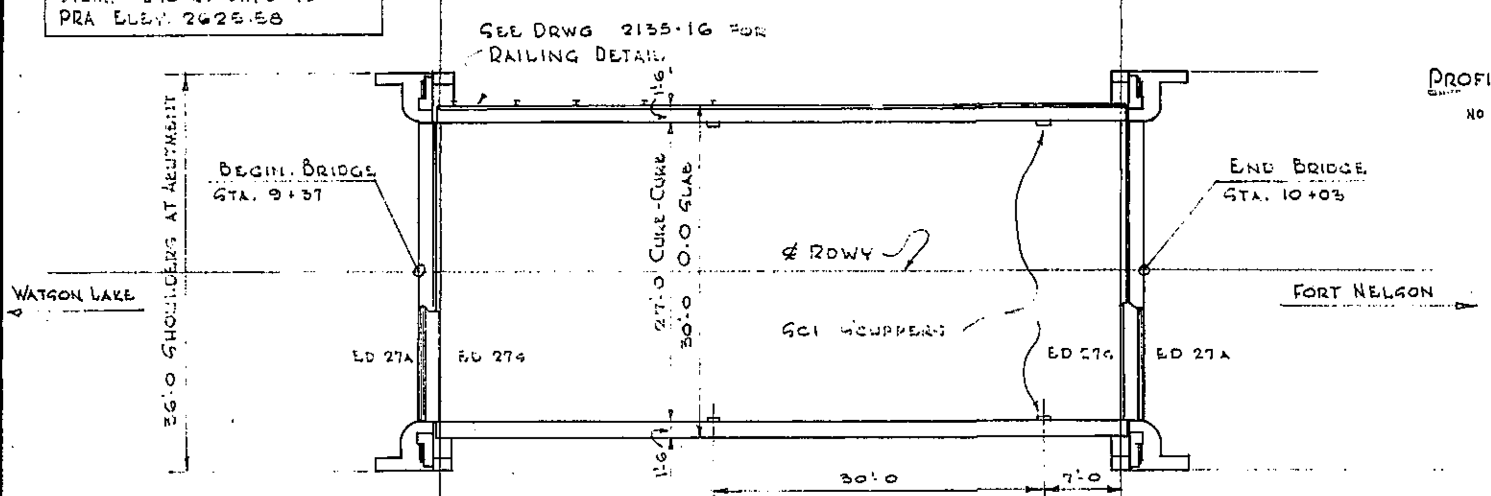
END OF SECTION


63'-0 OUT-OUT OF BEAMS
62'-0 C-C BRGS
20'-8
20'-8
20'-8
4 @ 6'-0 = 24'-0
12'-0
12'-0
SYMM. ABT ℄
12 [20.7
INTERM. CROSSFRAME SEE DETAIL
FIX
EXP
ALL 33 WF 118 x 63'-0
STEEL LAYOUT
NO SCALE
CROWN OF RDWY
1'-7
1¾
7¾
7¾
1¾
5 x ¾ x 1'-1 PHOSPHOR BRONZE PLATE SET ⅜" INTO BRG. PLATE
℄ BM
WATSON LAKE
1⅜" x 2½ SLOTS IN SOLE Pl & BRG Pl.
℄ BRG
1" x 18 SWEDGE BOLTS (OR "GRIPLOC") C/W HEX NUT & JAM NUT & STD. PD WASHER
NOTE: BRONZE PLATE SHALL CONFORM TO ASTM B 100-55 ALLOY I. FINISHED IN DIRECTION OF MOTION TO ASA B46.1 No 125
EXPANSION BEARING DETAIL
SCALE 1½" = 1'-0
CROWN OF RDWY
1" x 18" SWEDGE BOLTS (OR "GRIPLOC") C/W HEX NUT & STD. RD. WASHER
1⅜" x 2½" SLOTS IN SOLE & BRG PLATES
FIXED BEARING DETAIL
SCALE 1½" = 1'-0
30'-0 OUT-OUT
1'-6
13'-6
SYMM ABOUT ℄ RDWY
SEE CONCRETE DECK DETAIL
12 [20.7
12 [20.7
12 [20.7
13/16" HOLE & ¾ ERECTION BOLT
BEARING PLATES SEE DETAIL
GROUND TO BEAR
BOTTOM OF BEARING LEVEL
3 LAYERS 12 OZ CANVASS SOAKED WITH RED LEAD UNDER EACH BEARING SUPPLIED BY FABRICATOR
NO WELD
Pl 5 x ⅜
FILL PLATE Pl 5 x ⅜ x 0'-8
L3 x 3 x 5/16
BEVEL TO SUIT
6'-0
6'-0
6'-0
6'-0
END DIAPHRAGM
INTERM. DIAPHRAGM
ROADWAY SECTION
SCALE ¾" = 1'-0
2"
18'-0
17'-6
17'-6
18'-0
D.L. CAMBER TO BE ROLLED INTO BEAMS
NB CAMBER 2"
CUT SQUARE & SMOOTH
C WF 15.5 x 3'-3
2-¾" x 1½ SLOTS
4-15/16" x 1½ SLOTS
1'-6⅞
3'-3
RAILPOST DETAIL
MAKE 22 PER SPAN
NO PAINT
3" THRD
GALV
¾" x 28 ROD
ABOUT 12"
4 HEX. NUTS & 2 CUT WASHERS, GALVANIZED, WITH EA. BOLT
RAILPOST ANCHOR "U" BOLT
MAKE 44 SETS PER SPAN
AS BUILT
REVISED Nov 25/64
31'-0
CONNECTOR SPACES
DIAPHRAGM BRACKETS
18 Sp. @ 6" = 9'-0
7 Sp. @ 8" = 4'-8
8 Sp. @ 10" = 6'-8
4 Sp. @ 15" = 5'-0
2 Sp @ 20" = 3'-4
1 Sp. @ 22" = 1'-10
SYMM. ABOUT ℄ SPAN
20'-8
20'-8
Pl 5 x ⅜
Pl 5 x ⅜
℄ BR
EXTERIOR BEAMS 20'-0 (Pl 10½ x ¾ x 40'-0)
INTERIOR BEAMS 18'-0 (Pl 10 x ¾ x 38'-0)
BEAM DETAIL
W+3W
5/16 CONTINUOUS
COVER Pl
GRIND PLATE AND WELD TO 1:3 BEVEL TO PROVIDE SMOOTH TRANSITION
¾ PLATE
COVER PLATE WELDING DETAIL
⅞" STUDS
3 Sp @ 2½ = 7½
STUDS AUTOMATICALLY END WELDED TO TOP OF BEAM
STUD CONNECTOR DETAIL
(CALC WT. PER SPAN = 48400 #)
NOTES
SPECIFICATIONS = AASHO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 8TH ED. 1961.
MATERIAL = ALL STEEL SHALL BE IN COMPLIANCE WITH ASTM A36.
WELDING = ALL WELDING SHALL BE IN ACCORDANCE WITH AWS SPECIFICATIONS D2.0.
STUD CONNECTORS = STUDS SHALL BE WELDABLE STEEL (NELSON GRANULAR FLUX-FILLED STUDS OR APPROVED EQUAL) WELDED IN ACCORDANCE WITH RECOMMENDATIONS OF THE NELSON STUD MANUFACTURERS.
PAINT = ONE SHOP COAT RED LEAD-IRON OXIDE PAINT (1-GP-140). NO PAINT ON CONTACT SURFACES.
"AA000529"
REVISION
DATE
BY
As Buil
DEPARTMENT OF NATIONAL DEFENCE (ARMY)
NORTHWEST HIGHWAY MAINTENANCE ESTABLISHMENT
NORTHWEST HIGHWAY SYSTEM
WHITEHORSE, YUKON
LOCATION MP 441.8 PETERSEN CR. No 1
DRWG. TITLE 62' COMPOSITE I-BEAM SPAN (ALTERNATIVE "B")
27' ROADWAY
H20-S16-44 LOADING
SCALE AS SHOWN
DATE NOVEMBER 63
DRAWN CGB
APPROVED
LT. COL. DEP. SR. HIGHWAY ENGINEER
DRWG. NO. 2135-15

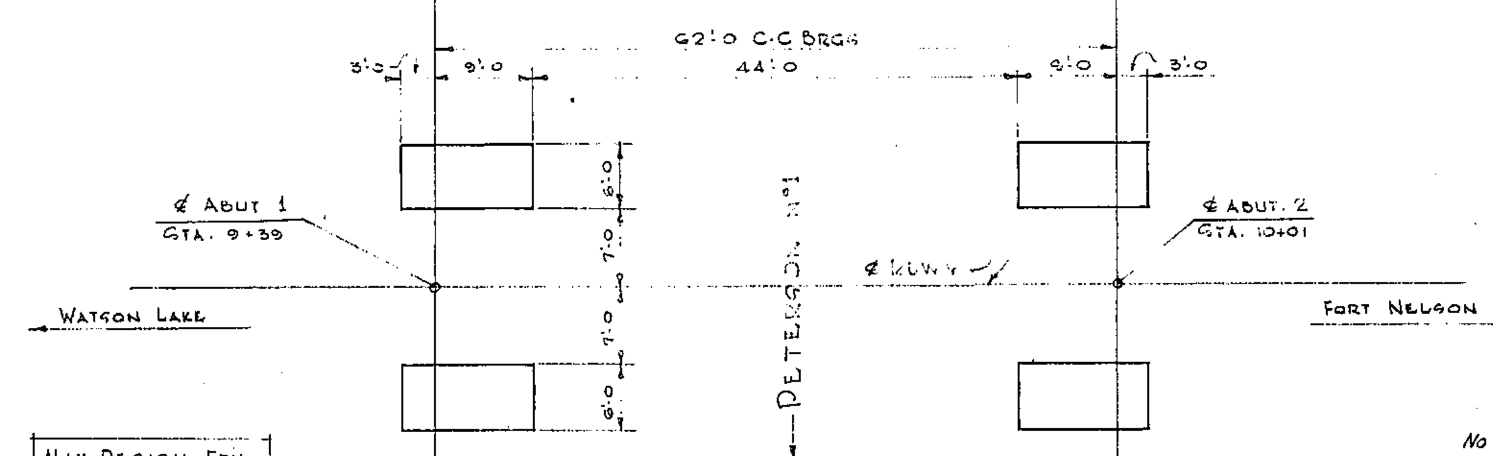


ELEVATION

BRIDGE LEVEL DATUM
BM RR SPIKE IN 6" SPRUCE STUMP 240 RT STA 9+45
PRA ELEV. 2625.58

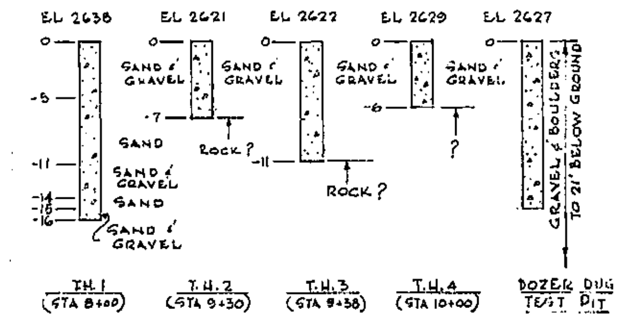


PLAN

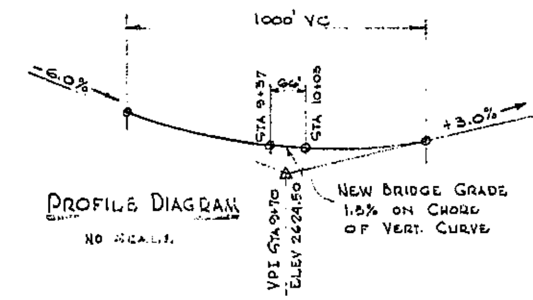


MAX. DESIGN FDN. LOAD 3½ TONS PER SQ. FT.

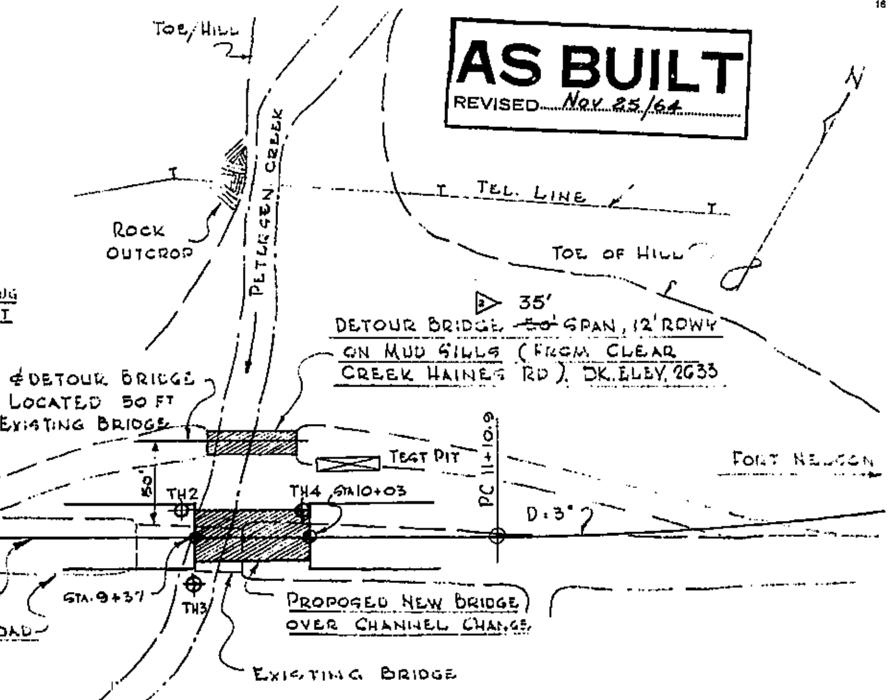
FOOTING LAYOUT



TEST HOLE DATA



PROFILE DIAGRAM
NO SCALE



VICINITY PLAN
1" = 50'

GENERAL NOTES

DESIGN SPECIFICATIONS : AASHO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES. 8TH EDITION, 1961 EXCEPT AS OTHERWISE NOTED.

ALLOWABLE STRESSES :
STRUCT. STEEL (ASTM A36) f = 20,000 PSI
REINF. STEEL (INTERM. GRADE) f = 20,000 PSI
CONCRETE f'c = 1200 PSI.

CONSTRUCTION SPECIFICATIONS : USBPA FORM FP 61 EXCEPT AS OTHERWISE DIRECTED.

DESIGN LIVE LOAD : H 20-S16-44

DEAD LOAD : 15 LBS PER SQ FT. OF DECK SURFACE ALLOWED FOR FUTURE WEARING SURFACE.

CONCRETE : ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS BUT SHALL BE CONTROLLED FOR MAX. DURABILITY IN ACCORDANCE WITH THE CONTROL TABLE ON THE RIGHT.

REINFORCING STEEL : INTERMEDIATE GRADE, DEFORMED TYPE IN ACCORDANCE WITH CSA G30.1 AS AMENDED TO DATE.

CONCRETE FINISH : ALL EXPOSED CORNERS SHALL BE CHAMFERED ¾ INCH UNLESS OTHERWISE SHOWN.

STRUCTURAL STEEL : ALL FIELD CONNECTIONS SHALL BE WELDED. LOW HYDROGEN TYPE CLASS E60 ELECTRODES WILL BE USED. ALL WELDING SHALL BE IN ACCORDANCE WITH AWS PRACTICE.

PAINTING : ALL STRUCTURAL STEEL SHALL BE GIVEN ONE FIELD COAT OF RED LEAD-IRON OXIDE PAINT (1-GP-140) AND FINISHED WITH ONE COAT OF ALUMINUM (1-GP-69 OR EQUAL) THE FLEXBEAM RAIL SHALL BE GIVEN ONE FIELD COAT OF RED LEAD-IRON OXIDE AND FINISHED WITH ONE COAT OF RED ENAMEL (1-GP-59 EXT. GLOSS, ALKYD TYPE, COLOR [illegible] RED 9-1)

NO FIELD PAINTING

ABUTMENT BACKFILL : BACKFILL BEHIND ABUTMENT FOR 12 FT SHALL BE SILT FREE GRANULAR MATERIAL APPROVED BY THE SOILS ENGINEER.

CONCRETE CONTROL TABLE

CLASS	MAXIMUM SIZE COARSE AGGREGATE	MIN. CEMENT PER CU. YD.	WATER PER BAG CEMENT (WATER/CEMENT RATIO)
A(AE)	1½ INCH	6 BAGS	4¼ GAL (0.49 ± 0.02)
Y(AE)	¾ INCH	7 BAGS	3⅔ GAL (0.42 ± 0.02)

SUMMARY OF QUANTITIES

ITEM	UNIT	ESTIMATED	AS BUILT
STRUCTURE EXCAVATION	C.Y.	NET 350	600
CONCRETE CLASS A (AE)	C.Y.	100	74.0
" CLASS Y (AE)	C.Y.	49.5	67.1
REINFORCING STEEL	LB.	21,296	20206
STRUCTURAL STEEL	LB.	48,400 (1)	48,400
FLEXBEAM GUARDRAIL	L.F.	132 (2)	132
8" PERFORATED PIPE	L.F.	120	120
EMBANKMENT (BANK)	C.Y.	3000	3,000
QUARRY STONE	C.Y.	1100	1,305
MISC. STEEL (EDs GCI)	LB.	2836	2,836

(1) WEIGHT SHOWN IS FOR COMPOSITE I-BM ALTERNATIVE. CALC. WEIGHT FOR STD I-BM SPAN IS 61,500 LBS
(2) SUPPLIED QUANT.

INDEX OF DRAWINGS

DRWG Nº	TITLE
2135-11	LAYOUT & GENERAL NOTES
2135-12	STREAM CONTROL BANK DETAIL
2135-13	ABUTMENT DETAIL
2135-14	62' STD I-BEAM SPAN (ALTERNATIVE "A")
2135-15	62' COMP. I-BEAM SPAN (ALTERNATIVE "B")
2135-16	CONCRETE DECK DETAIL
2135-17	EXPANSION DAM DETAIL
2135-18	REINF. STEEL SCHEDULE

REVISION	DATE	BY
1	25 FEB 64	
2	AS BUILT	

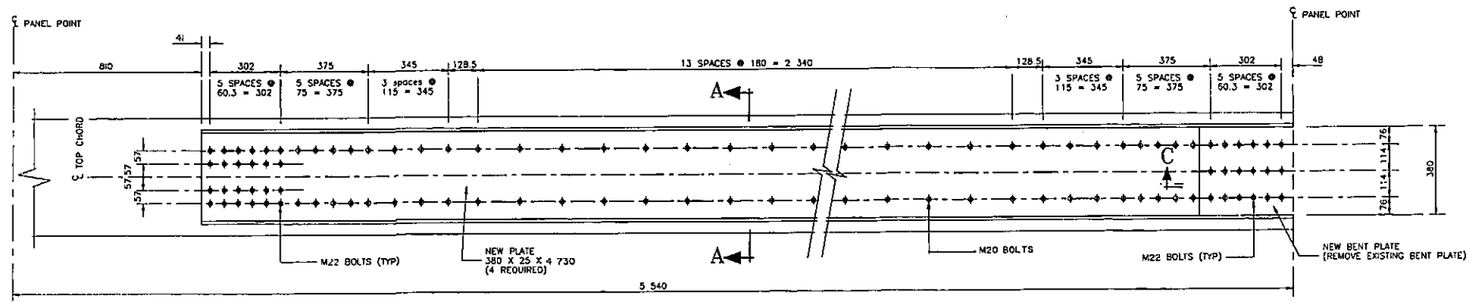
DEPARTMENT OF NATIONAL DEFENCE (ARMY)
NORTHWEST HIGHWAY MAINTENANCE ESTABLISHMENT
NORTHWEST HIGHWAY SYSTEM — WHITEHORSE - YUKON

LOCATION: MP 441.8 PETERSEN CR Nº1

DRWG. TITLE: LAYOUT OF REPLACEMENT BRIDGE

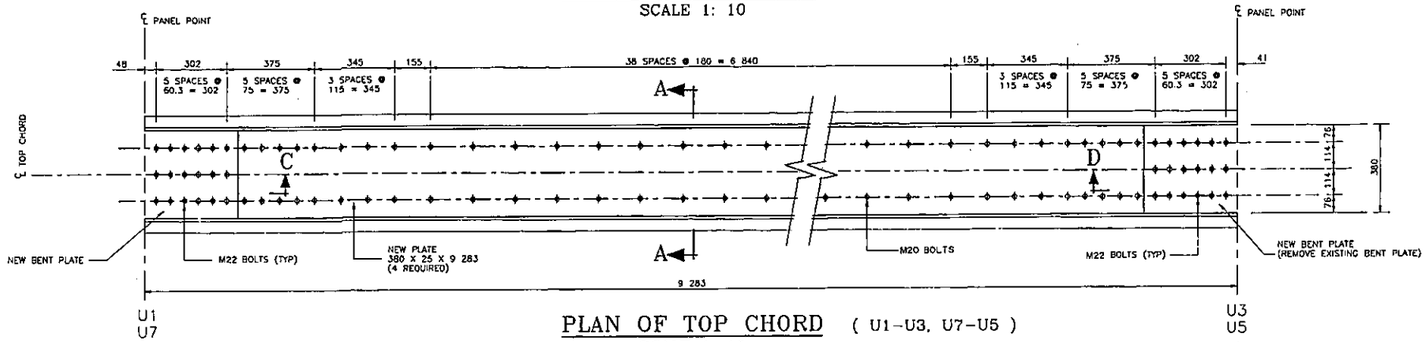
SCALE: ⅛" = 1'-0 — DATE: JAN [illegible] 1964
DESIGN J.Q. — CHECKED
DRAWN C.G.B. — CHECKED
TRACED — CHECKED
SURVEY — BOOK
PLOTTED — CHECKED
APPROVED: LT. COL., RCE, SR. HIGHWAY ENGINEER

DRWG. NO. 2135-11



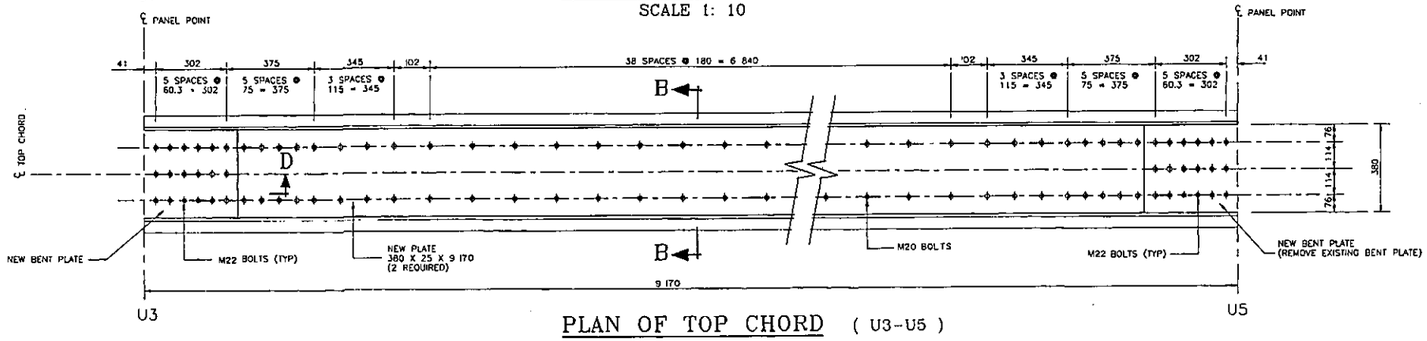
PLAN OF TOP CHORD (L0–U1, L8–U7)

SCALE 1: 10



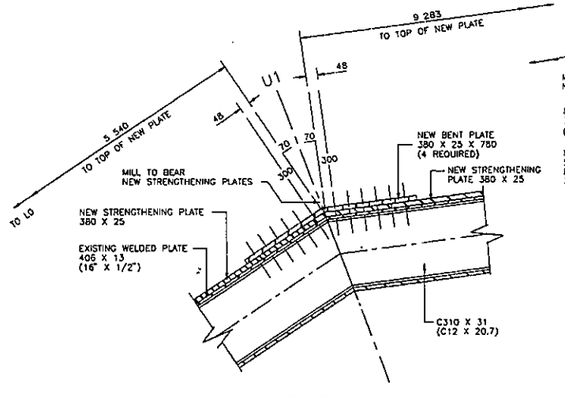
PLAN OF TOP CHORD (U1–U3, U7–U5)

SCALE 1: 10



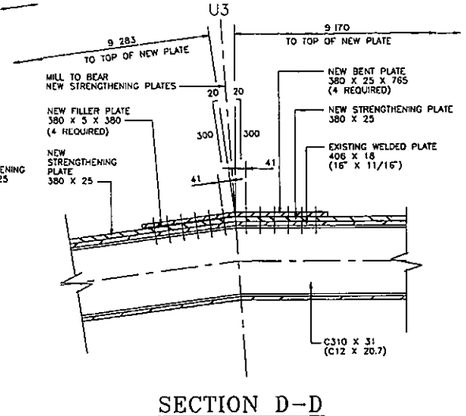
PLAN OF TOP CHORD (U3–U5)

SCALE 1: 10



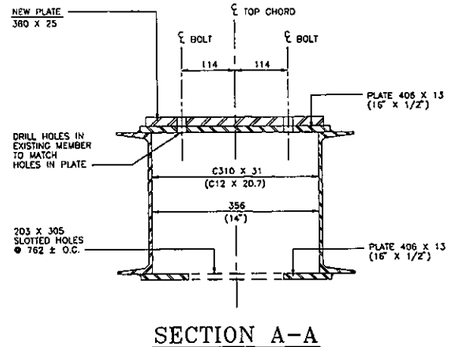
SECTION C–C

SCALE 1:10



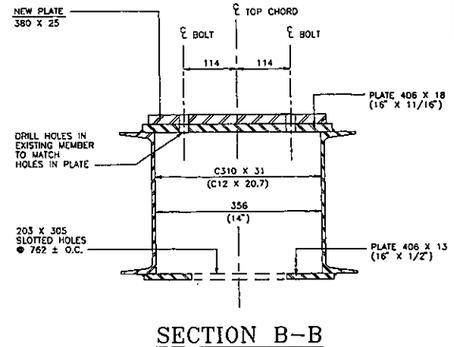
SECTION D–D

SCALE 1:10



SECTION A–A

SCALE 1:5



SECTION B–B

SCALE 1:5

NOTES

1. FOR GENERAL NOTES SEE DRAWING 1 of 2.
2. SCALE AS NOTED.
3. SHADED AREAS INDICATE NEW STEEL.
4. ● REPLACE BOLTS WITH M22 HIGH STRENGTH BOLTS.
   ○ DRILL NEW HOLE IN EXISTING STEEL FOR M20 BOLTS.
5. SEE Drwg. 1 of 2 FOR "GENERAL LAYOUT AND BOTTOM CHORD STRENGTHENING" DETAILS, ALSO NOTES 1,2,3, AND 4.

Date

Public Works Canada / Travaux publics Canada

Architectural and Engineering Services
Services d'architecture et de génie

Transportation
Voirie

Revisions
Révisions

Designed by / Conçu par — K.K. SOOD — date
Checked by / Examiné par — W.J. DAWSON — date
Drawn by / Dessiné par — G.E. ROBERTS — date
Checked by / Examiné par — K.K. SOOD — date
Approved by / Approuvé par — G.S. HIBBERT — 92/04/09 — date
Manager – Bridge Services / Manager – Gestionnaire des Ponts

project / projet
JACKFISH CREEK BRIDGE
ALASKA HIGHWAY
KILOMETER 447.7
BRITISH COLUMBIA

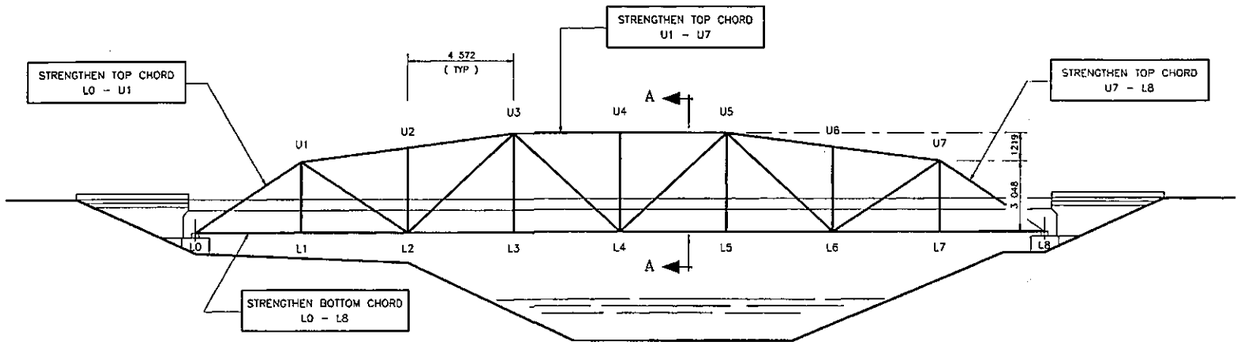
drawing / dessin
TOP CHORD

1992 MODIFICATIONS

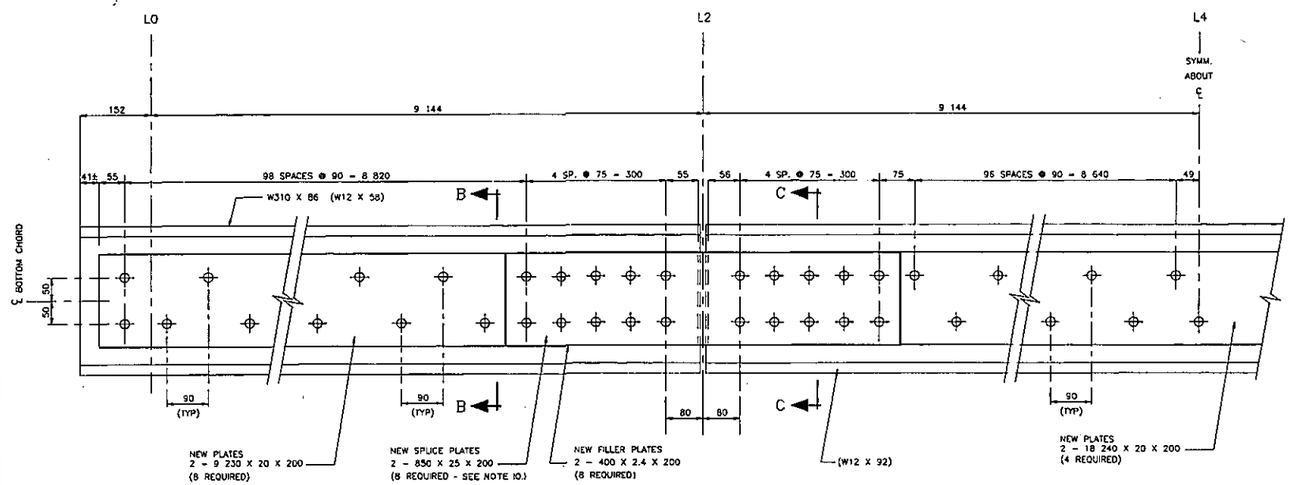
project no. / no. du projet
859231

drawing no. / dessin no.
2 of 2

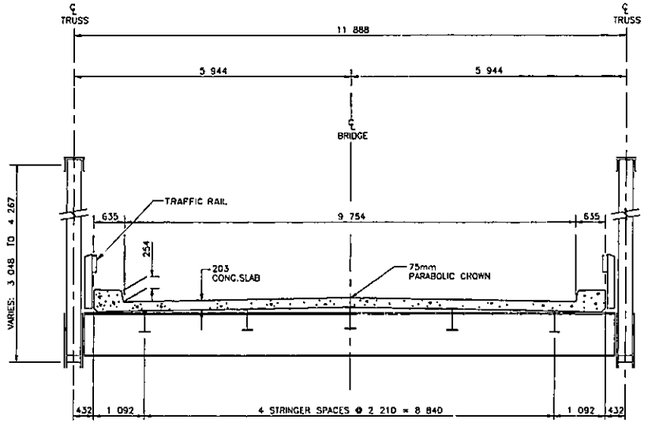
113-9-2



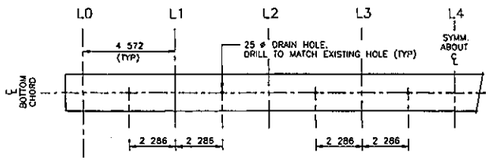
ELEVATION (SEE NOTE 8.)
SCALE 1:100



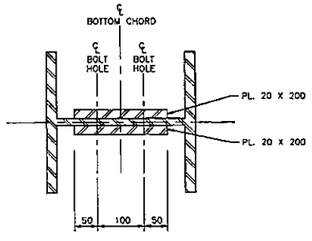
PLAN OF BOTTOM CHORD
SCALE 1:5



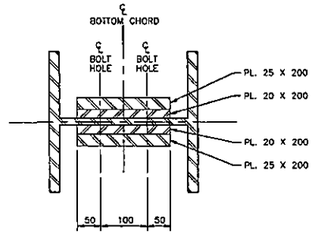
SECTION A–A
SCALE 1:50



PLAN OF BOTTOM CHORD DRAIN HOLE LOCATION
N.T.S.



SECTION B–B
SCALE 1:5



SECTION C–C (SEE NOTE 10.)
SCALE 1:5

NOTES

1. CONTRACTORS TO VISIT SITE TO VERIFY CONDITIONS AND SURVEY EXTENT OF WORK PRIOR TO SUBMITTING BID.
2. CONTRACTORS TO VISIT SITE TO VERIFY ALL DIMENSIONS PRIOR TO PROCEEDING WITH WORK. ANY DISCREPANCIES ARE TO BE REPORTED DIRECTLY TO THE ENGINEER, WHO WILL THEN INSTRUCT THE GENERAL CONTRACTOR ON HIS NEXT COURSE OF ACTION. FAILURE TO REPORT ANY DISCREPANCIES WILL IMPLY THAT ALL WORK CONFORMS WITH THE DESIGN DOCUMENTS AND ANY COSTS RESULTING WILL BE INCURRED WHOLELY BY THE GENERAL CONTRACTOR.
3. THE SPECIFICATIONS MARKED "SPECIFICATIONS" ARE AN INTEGRAL PART OF THIS CONTRACT AND ARE TO BE READ IN CONJUNCTION WITH THE DRAWINGS. THE WORK SHALL BE PERFORMED ACCORDINGLY.
4. THE EXISTING DRAWINGS ARE AVAILABLE UPON REQUEST BY THE GENERAL CONTRACTOR FROM THE ENGINEER. NOTE THAT THE EXISTING DRAWINGS DO NOT NECESSARILY DESCRIBE THE AS-BUILT CONDITIONS. HENCE ITEMS #1 AND #2 MUST BE FOLLOWED.

GENERAL NOTES

1. SPECIFICATIONS: PROJECT SPECIFICATIONS (HEREINAFTER THESE WILL BE REFERRED TO AS SPEC'S.) AASHTO SPECIFICATION–1989, CSA STANDARDS AND AS NOTED.
2. DESIGN CODE: CSA CAN3-S6-88.
3. UNITS: 1. CHAINAGES AND ELEVATIONS IN m.
   2. DIMENSIONS IN mm.
   3. IMPERIAL UNITS IN BRACKETS.
4. STEEL FOR PLATES TO CSA CAN3-G40.21-M81 GRADE 350W AND TO BE PAINTED.
5. HIGH STRENGTH BOLTS: 1. TO ASTM A325M-84a, TYPE 1, TO BE GALVANIZED.
   2. USE M20 BOLTS UNLESS NOTED OTHERWISE
6. WIRE BRUSH PRIOR TO BOLTING ALL CONTACT SURFACES OF MEMBERS TO BE BOLTED TOGETHER, SEE SPEC'S.
7. SEE Drwg. 2 of 2 FOR "TOP CHORD-STRENGTHENING" DETAILS.
8. GUIDERAIL NOT SHOWN IN "ELEVATION" FOR CLARITY.
9. SUBMIT INSTALLATION PROCEEDURES FOR ENGINEER'S APPROVAL IN WRITING FOR STRENGTHENING BOTTOM AND TOP CHORDS BEFORE COMMENCING FIELD WORK.
10. SPLICE PLATES INTERFERED WITH BY EXISTING SPLICE BOLTS (NOT SHOWN). REPLACE WITH NEW M20 BOLTS WITH NUTS ON OUTSIDE FACE OF SECTION.

Date

Public Works Canada / Travaux publics Canada

Architectural and Engineering Services
Services d'architecture et de génie

Transportation
Voirie

Revisions
Révisions

Designed by / Conçu par — date
K.K. SOOD

Checked by / Examiné par — date
W.J. DANSON

Drawn by / Dessiné par — date
G.E. ROBERTS

Checked by / Examiné par — date
K.K. SOOD

Approved by / Approuvé par — date
G.S. HIBBERT
12/04/09
Manager – Bridge Services
Manager – Gestionnaire des Ponts

project / projet
JACKFISH CREEK BRIDGE
ALASKA HIGHWAY
KILOMETER 447.7
BRITISH COLUMBIA

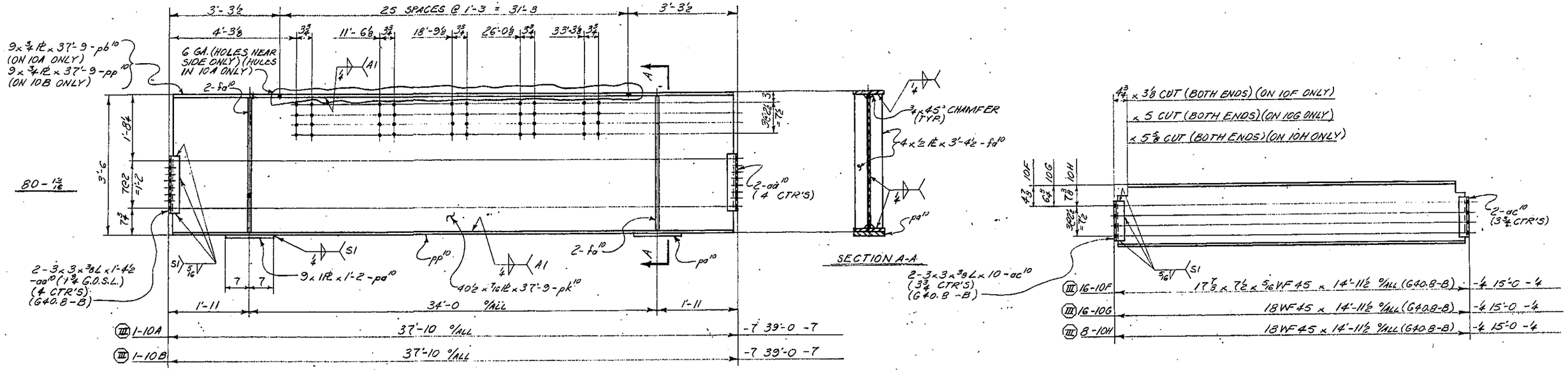
drawing / dessin
GENERAL LAYOUT AND BOTTOM CHORD
AA000182

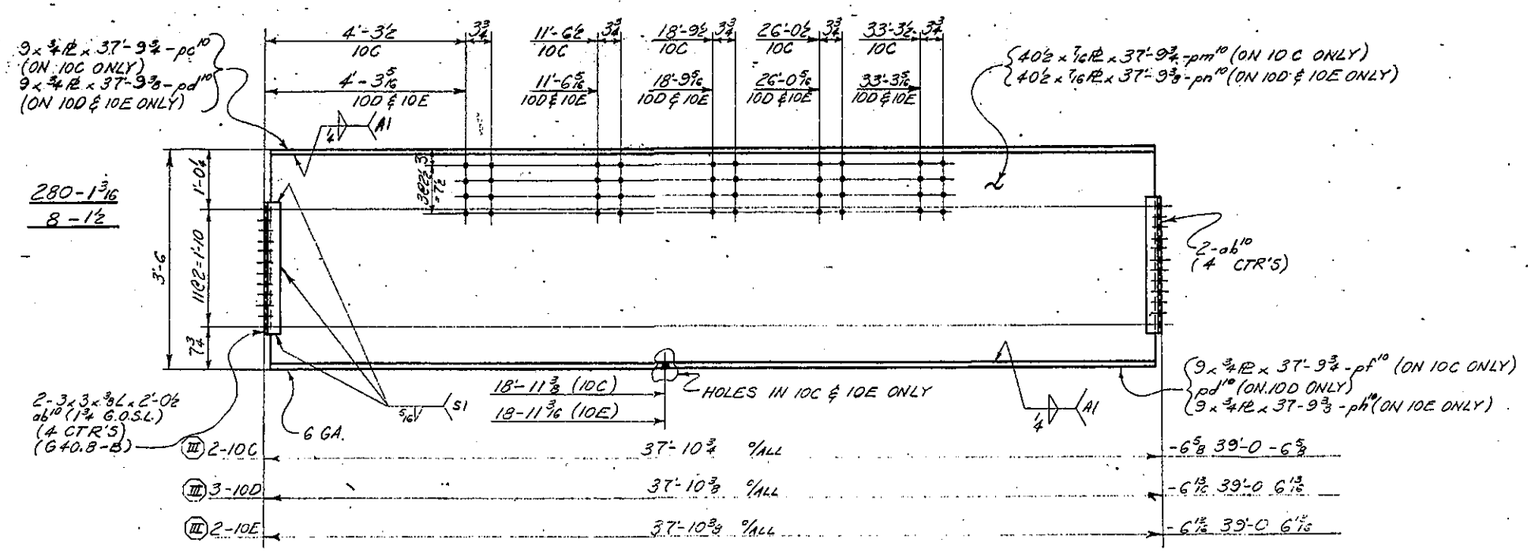
1992 MODIFICATIONS

project no. / no. du projet
859231

drawing no. / dessin no.
1 of 2

113-9-1





DEPT. OF PUBLIC WORKS
CANADA

APPROVED } DATE JUN 13 1969
ENGINEER-IN-CHARGE
FOR CHIEF ENGINEER

FIELD BOLTS
80 - ¾ ϕ H.T.B x 2
280 - ¾ ϕ H.T.B x 2½
8 - ¾ ϕ H.T.B x 2½

MATERIAL A.C.R. 1-67-8 13/16
HOLES 13/16 ϕ UNLESS NOTED
PAINT: ONE COAT OF SEE DRG. GN1

A·I·M STEEL LIMITED
EDMONTON ALBERTA

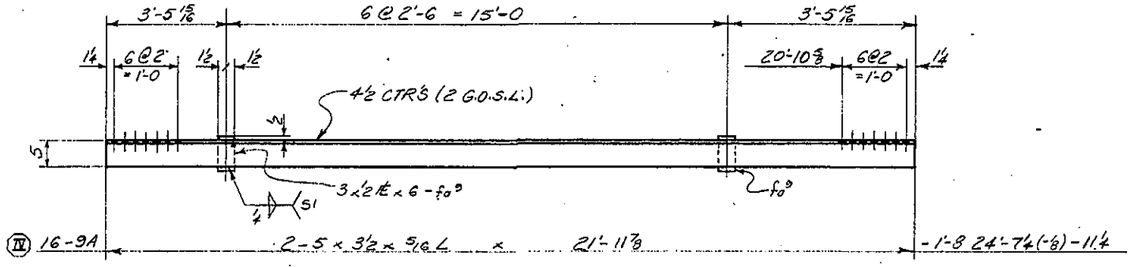
CUSTOMER POOLE CONSTRUCTION
NAME OF STRUCTURE JACKFISH CREEK BRIDGE
LOCATION ALASKA HIGHWAY MILE 278
TITLE OF DRAWING BEAMS
DRAWN BY G. SCHULTZ DATE 22-5-69
CHECKED BY H. GORDON DATE 29-5-69

CONTRACT	DRG. NO.	REV.
E51983	10	

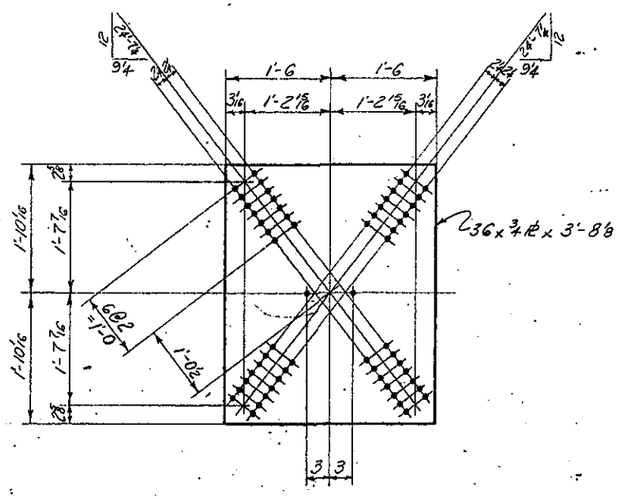
REVISIONS 1 2 3

7437

113-8-10



224-1 1/16



(IX) FOUR - PLATES REQ MK'D - 9B

DEPT. OF PUBLIC WORKS
CANADA

APPROVED | DATE JUN 13 1969
ENGINEER-IN-CHARGE
FOR CHIEF ENGINEER

"AA900175"

FIELD BOLTS
224 - 3/4 ϕ H.T.B. x 2 1/4
8 - 3/4 ϕ H.T.B. x 2 3/4

MATERIAL G40.3-B
HOLE 13/16 ϕ UNLESS NOTED

PAINT ONE COAT OF
SEE DRG. GN1

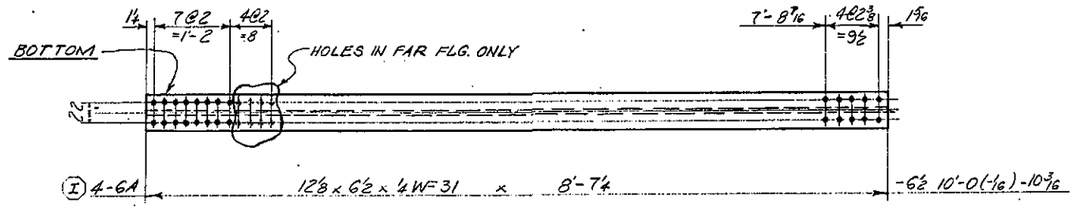
A·I·M STEEL LIMITED
EDMONTON ALBERTA

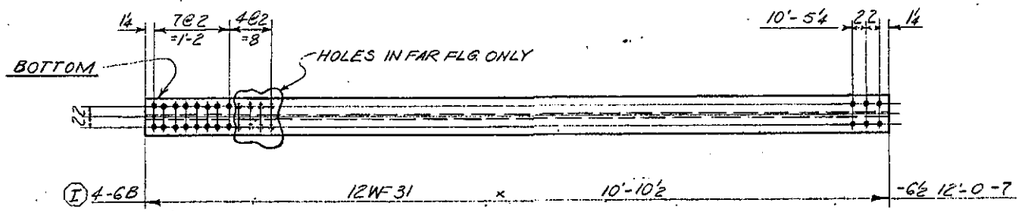
CUSTOMER POOLE CONSTRUCTION
NAME OF STRUCTURE JACKFISH CREEK BRIDGE
LOCATION ALASKA HIGHWAY MILE 278
TITLE OF DRAWING BRACING
DRAWN BY G. SCHULTE DATE 26-5-69.
CHECKED BY H. GORDON DATE 29-5-69.

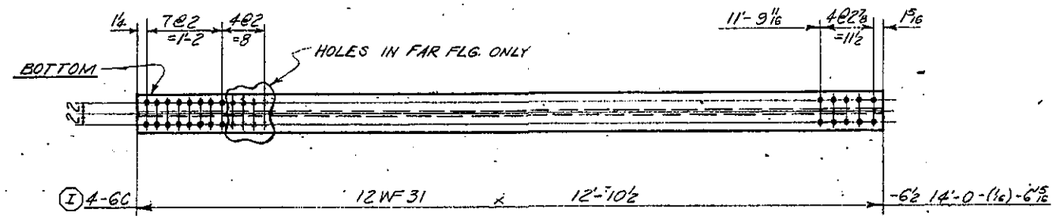
CONTRACT	DWG. NO.	REV.
E51983	9	

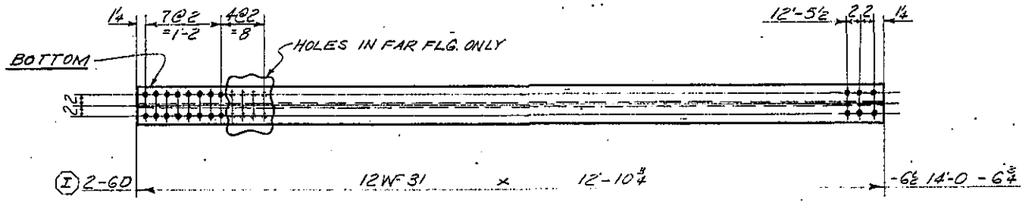
REVISIONS
1
2
3

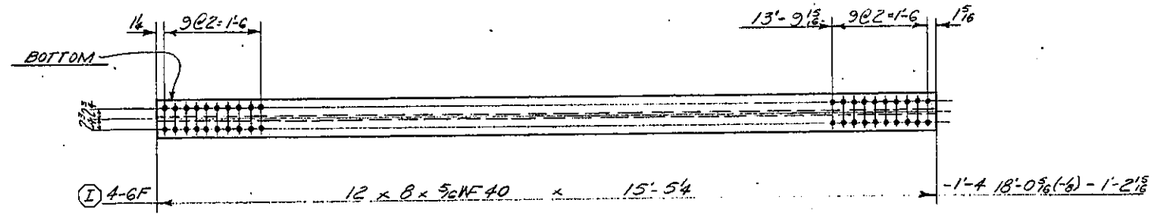
~~1836~~ 113-8-9

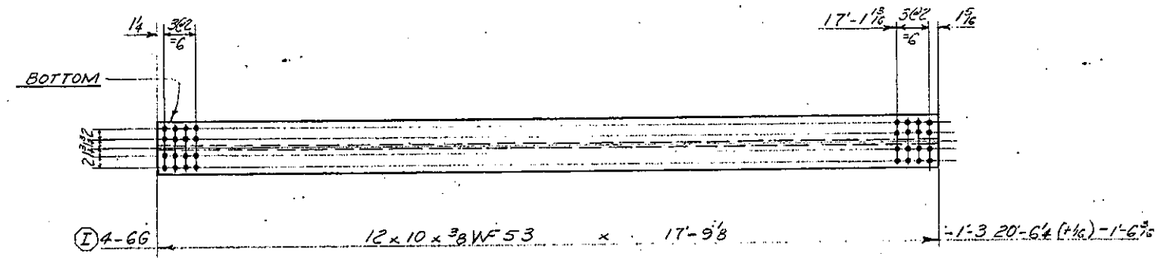


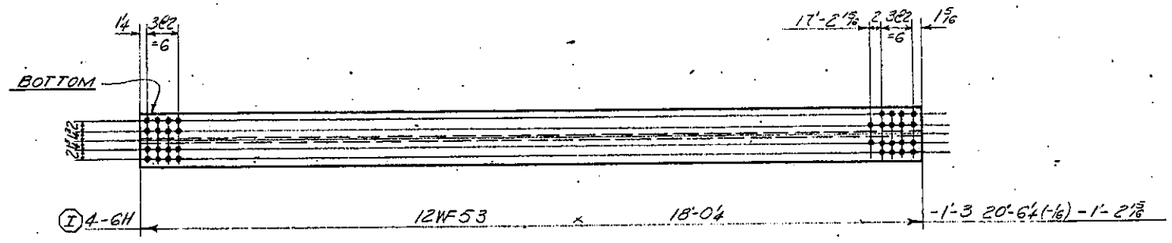












NOTES:

SEE NOTES DRG. GN1.

HOLES IN BOTH FLG'S U/N OTHERWISE.

"AA000176"

DEPT. OF PUBLIC WORKS

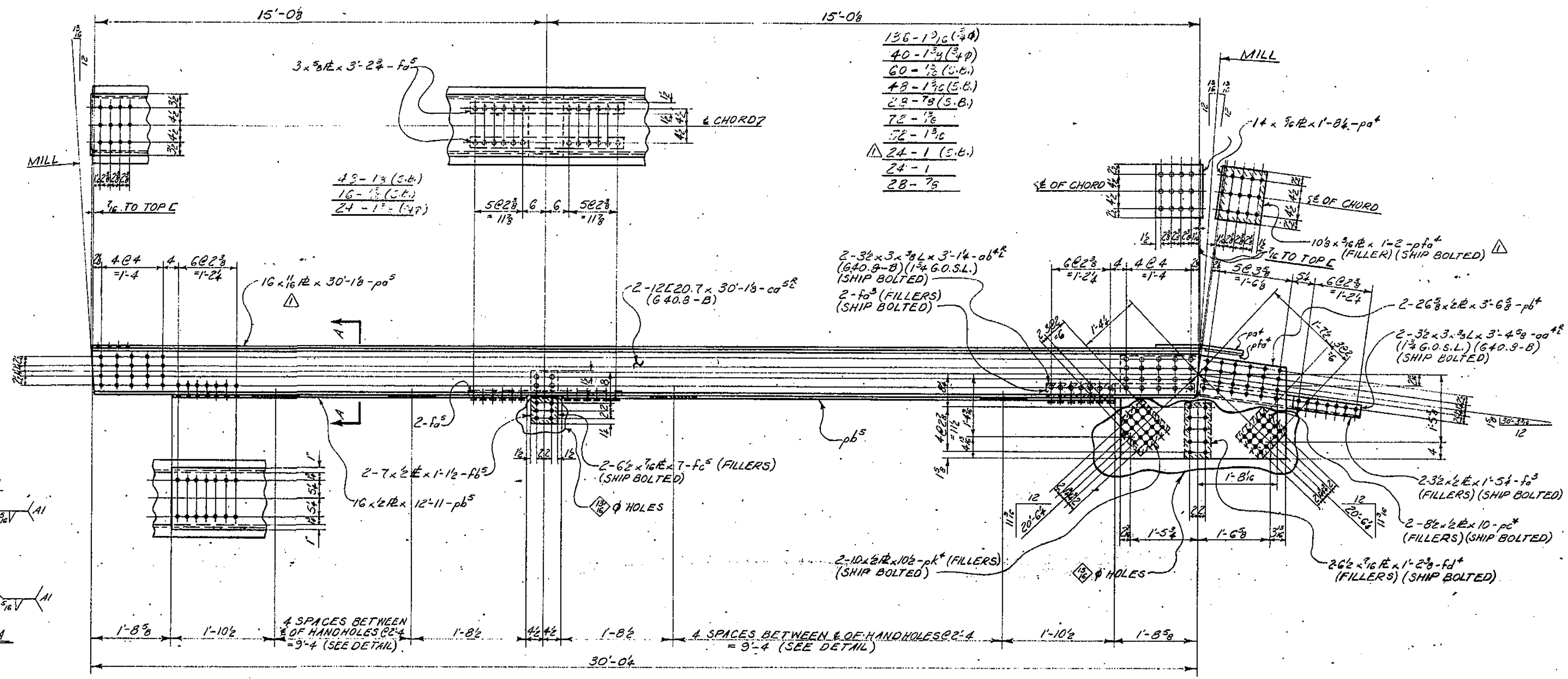
CANADA

APPROVED | DATE JUN 13 1969

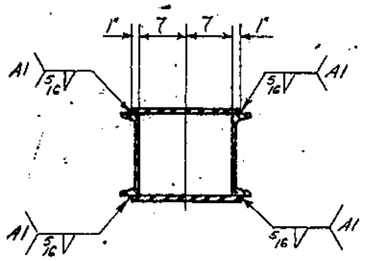
Engineer-in-Charge

FOR CHIEF ENGINEER

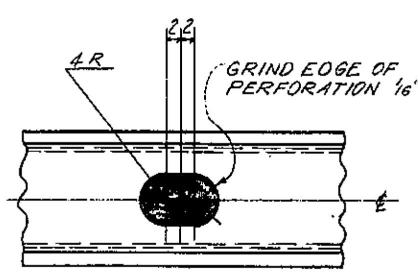
FIELD BOLTS	MATERIAL: G40.8-B HOLES: 13/16 Ø UNLESS NOTED PAINT: ONE COAT OF SEE DRG. GN1	A·I·M STEEL LIMITED EDMONTON ALBERTA
REVISIONS 1 2 3	CUSTOMER: POOLE CONSTRUCTION NAME OF STRUCTURE: JACKFISH CREEK BRIDGE LOCATION: ALASKA HIGHWAY MILE 278 TITLE OF DRAWING: WEB MEMBERS DRAWN BY: G. SCHULTZ DATE: 25-5-69 CHECKED BY: H. GORDON DATE: 29-5-69	CONTRACT: E51983 DRG. NO.: 6 REV.:



Ⓘ TWO - TOP CHORDS REQ'D MK'D - 5A



SECTION A-A



HANDHOLE DETAIL

DEPT. OF PUBLIC WORKS
CANADA

APPROVED } DATE JUN 13 1969
ENGINEER-IN-CHARGE
FOR CHIEF ENGINEER

NOTES:
SEE NOTES DRG. GN1.
SHIP BOLTED ALL LOOSE FILLERS

FIELD BOLTS	SHOP BOLTS	
200 - ¾ φ H.T.B. x 2⅜	104 - ⅞ φ H.T.B. x 2¼	MATERIAL A441 - U/N.
100 - ⅞ φ H.T.B. x 2¼	120 - ⅞ φ H.T.B. x 2½	HOLES ¹⁵⁄₁₆ φ UNLESS NOTED
76 - ⅞ φ H.T.B. x 2½		PAINT: ONE COAT OF SEE DRG. GN1

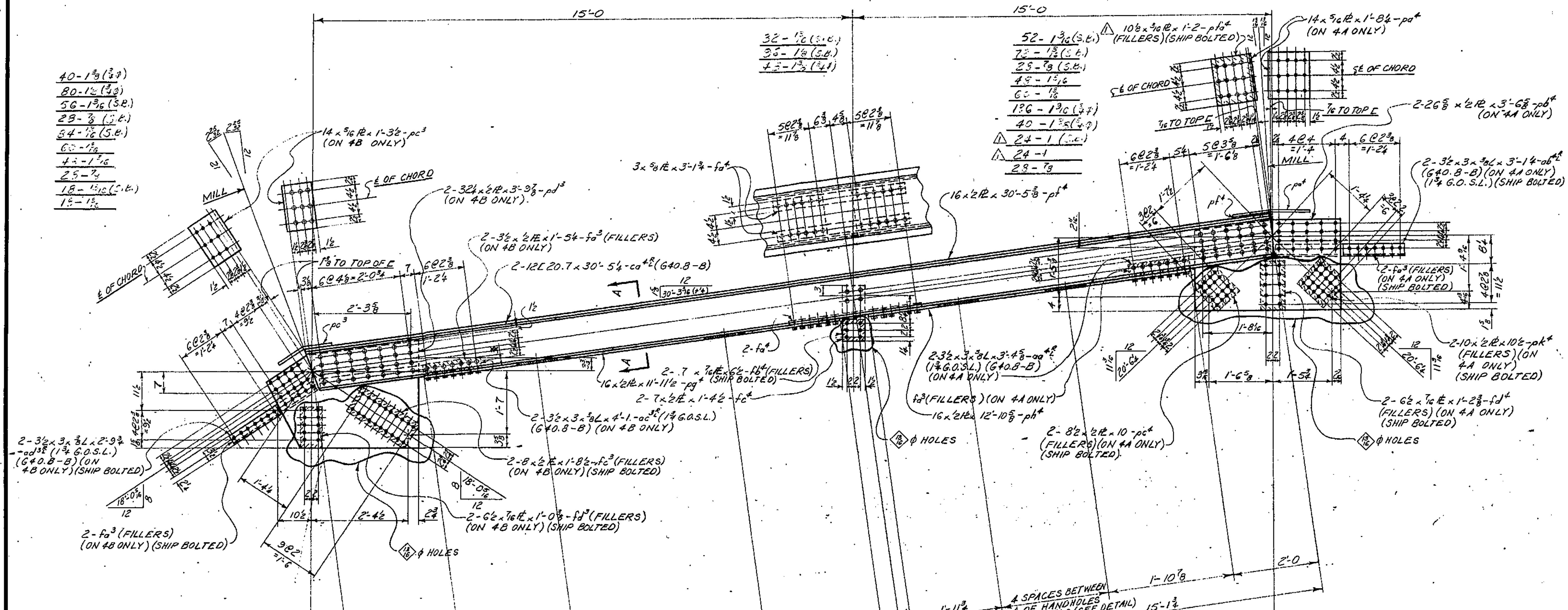
REVISIONS			
1	TO SUIT APPROVAL		10/6
2			
3			

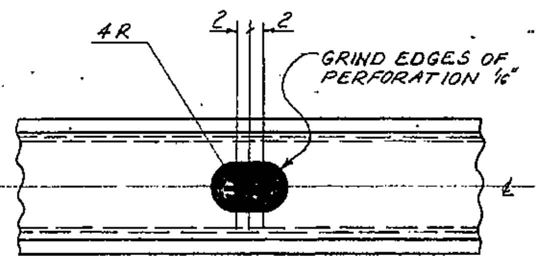
A·I·M STEEL LIMITED
EDMONTON ALBERTA

CUSTOMER POOLE CONSTRUCTION
NAME OF STRUCTURE JACKFISH CREEK BRIDGE
LOCATION ALASKA HIGHWAY MILE 278
TITLE OF DRAWING TOP CHORD
DRAWN BY G. SCHULTZ DATE 23-5-69
CHECKED BY H. GORDON DATE 29-5-69

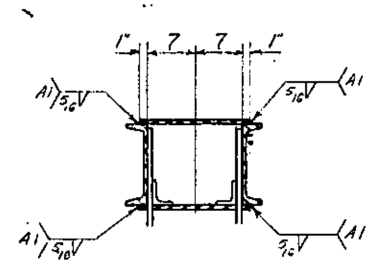
CONTRACT	DRG. NO.	REV.
E51983	5	1

7431 113-8-5





HANDHOLE DETAIL



SECTION A-A

(I) TWO- TOP CHORDS REQ'D MK'D - 4A

(I) TWO- TOP CHORDS REQ'D MK'D - 4B

DEPT. OF PUBLIC WORKS
CANADA

APPROVED — DATE NOV 13 1969
ENGINEER-IN-CHARGE
FOR CHIEF ENGINEER

FIELD BOLTS	SHOP BOLTS	
344 - ¾ φ H.T.B. x 2¾	262 - ⅞ φ H.T.B. x 2¼	MATERIAL A441 U/N
134 - ⅞ φ H.T.B. x 2¾	223 - ¾ φ H.T.B. x 2½	HOLES 15/16 φ UNLESS NOTED
120 - ¾ φ H.T.B. x 2½		PAINT: ONE COAT OF SEE DRG. GN1

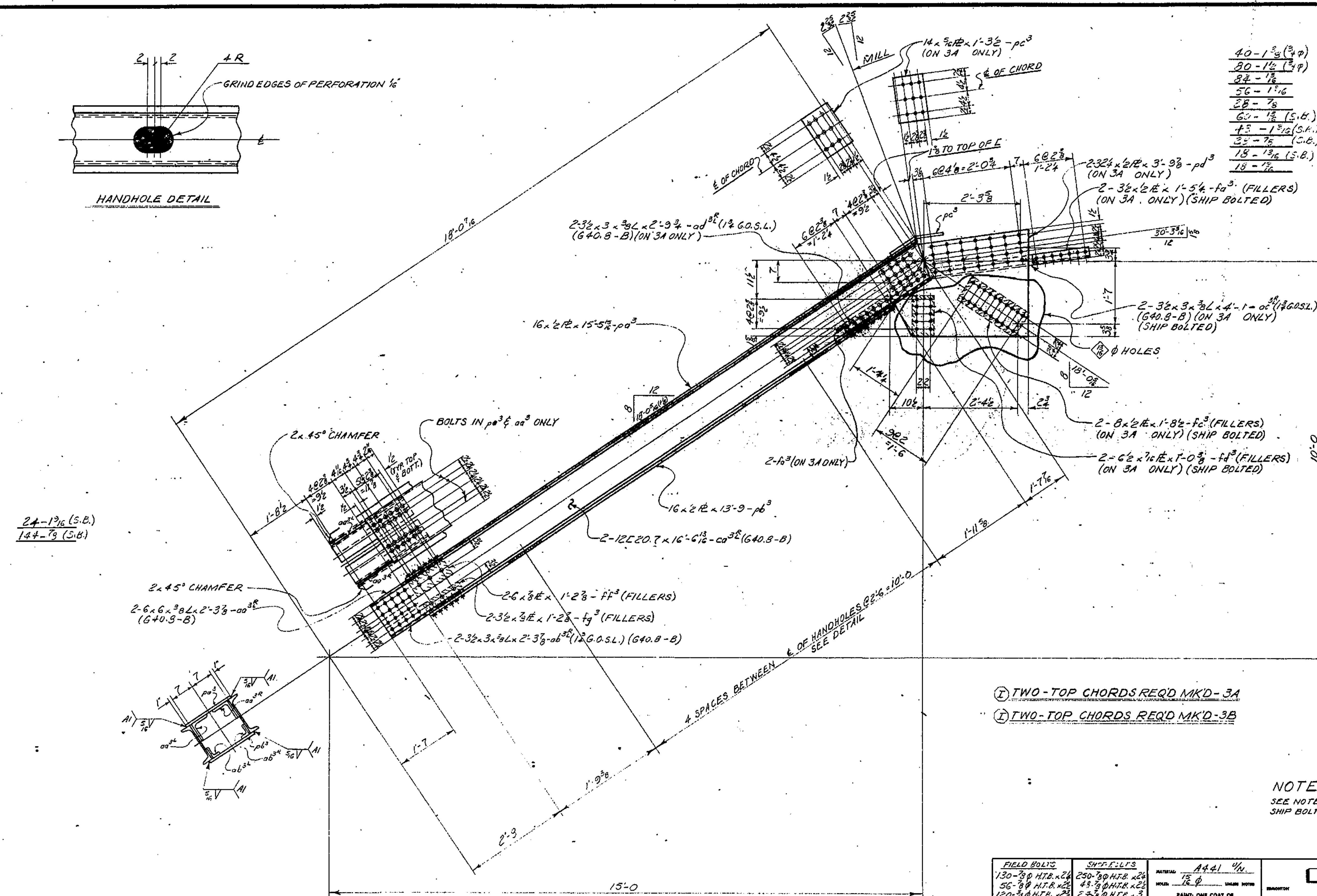
A·I·M STEEL LIMITED
EDMONTON — ALBERTA

CUSTOMER: POOLE CONSTRUCTION
NAME OF STRUCTURE: JACKFISH CREEK BRIDGE
LOCATION: ALASKA HIGHWAY MILE 278
TITLE OF DRAWING: TOP CHORD
DRAWN BY G. SCHULTZ DATE 21-5-69
CHECKED BY H.GORDON DATE 29-5-69

REVISIONS: 1 TO SUIT APPROVAL; 2; 3

CONTRACT E51983 — DWG. NO. 4 — REV. 1

113-8-4



(I) TWO - TOP CHORDS REQ'D MK'D - 3A

(I) TWO - TOP CHORDS REQ'D MK'D - 3B

DEPT. OF PUBLIC WORKS
CANADA

APPROVED DATE JUN 13 1969

ENGINEER-IN-CHARGE FOR CHIEF ENGINEER

NOTES:
SEE NOTES DRG. GN1.
SHIP BOLTED ALL LOOSE FILLERS.

FIELD BOLTS	SHOP BOLTS
130 - 7/8 φ H.T.B. x 2 1/4	250 - 7/8 φ H.T.B. x 2 1/4
56 - 7/8 φ H.T.B. x 2 1/2	43 - 7/8 φ H.T.B. x 2 1/2
120 - 3/4 φ H.T.B. x 2 3/4	24 - 7/8 φ H.T.B. x 3

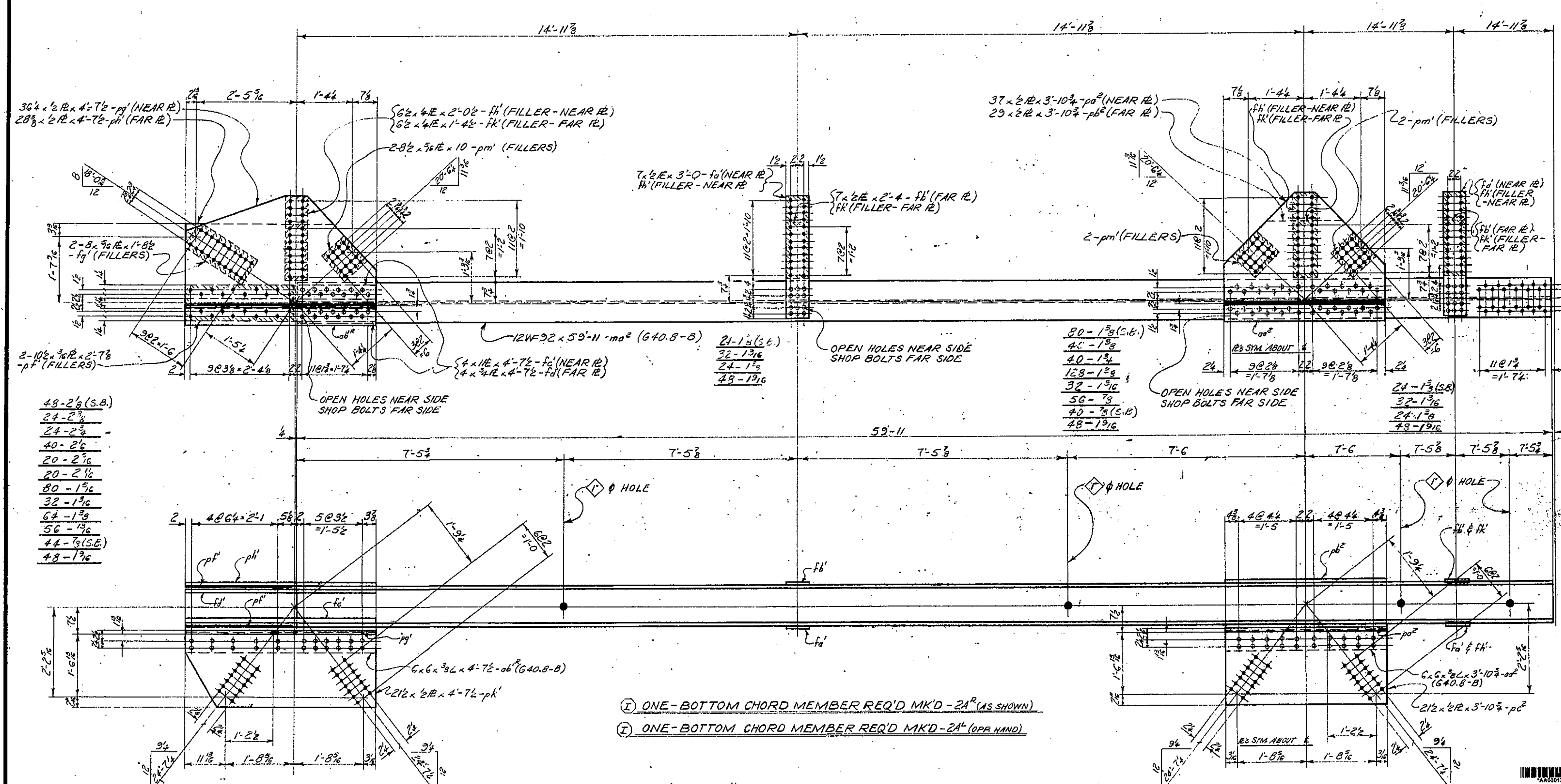
MATERIAL A441 U/N
HOLES 15/16 φ UNLESS NOTED
PAINT: ONE COAT OF SEE DRG. GN1

REVISIONS 1 2 3

A·I·M STEEL LIMITED

CUSTOMER POOLE CONSTRUCTION
NAME OF STRUCTURE JACKFISH CREEK BRIDGE
LOCATION ALASKA HIGHWAY MILE 279
TITLE OF DRAWING TOP CHORD
DRAWN BY G. SCHULTZ DATE 20-5-69
CHECKED BY H. GORDON DATE 29-5-69
CONTRACT E51983 DWG. NO. 3

7428 113-8-3



NOTES:
SEE NOTES DRG. GNI.
SHIP BOLTED ALL LOOSE FILLERS.

DEPT. OF PUBLIC WORKS
CANADA

APPROVED } DATE JUN 13 1969
ENGINEER-IN-CHARGE
FOR CHIEF ENGINEER

FIELD BOLTS	SHOP BOLTS
56-¾φH.T.B.x2	84-¾φH.T.B.x2¼
56-¾φH.T.B.x2¼	128-¾φH.T.B.x2¾
205-¾φH.T.B.x2½	48-¾φH.T.B.x3½
472-¾φH.T.B.x2¾	
40-¾φH.T.B.x3	
40-¾φH.T.B.x3¼	
20-¾φH.T.B.x3½	
24-¾φH.T.B.x3¾	
44-¾φH.T.B.x4	

MATERIAL A441 U/N.
HOLES 13/16 φ UNLESS NOTED
PAINT: ONE COAT OF SEE DRG. GNI

REVISIONS: 1 / 2 / 3

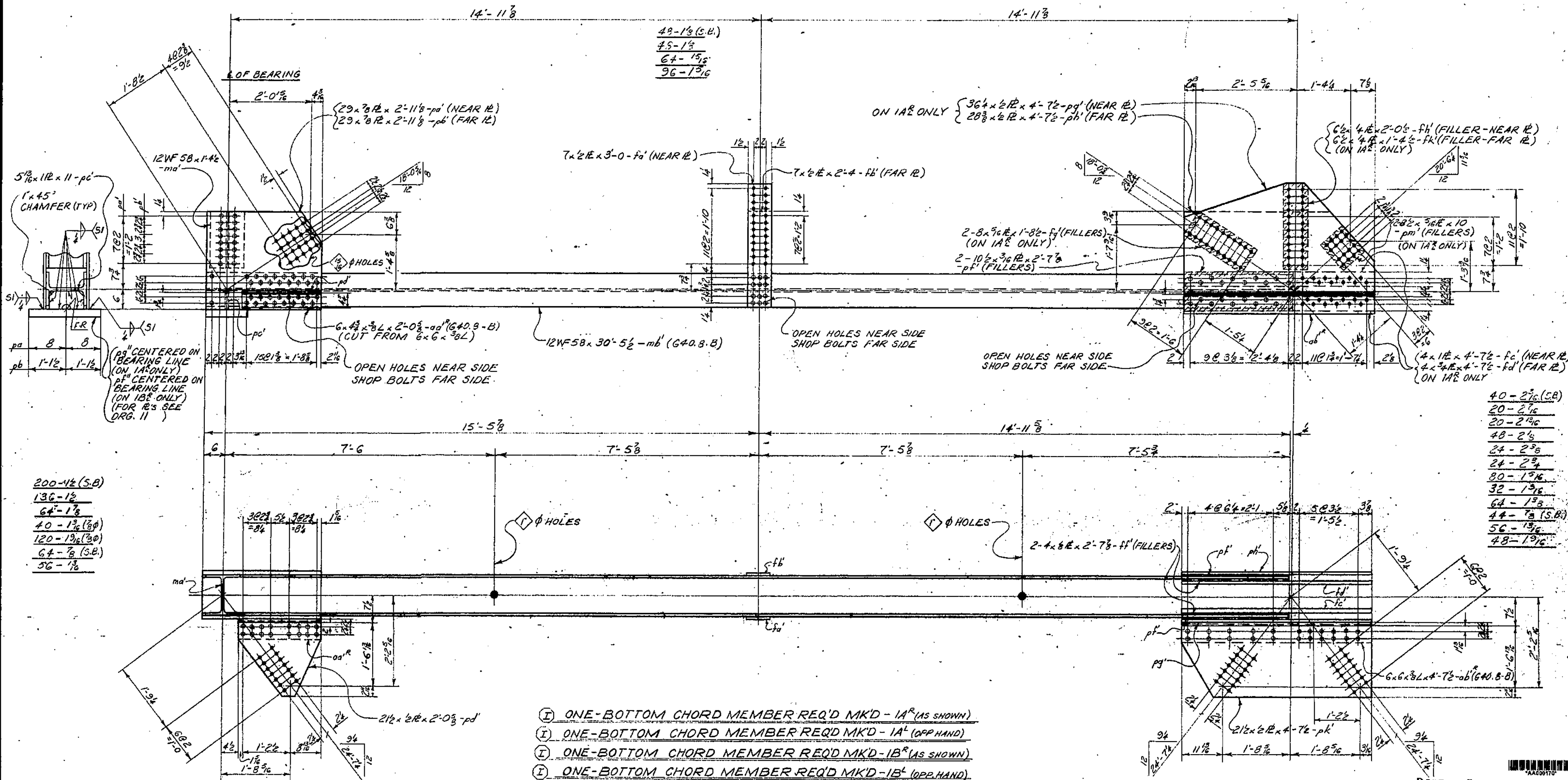
A·I·M STEEL LIMITED
EDMONTON ALBERTA

CUSTOMER: POOLE CONSTRUCTION
NAME OF STRUCTURE: JACKFISH CREEK BRIDGE
LOCATION: ALASKA HIGHWAY MILE 278
TITLE OF DRAWING: BOTTOM CHORD
DRAWN BY G. SCHULTZ DATE 14-5-69
CHECKED BY H. GORDON DATE 29-5-69

CONTRACT	DWG. NO.	REV.
E51983	2	

~~7427~~

113-8-2



(I) ONE-BOTTOM CHORD MEMBER REQ'D MK'D - 1A^R (AS SHOWN)

(I) ONE-BOTTOM CHORD MEMBER REQ'D MK'D - 1A^L (OPP HAND)

(I) ONE-BOTTOM CHORD MEMBER REQ'D MK'D - 1B^R (AS SHOWN)

(I) ONE-BOTTOM CHORD MEMBER REQ'D MK'D - 1B^L (OPP. HAND)

NOTES:
SEE NOTES DRG. GN1.
SHIP BOLTED ALL LOOSE FILLERS.

"AA000170"

DEPT. OF PUBLIC WORKS
CANADA

APPROVED | DATE JUN 13 1969
[signature] ENGINEER-IN-CHARGE
FOR CHIEF ENGINEER

FIELD BOLTS	SHOP BOLTS
40-⅞φ H.T.B.×2½	108-¾φ H.T.B.×2¼
120-⅞φ H.T.B.×3	48-¾φ H.T.B.×2½
112-¾φ H.T.B.×2	200-¾φ H.T.B.×2¾
64-¾φ H.T.B.×2¼	40-¾φ H.T.B.×3½
256-¾φ H.T.B.×2½	
248-¾φ H.T.B.×2¾	
64-¾φ H.T.B.×3¼	
48-¾φ H.T.B.×3½	
44-¾φ H.T.B.×3¾	
44-¾φ H.T.B.×4	

MATERIAL A441 U/N
HOLES 13/16 φ UNLESS NOTED
PAINT: ONE COAT OF SEE DRG. GN1

REVISIONS	
1	
2	
3	

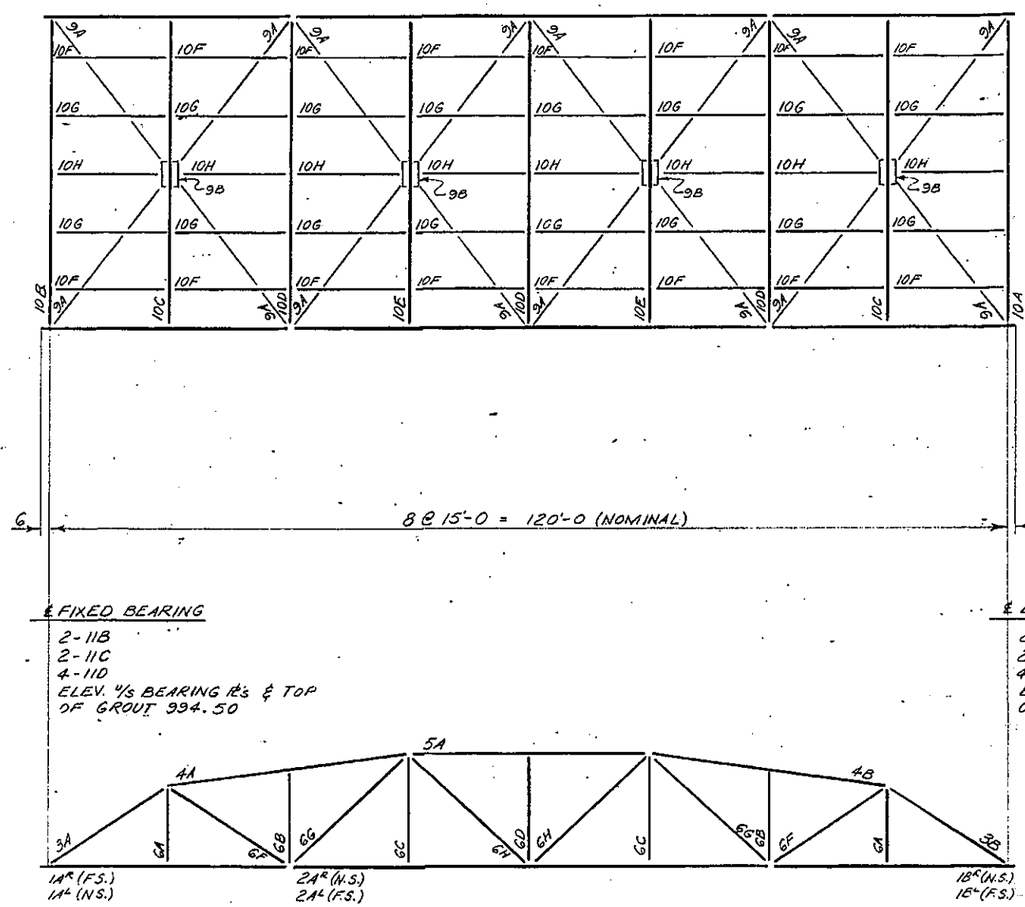
A·I·M STEEL LIMITED
EDMONTON ALBERTA

CUSTOMER POOLE CONSTRUCTION
NAME OF STRUCTURE JACKFISH CREEK BRIDGE
LOCATION ALASKA HIGHWAY MILE 278
TITLE OF DRAWING BOTTOM CHORD
DRAWN BY G. SCHULTZ DATE 12-5-69
CHECKED BY H. GORDON DATE 29-5-69

CONTRACT	DRG. NO.	REV.
E51983	1	

113-8-1

7418

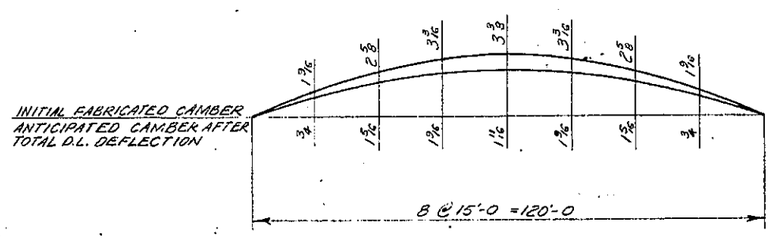


℄ FIXED BEARING

2 - 11B
2 - 11C
4 - 11D
ELEV. ⅓ BEARING Pt's ℄ TOP OF GROUT 994.50

℄ EXP. BEARING

2 - SK1A
2 - 11A
4 - 11D
ELEV. ⅓ BEARING Pt's ℄ TOP OF GROUT 992.77



CAMBER DIAGRAM

GENERAL NOTES:

MATERIAL: AS PER SHOP DRG'S.
SHOP CONN'S: ¾ϕ H.T.B. & ⅞ϕ H.T.B.
FIELD CONN'S: ¾ϕ H.T.B. & ⅞ϕ H.T.B.
SHOP PAINT: AS PER DRG. GN1.
FIELD PAINT: BY OTHERS.
ERECTION: BY OTHERS.
SEE FABRICATION NOTES ON DRG. GN1.

DEPT. OF PUBLIC WORKS
CANADA

"AA000171"

APPROVED | DATE JUN 13 1969
ENGINEER-IN-CHARGE
FOR CHIEF ENGINEER

FIELD BOLTS
MATERIAL
HOLES — UNLESS NOTED
PAINT: ONE COAT OF

A·I·M STEEL LIMITED
EDMONTON ALBERTA

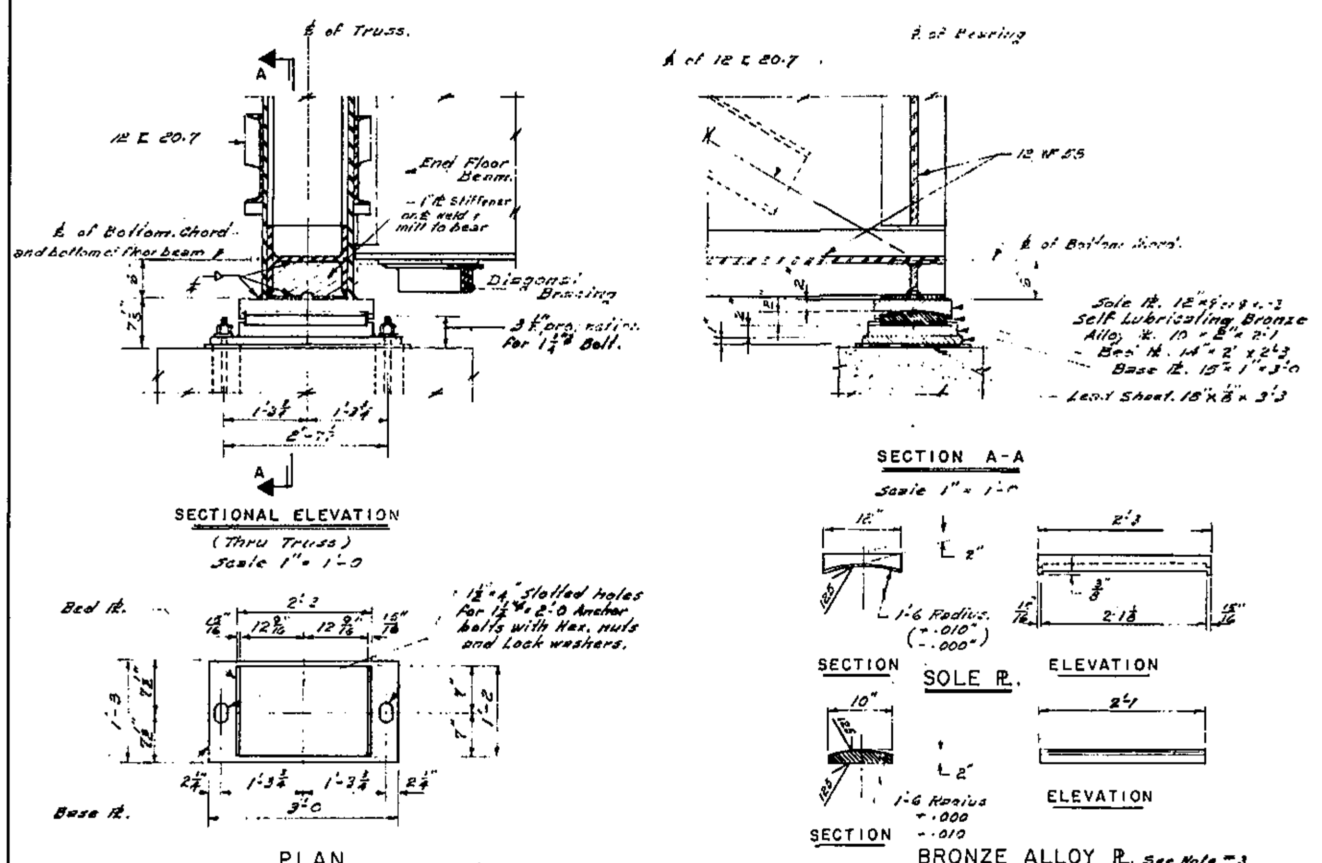
CUSTOMER POOLE CONSTRUCTION
NAME OF STRUCTURE JACKFISH CREEK BRIDGE
LOCATION ALASKA HIGHWAY MILE 278
TITLE OF DRAWING ERECTION DIAGRAM
DRAWN BY G. SCHULTZ DATE 27-5-69
CHECKED BY H. GORDON DATE 29-5-69

CONTRACT	DRG. NO.	REV.
E51983	E1	

REVISIONS
1
2
3

BR. 113

113-8-E1

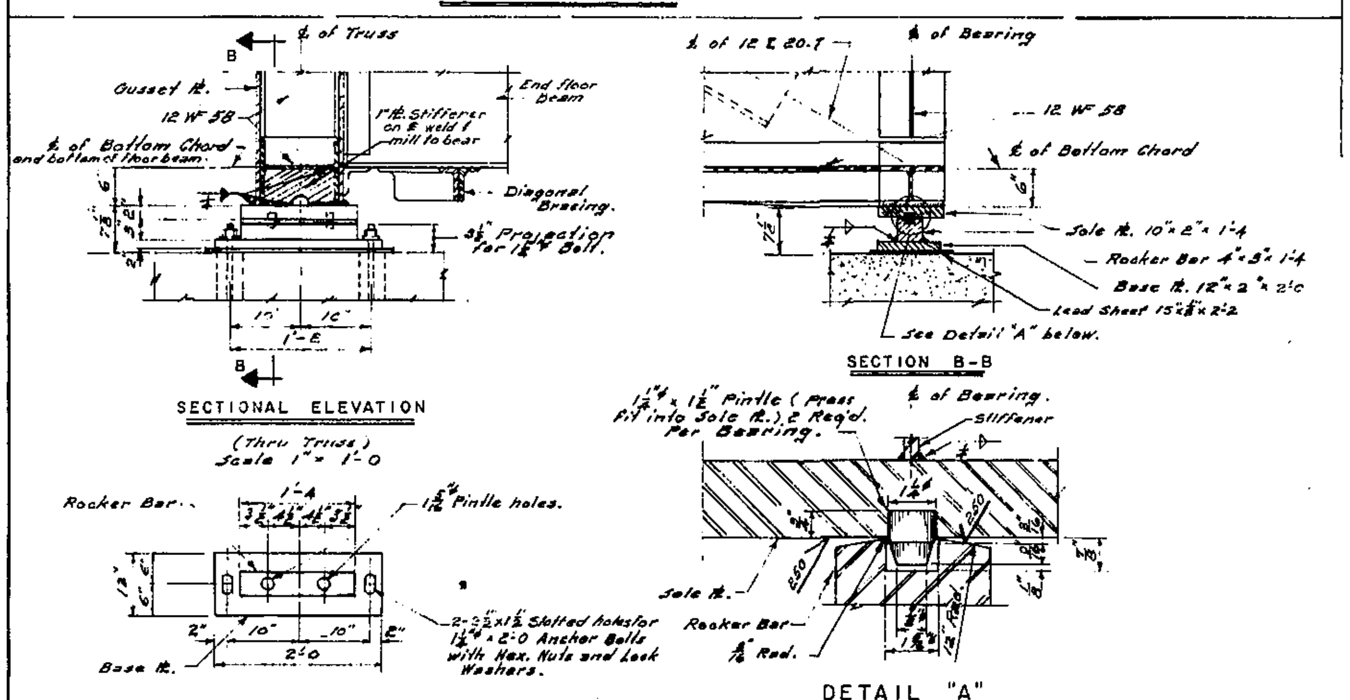


NOTE TO CONTRATOR

Installation of Expansion Bearings

1- The Bearings shall be positioned after the deck slab is cast.
2- The Sole Plate and the Bronze ℞. shall be Concentric of installation.
3- The Base ℞. shall be Concentric with the Bronze ℞. at 20°F move the Base ℞. away from the backwall ⅛" for every 10°F above 20°F or ⅛" towards the backwall for every 10°F below 20°F.

EXPANSION BEARING

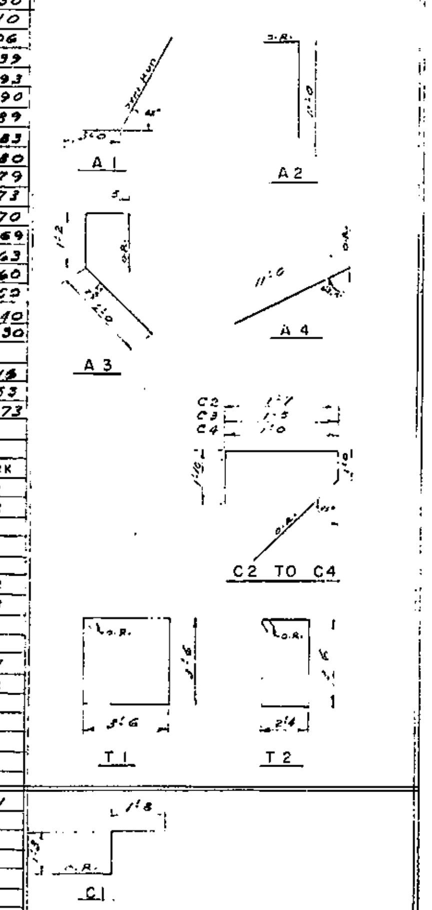


FIXED BEARING

STEEL SCHEDULE

LOCATION	CU. YDS. CONC.	LBS. REINF.	STRAIGHT BARS NO	SIZE	LENGTH	MARK	STRAIGHT BARS NO	SIZE	LENGTH	MARK
ABUTMENTS INCLUDING APPROACH SLABS	177	13,242	27	8	10'-6	8106	4	5	13'-0	5130
			4		8'-9	8089	44		11'-0	5110
			4		6'-6	8066	60		10'-6	5106
			4		5'-9	8059	8		9'-9	5099
			4	8	4'-0	8040	8		9'-3	5093
							4		9'-0	5090
			4	6	36'-0	6360	8		8'-9	5089
			16		31'-6	6316	8		8'-3	5083
			8		23'-0	6230	68		8'-0	5080
			4		13'-6	6136	8		7'-9	5079
			20		12'-0	6120	[illegible]		7'-3	5073
			4		11'-6	6116	44		7'-0	5070
			4		9'-6	6096	8		[illegible]	[illegible]
			4		9'-3	6093	[illegible]		6'-3	5063
			4		9'-0	6090	[illegible]		[illegible]	5060
			4		8'-9	6089	[illegible]		[illegible]	[illegible]
			4		8'-6	6096	[illegible]		[illegible]	[illegible]
			4		8'-3	6083	52	5	3'-0	5030
			4		8'-0	6080				
			8		7'-6	6076	[illegible]	[illegible]	31'-6	[illegible]
			68		7'-3	6073	[illegible]	4	[illegible]	4153
			4		7'-0	6070	64	4	7'-3	4073
			36		5'-6	6056				
			58		5'-3	6053	BENT BARS			
			4		4'-9	6049	NO	SIZE	LENGTH	MARK
			4		4'-3	6043	24	5	8'-9	A1
			4		3'-9	6039	58	5	12'-0	A2
			4		3'-6	6036	72	5	7'-0	A3
			4		3'-3	6033	8	5	13'-0	A4
			12		2'-6	6026				
			64	6	1'-6	6016	40	4	5'-9	C2
							12	4	5'-6	C3
			46	5	34'-6	5346	12	4	5'-3	C4
			4		16'-0	5160				
			8		15'-5	5153	24	3	14'-6	T1
			4		15'-0	5150	48	3	12'-3	T2
			12	5	14'-6	5146				
			CONTINUED NEXT COL.							
DECK	127	32,821.0	294	7	35'-6	7356	292	4	3'-9	C1
			148	6	30'-0	6300				
			37	6	8'-0	6080				
			148	4	30'-0	4300				
			24		24'-6	4246				
			6		21'-6	4216				
			37	4	8'-0	4080				

BENDING DIAGRAMS
ALL DIMENSIONS ARE OUT TO OUT



NOTE:
Bars are listed in the reinforcing schedule for the contractor's convenience, and it is his responsibility to check the quantities indicated therein.

QUANTITIES CHECKED BY SCP

Notes:
1- See General Notes Dwg. #1
2- Steel for Bearing plates shall conform to C.S.A. 340-B.
3- The self-lubricating bronze alloy plates shall conform to A.S.T.M. B22 alloy D modified with up to 2½% lead. The plate shall have self-lubricating inserts in the top and bottom surface of the plate. The lubricant shall be to approval.

NO.	REVISION	NAME	DATE

DEPARTMENT OF PUBLIC WORKS
CANADA

"AA000158"

JACKFISH CREEK FRIDGE
ALASKA HIGHWAY MILE 276
BRITISH COLUMBIA

BEARINGS & STEEL SCHEDULE

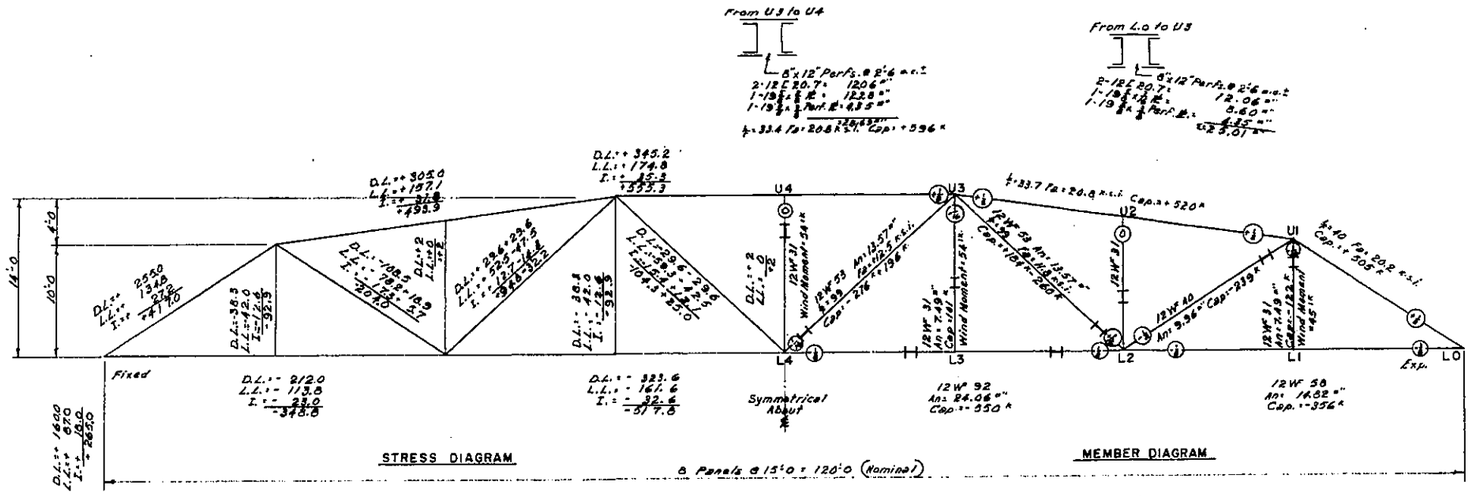
JOB SUPERVISOR T. DEVROOM
HEAD STRUCT. SECT.
APPROVED DATE 17-12-68
CHIEF CIVIL ENGINEERING DIVISION
APPROVED DATE 17-12-68
CHIEF ENGINEER

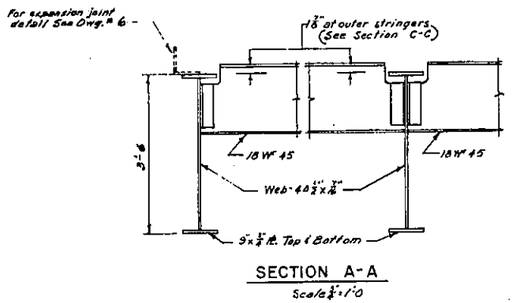
	BY	DATE
DESIGN	V.A.	
CHECKED	E.K.	
DRAWN	L.B.P.	
CHECKED		

PROJECT NO. S- 267

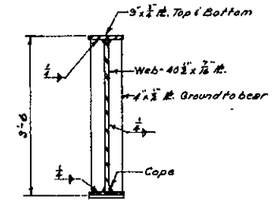
SHEET 5 OF 6

113-7-5



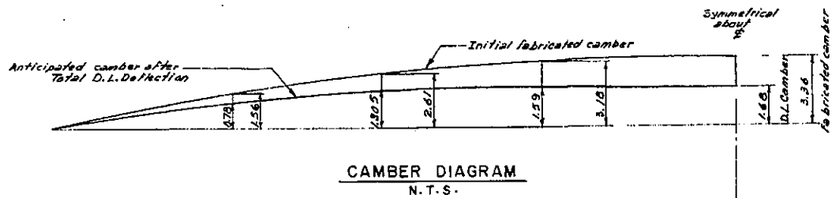


SECTION A-A
Scale 3/4" = 1'-0

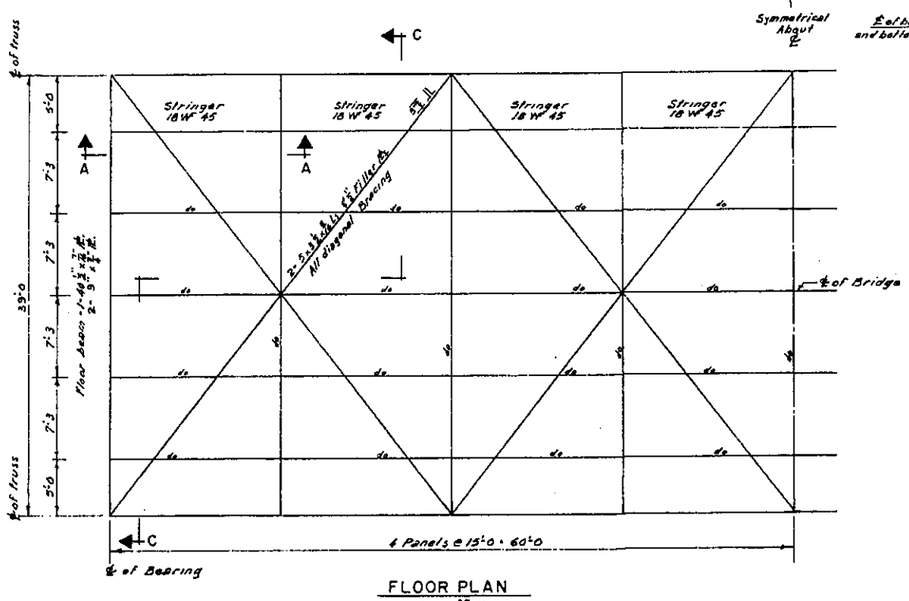


SECTION B-B
Scale 3/4" = 1'-0

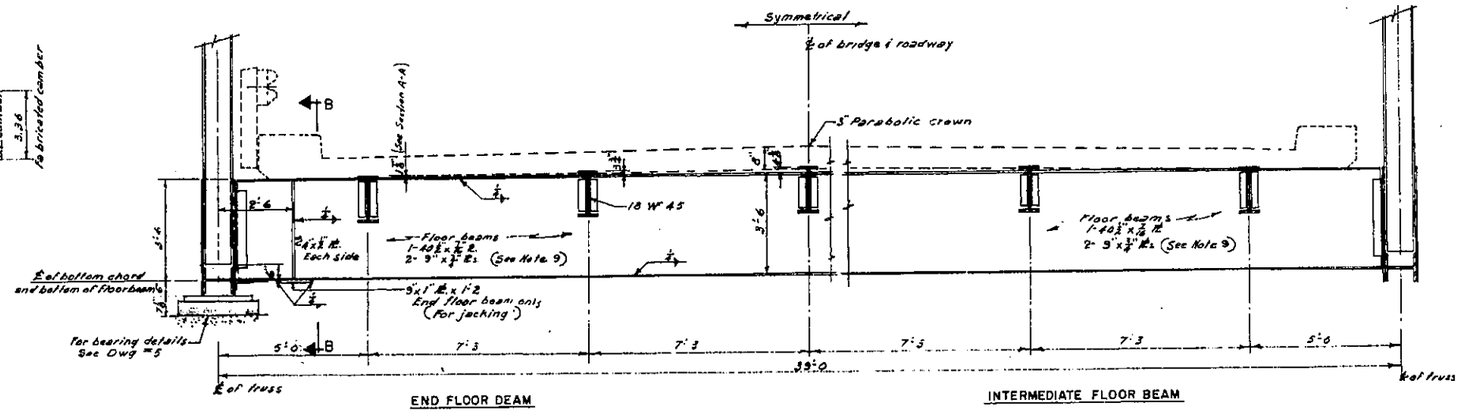
ELEVATION OF TRUSS
Scale 1/16" = 1'-0



CAMBER DIAGRAM
N.T.S.



FLOOR PLAN
Scale 3/32" = 1'-0



END FLOOR DEAM
See Dwg.# 6 for deck expansion details

SECTION C-C
Scale 3/4" = 1'-0

INTERMEDIATE FLOOR BEAM

NOTES

1. See Dwg.# 1 for general notes.
2. Members to be shortened or lengthened by amount shown in inches: eg -3/8
3. Fabricated camber to be twice anticipated dead load deflection, as shown.
4. Erection stresses not included in stress diagram. Tension is (minus) kips. Kips compression is (+ plus) kips.
5. Truss member sizes are based on 7/8" ℄ rivets. (7/8" ℄ high strength bolts may be used for field connections.)
6. Gusset ℄s. to be 1/2" minimum for main member connections.
7. Continuous compression members shall have faced ends and full contact bearing at the joint.
8. The web of the bottom chord shall have 1" ℄ drainholes, provided at the centre of each panel.
9. All structural steel shall conform to C.S.A. spec's. G40.8-B except the floor beams which shall conform to A.S.T.M. 1-67 grade B spec's. of the Canadian Institute of steel construction.

NO.	REVISION	NAME	DATE

DEPARTMENT OF PUBLIC WORKS
CANADA

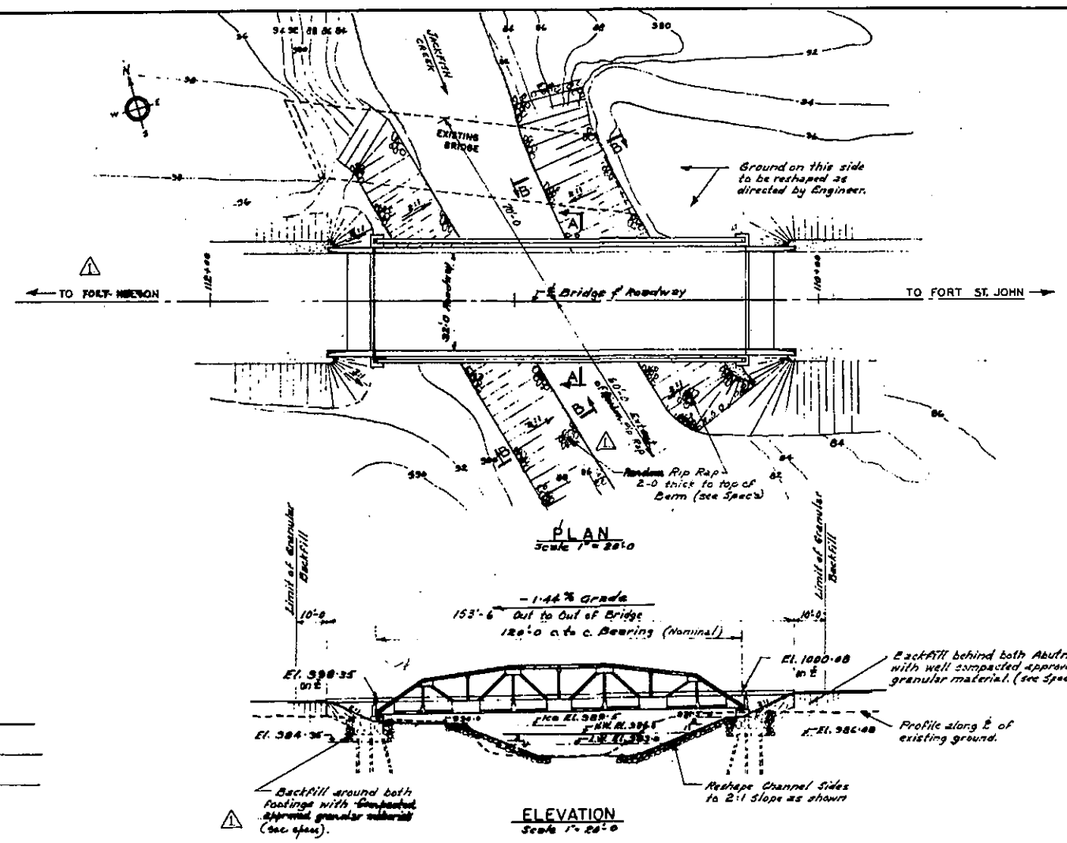
"AA000167"

JACKFISH CREEK BRIDGE
ALASKA HIGHWAY MILE 278
BRITISH COLUMBIA

120'-0 PONY TRUSS
STRUCTURAL STEEL

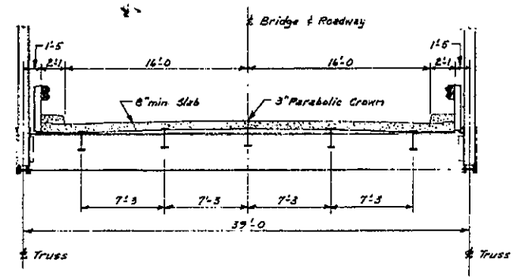
		BY	DATE
JOB SUPERVISOR T. DEVROOM	DESIGN CHECKED	D.S.	
HEAD STRUC. SECT. [illegible]		E.K.	
APPROVED DATE 17-12-68	DRAWN	J.M.B.	
CHIEF CIVIL ENGINEERING DIVISION	CHECKED	T.V.	
APPROVED DATE 17-12-68	PROJECT NO. S- 267		
CHIEF ENGINEER	SHEET 4 OF 6		

113-7-4

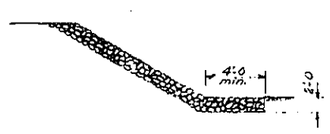


PLAN
Scale 1" = 20'-0

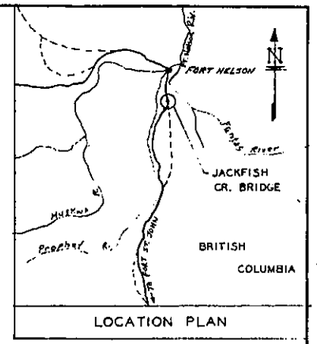
ELEVATION
Scale 1" = 20'-0



SECTION A-A
Scale 1/2" = 1'-0



SECTION B-B
Scale 1/2" = 1'-0



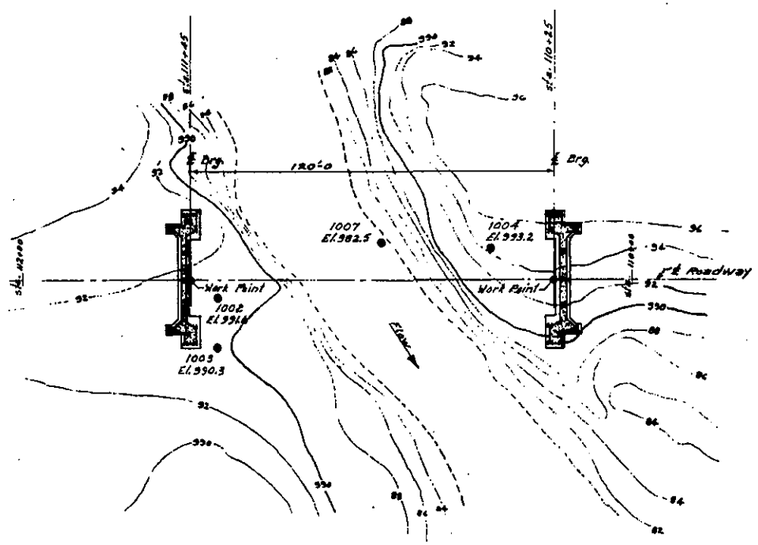
LOCATION PLAN

LIST OF DRAWINGS

1. GENERAL LAYOUT.
2. WEST & EAST ABUTMENTS - CONCRETE DETAILS.
3. WEST & EAST ABUTMENTS - REINFORCING DETAILS.
4. 120'-0 PONY TRUSS - STRUCTURAL STEEL.
5. BEARINGS & STEEL SCHEDULE.
6. DECK - CONCRETE & REINFORCING DETAILS.

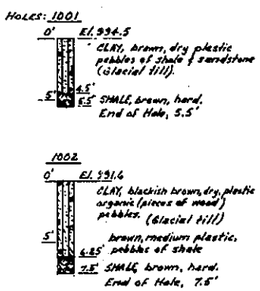
GENERAL NOTES

1. Specifications - C.S.A. and General Specifications.
2. Loading - Two H20-S16 Lanes or one H25-S20 Lane.
3. Concrete - 3000 p.s.i. at 28 days.
4. Reinforcement - Hard or intermediate grade billet or rail steel, deformed bars throughout. See Spec's.
5. Concrete Cover 3" except as noted.
6. Chamfer all exposed edges 1" except as noted.
7. Concrete Finish - See General Specifications.
8. All drains, deck angles and plates, anchor bolts for guide rail posts, guide rails and guide rail posts shall be hot dipped galvanized. Minimum thickness to be .0036" after fabrication. Galvanizing to conform to C.S.A. - G164.
9. Fabrication and erection (see Spec's).
10. Steel for drains, deck joint angles and plates shall conform to C.S.A.-G40.4 or equivalent.

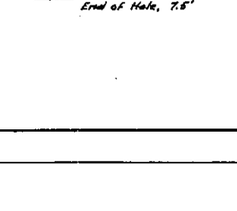


FOUNDATION PLAN
Scale 1" = 20'-0

Test Holes: 1001



1002



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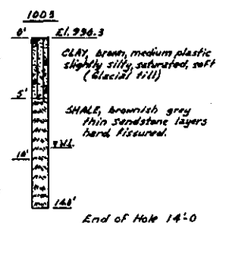

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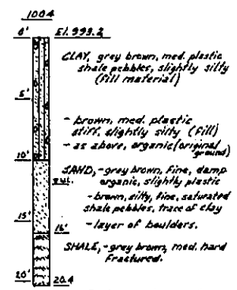

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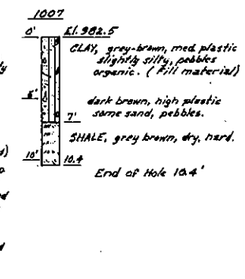


TEST HOLE DATA

NO.	REVISION	NAME	DATE
⚠	MISC.		17-2-69

DEPARTMENT OF PUBLIC WORKS
CANADA

AA000163

JACKFISH CREEK BRIDGE
ALASKA HIGHWAY MILE 278
BRITISH COLUMBIA

GENERAL LAYOUT

		BY	DATE
JOB SUPERVISOR	T. DEVROOM		
HEAD STRUC. SECT		DESIGN CHECKED	
APPROVED DATE	17-12-68	DRAWN	D.A.S.
CHIEF CIVIL ENGINEERING DIVISION		CHECKED	
APPROVED DATE	17-12-68	PROJECT NO.	S-267
CHIEF ENGINEER		SHEET	OF

113-7-1

Environmental Protection Plan (EPP) – Checklist

Note: This checklist was developed to assist the Contractor in determining and mitigating environmental issues at site. It is considered a generic checklist and it is in the Contractor's best interest to review the PWGSC Environmental Effects Evaluation (EEE) and/or the Fish and Fish Habitat Report as supporting documents in the completion of the site Environmental Protection Plan (EPP). Applicable provincial and federal guidelines and regulations should be reviewed prior to submission of the EPP.

EPP Framework	Content Requirements	Yes	No	N/A
Project Setting and Site Activities				
Project Description	A brief description of the project and its location is provided.			
Environmental Sensitivities	Sensitive or protected features that could be impacted as a result of the Contractor's activities are described.			
Site Activities	A scope of work and a list of all construction or related activities to be undertaken during the project are provided.			
Project Schedule and Site Drawings				
Project Schedule	A project schedule is provided, including scheduled shut-downs and restricted work periods due to environmental requirements.			
Site Drawing	One or more site drawings(s) are provided, indicating the site location; site set-up and layout; erosion and sediment controls; in-stream work areas; and environmental sensitivities.			
Potential Environmental Impacts and Controls				
Potential Environmental Issues and Impacts	The potential environmental issues and impacts that may result from the construction activities are described. Environmental Reports (Environmental Effects Evaluation, Environmental Assessments; Fish and Fish Habitat and Compensation Reports, Aquatics Effects Evaluations etc) will be provided to the contractor especially with respect to any in-stream work procedures that will be required. For example, in-stream works will impact fish and fish habitat in the surrounding ecosystem and potentially upstream and downstream of proposed works. It is the Contractor's responsibility to ensure the work is completed in a manner that causes the least impact on the ecosystem (see section on Mitigation).			
Permits, Approvals, and Authorizations	List required permits, approvals and authorizations. As applicable, environmental mitigation measures prescribed by regulatory agencies and included in project permits, approvals and authorizations are described. NOTE: DFO, MOE and NWPA approvals and authorizations for in-stream works are PWGSC's responsibility however, the Contractor must be aware of the requirements of these approvals/authorizations. Permitting for water withdrawal from the water body as part of construction activities is part of the Contractor's responsibility. Scientific Collection Permits such as licences for Fish Salvage Permits are also the responsibility of the Contractor and are obtained by the Contractor's **environmental monitor/consultant*** who will be completing the salvage.			

Mitigation Strategies	Procedures, controls or best management practices (BMPs) to prevent or reduce adverse impacts on the environment are provided. For example, all work in BC must adhere to the BC MOE "Standards and Best Practices for Instream Works" for those works that are completed below the high water mark. DFO mitigation techniques under the Fisheries Act must also be followed. One useful document that contains information on Ministry of Environment's ecosystems, guidelines and mitigation techniques is from the MOE Ecosystems Branch – Develop With Care 2014 – Environmental Guidelines for Urban and Rural Land Development in BC.			
Erosion and Sediment Control	Erosion and sediment controls are provided, as appropriate for the jurisdiction.			
Waste Management and Hazardous Materials				
Waste Management and Hazardous Materials	Hazardous materials that will be used and/or stored on site are listed. Expected hazardous and non-hazardous waste materials along with proper handling, containment, storage, transportation and disposal methods are listed. As appropriate for the jurisdiction, estimated waste quantities and specific handling procedures are also provided. For example, re-fuelling of equipment will be conducted at least 30m away from any active drainage courses.			
EPP Implementation				
Site Representative	Name(s) and contact details for the person(s) who will be the Contractor's Site Representative(s) are provided.			
Training and Communication	Training and communication details are provided.			
Monitoring and Reporting	Monitoring and inspection procedures, including a schedule of monitoring activities and reporting procedures are provided. For example, this would include downstream monitoring activities for increased siltation during in-stream works.			
Documentation	Information and/or records that will be maintained relating to the EPP and end environmental matters on the project site are described.			
EPP Update	EPP review and update procedures are provided.			
Environmental Emergency Response Procedures				
Environmental Emergency Response Procedures	Potential incidents that may impact the environment are identified, and emergency response procedures to prevent and respond to incidents are provided. An environmental emergency response contact list is also provided.			

***Environmental Monitor/Qualified Professional as recognized by the province:** an applied scientist or technologist specializing in a relevant applied science or technology including, but not necessarily limited to, agrology, forestry, biology, engineering, geomorphology, geology, hydrology, hydrogeology or landscape architecture, and who is registered in British Columbia with their appropriate professional organization, and acting under that association's Code of Ethics and subject to disciplinary action by that association, and who, through demonstrated suitable education, experience, accreditation and knowledge relevant to the particular matter, may be reasonably relied on to provide advice within their area of expertise.

Environmental Effects Evaluation (EEE) Report

(Sections 66-69 of
Canadian Environmental Assessment Act (CEAA) 2012)

Public Works and Government Services Canada
Painting of Two Bridges Along the Alaska Highway Corridor
Northern BC
Jackfish Creek KM 424.8
Peterson Creek KM 678.6

PWGSC Project No. 017173.703

Prepared by
Public Works and Government Services Canada –
Environmental Services
Western Region

January 2015

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

PART A: PROJECT INFORMATION

Project Title:	**Painting of 2 Bridges Along Alaska Highway Corridor**
Location:	Jackfish Creek KM 424.8 and Peterson Creek KM 678.6
Federal Authority:	Public Works and Government Services Canada
Contact person:	**Alex Taheri**
Telephone:	**(604) 836-8142**
EEE Assessor:	**Laurie Crawford**
Telephone:	**(780) 271-8051**
PWGSC Project Number:	R.017173.703

PART B: SCOPE OF PROJECT
Project Description

Project Phase	Project Components	
	Core Project Components	**Ancillary Works Other Projects & Activities**
Jackfish Creek Bridge – Full bridge paint removal and repainting ***Peterson Creek Bridge – Clean and touch up girder bottoms***	**Mobilization to site** **Traffic management during maintenance activities** **Construction of containment structures** **Washing of bridge components** **Testing of existing coating to determine existence of PCB's** **Removal of existing lead based paint** **Recoating structural steel and bearings with an approved coating product** **Design, installation and removal of all formwork, false work, and containment structures** **Demobilization**	**Site preparation** **Staged maintenance activities as required** **Shoring and temporary supports** **Protection of utilities** **Surface preparation of structural steel components and bearings** **Testing of existing coating to determine existence of PCB's** **Grind smooth 5 collision damage notches based on the Post-Accident Inspection of the Jackfish Creek** **Rehabilitate collision damaged spall concrete in the NE bridge barrier**

Scheduling

The anticipated schedule for the proposed work is summer months in 2015, subject to approvals/funding, with completion of works in fall of 2015.

Regulatory

FEDERAL

Canadian Environmental Assessment Act, 2012

On July 6, 2012 a new *Canadian Environmental Assessment Act, 2012* (CEAA, 2012) came into force. Projects that may require an environmental assessment (EA) are set out in the *Regulations Designating Physical Activities*. For projects on federal lands that are not on the *Regulations Designating Physical Activities*, Section 67 of CEAA 2012 applies. Section 67 states that federal authorities must ensure that projects on federal lands will not likely cause significant adverse environmental effects. CEAA 2012 also sets out requirements for annual reporting to Parliament regarding this obligation.

In response to the legislative changes, Public Works and Government Services Canada (PWGSC) developed a CEAA 2012 framework that details the procedure to ensure that projects are assessed for potential adverse environmental effects. The procedure includes a checklist that incorporates a determination of the risk for adverse environmental effects into the departmental Environmental Compliance Management Program (ECMP). The ECMP allows for the comprehensive and effective management of environmental compliance related to project management. The level of risk determined is based on the size and type of the project, level of effort required, as well as the potential for impacts to components of the environment as described in Section 5 of the Act.

Under Section 5 of the Act, the environmental effects that are to be taken into account in relation to an act or thing, a physical activity, a designated project or a project are (a) a change that may be caused to the following components of the environment that are within the legislative authority of Parliament:
i. fish as defined in section 2 of the Fisheries Act and fish habitat as defined in subsection 34(1) of that Act,
ii. aquatic species as defined in subsection 2(1) of the Species at Risk Act,
iii. migratory birds as defined in subsection 2(1) of the Migratory Birds Convention Act, 1994 and
iv. any other component of the environment that is set out in Schedule 2.

Other effects to the environment or with respect to aboriginal peoples are outlined under Section 5(1)(c) of the Act. Under Section 5(2), if the carrying out of the physical activity, the designated project, or the project requires a federal authority to exercise a power or perform a duty or function conferred on it under any Act of Parliament other than this Act, the following environmental effects are also to be taken into account .(a) A change, other than those referred to in paragraphs (1)(a) and (b), that may be caused to the environment and that is directly linked or necessarily incidental to a federal authority's exercise of a power or performance of a duty that would permit the carrying out, in whole or in part, of the physical activity the designated project or the project, and (b) An effect, other than those referred to in paragraph (1)(c), of any change referred to in paragraph (a) on
i. Health and socio-economic conditions,
ii. Physical and cultural heritage;
iii. Any structure, site or thing that is of historical, archaeological, paleontological or

architectural significance.

Fisheries Act

The *Fisheries Act* was amended on June 29, 2012. As of November 25, 2013 the new fisheries protection provisions of the Act will come into force. The Fisheries Protection Policy describes the changes to the *Fisheries Act* made in 2012. The focus is now on the productivity of commercial, recreational and original fisheries; the institution of enhanced compliance and protection tools that facilitate enforcement; provide clarity, certainty and consistency of regulatory requirements; and enable enhanced partnerships with other agencies of government and local groups to ensure a comprehensive approach to fisheries protection. The changes include a prohibition against causing serious harm to fish that are part of or support a commercial, recreational or Aboriginal fishery (Sec. 35), provisions for flow and passage (Sec. 20 and 21), and a framework for regulatory decision-making (Sec. 6 and 6.1). These provisions are intended to reduce threats to habitat (degradation or loss), flow alteration, aquatic invasive species, overexploitation of fish, and pollution of many kinds that may adversely affect water quality and fish health.

Proponents of development activities taking place in or near water must

- Understand the types of impacts projects are likely to cause;
- Take measures to avoid and mitigate impacts to the extent possible;
- Request authorization from the Minister and abide by the conditions of any such authorization, when it is not possible to avoid and mitigate impacts of projects that are likely to cause serious harm to fish; and,
- Ensure that projects conform to all other statutory requirements.

Fish that are **part of** commercial, recreational or Aboriginal fisheries are interpreted to be those fish that fall within the scope of applicable federal or provincial fisheries regulations, as well as those that can be fished by Aboriginal organizations or their members for food, social or ceremonial purposes or for purposes set out in a land claims agreement. Fish that **support** these fisheries are those fish that contribute to the productivity of a fishery (often, but not exclusively, as prey species).

Serious harm to fish is defined under the Act as "the death of fish or any permanent alteration to, or destruction of, fish habitat. Further interpretation of serious harm to fish and principles for meeting the goals and objectives of the Fisheries Protection Policy Statement are provided in the Policy.

Most water bodies contain fish, or their habitat, that would be subject to the prohibition against serious harm to fish. These include all three of Canada's oceans; areas of fishing for food, social, or ceremonial purposes or under land claims agreements by Aboriginal peoples; and areas covered by federal or provincial fisheries regulations. Note that some water bodies may be specifically excluded from the application of federal or provincial regulations.

When proponents are unable to completely avoid or mitigate serious harm to fish, the project will require

authorization under Subsection 35(2) of the *Fisheries Act* in order for the project to proceed without contravening the Act.

The Policy indicates that some water bodies may not contain fish or provide fish habitat that are part of or support commercial, recreational or Aboriginal fisheries, and therefore may not be subject to the prohibition. These need to be determined on a case-by-case basis. Proponents are advised to use appropriate and recognized scientific methods to consider whether any such water bodies would be affected by their projects.

Provisions for flow and fish passage are outlined in Sections 20 and 21 of the Act. The provisions include the following:

- Allow the Minister to request studies and evaluations related to obstructions or other things that may be hindering fish passage or harming fish;
- Allow the Minister to request: the removal of or modifications to obstructions or things that are harmful to fish or impede flow or fish passage; the installation of fish-ways, screens and guards; or that sufficient water flow be provided for fish passage; or
- Prohibit the damage or removal of fish-guards, fish-ways, and screens.

Projects that have the potential to obstruct fish passage, modify flow, or result in the entrainment of fish, and which may cause serious harm to fish, may require an authorization under Subsection 35(2). The conditions of authorizations may include avoidance, mitigation and offsetting measures to provide fish passage around obstructions. The conditions may also require water flows necessary to permit the free passage of fish, and the need for fish-guards or screens over water intakes.

There are four factors outlined in Section 6 of the Fisheries Act that the Minister must consider before exercising a Ministerial power such the issuance of a Subsection 35(2) authorization or a request to provide for fish passage or sufficient flow:

- The contribution of the relevant fish to the ongoing productivity of commercial, recreational or Aboriginal fisheries;
- Fisheries management objectives;
- Whether there are measures and standards to avoid, mitigate or offset serious harm to fish that are part of the named fisheries, or that support such a fishery; and
- The public interest.

The components of each consideration are provided in more detail in the Fisheries Protection Policy. General advice on understanding when a regulatory review or *Fisheries Act* authorization is required is provided in Box 1 and in steps 1 to 3 of Figure 2 of the Fisheries Protection Policy. The Policy also outlines additional powers of the Minister (Sec. 37) and a duty to notify (Sec. 38) that imposes a series of obligations upon persons responsible for projects that lead to occurrences that result in serious harm to fish that are part of or support the designated fisheries. An inspector or fishery officer has the authority to order the immediate action necessary to correct the situation at the expense of the person(s) identified as responsible.

In addition consequences for non-compliance with the prohibition against serious harm to fish or noncompliance with the conditions of an authorization include minimum and maximum penalties, depending on the type of offence, and whether it is a first or subsequent offence.

Operational Guidance - In preparation for coming into force of the new fisheries protection provision, on-line guidance is being developed for external stakeholders. This guidance will allow proponents, consultants and partners to identify when projects require Departmental review.

Guidance is being developed to identify water body types that are unlikely to support fish and fish habitat that are part of, or support a commercial, recreational or Aboriginal fishery. Projects occurring within these water body types are therefore unlikely to cause impacts to the ongoing productivity of fisheries, and would not receive project-specific review by the Department. Examples of these marginal water bodies may include, but are not limited to:

- non-fish bearing-waters
- watercourses not providing migratory corridors or in-stream habitat
- artificial irrigation, water supply, water management, or industrial waterbodies not connected to aquatic systems that support fish

Guidance is also being developed to identify specific species and areas that are at greater risk of impact to the ongoing productivity of fisheries. Site-specific review by the Department of projects affecting these species and/or habitats types should be conducted regardless of work, undertaking or activity proposed. These sensitive species and habitats may include, but are not limited to:

- designated species at risk and their residences or critical habitat
- defined limiting or rare habitats (including spawning, rearing, nursery, feeding and migratory routes), for instance areas that have been identified as important in support of local fisheries management objectives

The Minor Impacts List – The list of minor impacts to fish and fish habitat will identify impact types, and by extension project types, that are unlikely to result in effects to the ongoing productivity of commercial, recreational and Aboriginal fisheries. Due to the low-risk nature of these impacts, the Department of Fisheries and Oceans (DFO) will not provide a site-specific review of these projects, and proponents will be responsible for implementing existing best practices to maintain compliance with the *Fisheries Act*. Minor impacts may include, but are not limited to:

- watercourse alterations, such as channel realignment or vegetation removal, that are temporary or can be done in the dry
- temporary obstructions that take place outside critical migratory, spawning and nursery periods for local fish species
- spatial impacts, such as infilling, dredging or excavation activities, that occur within the existing footprint of previous works or that are of a footprint small enough that local effects on fisheries productivity would not likely occur

Compliance monitoring will be carried out primarily on projects which the Department reviews, provides advice, authorizes, or issues requests or orders, to determine if *Fisheries Act* requirements are being complied with.

Partnerships will be developed and will include regulatory arrangements with other federal agencies, and provincial regulators to allow for administration of the applicable fisheries protection provisions of the Fisheries Act by the organizations best positioned to do so. Existing regulatory partnership arrangements will continue to be supported by DFO.

Under the *Fisheries Act* the following definitions are provided:

"fish" includes
a) parts of fish,
b) shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and
c) the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals;

"fish habitat" means spawning grounds and any other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes;
"fishery" includes the area, locality, place or station in or on which a pound, seine, net, weir or other fishing appliance is used, set, placed or located, and the area, tract or stretch of water in or from which fish may be taken by the said pound, seine, net, weir or other fishing appliance, and also the pound, seine, net, weir or other fishing appliance used in connection therewith.

This work falls under a DFO self assessment review *Measures to Avoid Harm* (formerly known as Notification to DFO). The project will not cause adverse effects to the fish and fish habitat of the area under the new regime. In this case, DFO will not be contacted for review.

Navigation Protection Act

The new *Navigation Protection Act* (NPA) has replaced the *Navigable Waters Protection Act* (NWPA). The new NPA lists the waterways where approval is required prior to the building of works that substantially interfere with navigation. Works in waterways not listed in the Act will be subject to the common law public right of navigation.

This project does not fall under the NPA list of waterways where approval is required.

Species at Risk Act

Promulgated in 2003 the purpose of the *Species at Risk Act* (SARA) is to prevent wildlife species from being extirpated or becoming extinct, to provide for wildlife recovery, and to manage species of special concern. In addition, SARA has certain implications for environmental assessment under CEAA. Specifically, under Section 79, every person who is required to ensure that an assessment of the environmental effects of a project is conducted, and every authority who makes a determination under paragraph 67(a) or (b) of the CEAA, 2012 in relation to a project, must without delay, notify the competent minister or ministers in writing of the project if it is likely to affect a listed wildlife species or its critical habitat. The person must identify the adverse effects of the project on the listed wildlife species and its critical habitat and, if the project is carried out, must ensure that measures are taken to avoid or lessen those effects and to monitor them. The measures must be taken in a way that is consistent with any applicable recovery strategy and action plans.

The SARA applies to federal lands, the internal waters of Canada and the territorial sea of Canada. The SARA recognizes that Canada's protected areas, especially national parks, are vital to the protection and recovery of species at risk.

Under SARA the following definitions are provided:
"aquatic species" means a wildlife species that is a fish, as defined in section 2 of the *Fisheries Act*. Refer to the definition of "fish" under *Fisheries Act* above.
"habitat" is defined as:
(a) In respect of aquatic species, spawning grounds and nursery, rearing, food supply, migration and any other areas on which aquatic species depend directly or indirectly in order to carry out their life processes, or areas where aquatic species formerly occurred and have the potential to be reintroduced;
(b) in respect of other wildlife species, the area or type of site where an individual or wildlife species naturally occurs or depends on directly or indirectly in order to carry out its life processes or formerly occurred and has the potential to be reintroduced.
"critical habitat" is defined as the habitat that is necessary for the survival or recovery of listed wildlife species
and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species.
"project" is defined as:
• a designated project as defined in subsection 2(1) of the *Canadian Environmental Assessment Act, 2012* or a project as defined in section 66 of that Act;
• a project as defined in subsection 2(1) of the *Yukon Environmental and Socio-economic Assessment Act*; or • a development as defined in subsection 111(1) of the *Mackenzie Valley Resource Management Act*.
"wildlife species" means a species, subspecies, variety or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and
• (a) is native to Canada; or
• (b) has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.

The following prohibitions are applicable to species listed on Schedule 1 of the Act:

Section 32(1): No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species;
Section 33: No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered species or a threatened species; and
Section 58(1): No person shall destroy any part of the critical habitat of any listed endangered species or of any listed threatened species.

Section 73 and 74 of SARA state that a competent minister may enter into an agreement or issue a permit authorizing the person to engage in an activity affecting a listed wildlife species, its critical habitat or the residences of its individuals provided certain conditions are met.

This project is not expected to cause any disruption to any Species at Risk.

PROVINCIAL

British Columbia Environmental Assessment Act (BCEAA):

During the environmental assessment conducted in 2010 the Environmental Assessment Office (EAO) of the Province of British Columbia was contacted with a request for a determination of whether or not the project triggers the (BCEAA). The EAO responded that a BCEA was not triggered by this project because the requirement for an assessment under BCEAA with respect to highway improvements is quite specific, in that, unless the project involves the addition of more than two (2) lanes of paved public highway over a continuous distance of more than 20 km, a screening assessment under BCEAA is not required (Reviewable Projects Regulation (B.C. Reg. 370/2002)).

The works proposed will not involve the addition of more than two lanes of paved highway, therefore no EAO is required to screen the project under BCEAA.

Water Act Water Regulation (BC/Reg. 204/88).

Management of inland fisheries has largely been delegated to the provinces and the Yukon Territory although the administration of the fisheries protection provision remains with the federal government. However, provincial authorities deliver a range of natural resource conservation initiatives under various provincial statutes that complement those of the federal government. Arrangements between DFO and other federal, provincial and territorial authorities provide the mechanisms to collaborate on managing threats to fisheries (Fisheries Protection Policy Statement, DFO, 2013).

The BC Water Act is the main provincial statute regulating water resources in British Columbia. Under the Act, it is an offence to divert or use water, or alter a stream, without formal approval from the

Province. Section 9 regulates changes in or about a stream and is set out to ensure that water quality, riparian habitat, and the rights of licensed water users are not compromised.

Part 7 of the Water Act Regulation permit the use of notifications rather than approvals for certain types of works; contain provisions for the protection of water quality, habitat, and other water users; and authorize changes to streams. Changes in and about a stream must be compliant with the requirement of the Water Act, and authorized by an approval licence, or order under Section 9 of the Water Act, or authorized through a Notification to the Ministry of Water, Land and Air Protection (WLAP) as permitted by Part 7 of the Regulation.

Additionally, according to Section 3.2 of *A User's Guide to Working In and Around Water: Understanding the Regulation Under British Columbia's Water Act*, "In general, works that do not involve any diversion of water, that may be completed within a short period of time and that have little impact on the environment may be conducted in compliance with the Regulation under the *Water Act* through the notification process. Such works require notification to and review by the Ministry of Environment's Environmental Stewardship Division."

BC Standards and Best Practices for Instream Works:

This document is a comprehensive description of the standards and best practices for the planning, design and construction of instream projects in accordance with the BC *Water Act*. Any proposed works in or about a stream must protect fish and wildlife habitat. Habitat includes the watercourse itself as well as the vegetated streamside areas that provide nutrients and shade to the stream. Fish habitat includes watercourses, streams, ditches, ponds and wetlands that provide water, food, or nutrients into a fish-bearing stream even if they do not contain fish, or if they only have temporary or seasonal flows.

Works in or about a stream requiring a Notification to the Province may include stream crossings, stream channel maintenance, stream bank and lakeshore stabilization, habitat enhancement and restoration, beaver and beaver dam management, miscellaneous works, and emergency works. Types of instream work that require an approval application under the Water Act include:

- Culvert installation for reasons other than those listed under the "stream crossings" section
- Watercourse or channel realignment
- Retaining wall or bank protection installation
- Dam construction
- Dredging
- Weir construction
- Construction of a sediment sump
- Pond of lake creation
- Permanent flow diversions, and
- Other permanent work.

The link to this comprehensive document is
http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf.

This work is within 30m of water and as such, must be compliant with applicable provincial, federal and/or municipal legislation/regulations including the *BC Water Act*, the *BC Fish Protection Act*, and the federal *Fisheries Act*. It is also expected that these works must be consistent with the *Standards and Best Practices for Instream Works* and the *Peace Region Terms and Conditions*. There are no approvals or notifications required for this work as it falls under maintenance procedures.

This work may require limited removal of right- of- way vegetation and so is subject to the *Ministry of Forest and Range (MFR) Riparian Management Area Guidebook*. When removing this vegetation it is important to note that *Section 34* of the *BC Wildlife Act* prohibits damage to any active bird nest and nests of raptors regardless of occupation.

The *Peace Region Least Risk Timing Windows - Biological Rationale* is a document that indicates the potential impacts of disturbance on a wide range of species. Least-risk windows divide a calendar year into critical, cautionary, and low risk windows based on the ecology of specific species groups. Critical and cautionary timing windows cover the time when a species is most susceptible to disturbance, and development should be avoided. Low risk timing windows are defined when species are least susceptible to disturbance; development activities should be planned for low risk windows whenever possible. Critical timing windows cover breeding and rearing seasons for birds, and late winter, parturition, and early rearing for ungulates. Cautionary windows cover late rearing for some sensitive birds (sandhill cranes, trumpeter swans, and raptors) and the early winter rut period for caribou, mountain sheep, and mountain goats.

PART C: SCOPE OF EVALUATION

Jackfish Creek Bridge Site

Environmental Setting

Physical Description

Located in northern British Columbia, the project site is at KM 424.8 of the Alaska Highway. Fort Nelson is at km 455, 30 KM north of the bridge maintenance work area. Construction work is within the right-of-way of the Alaska Highway.

Jackfish Creek is part of the Prophet River watershed. The headwaters of the Prophet River can be found in the Bruce Ridge of the Muskwa Ranges in the Northern Rockies, at an elevation of 2,000 meters (6,600 ft). It flows eastwards between the Northern Rocky Mountains Provincial Park and the Redfern-Keily Provincial Park, with occasional waterfalls on its course. The remote Prophet River Hotsprings Provincial Park is established on the upper course of the river. It receives the waters from Hewer Creek north of Mount Boe, then from Kravac Creek and Richards Creek towards the foothills. North of Klingzut Mountain it receives the Besa River just before flowing from the mountains into the plains.

The Milliken Creek and Bat Creek flow into the Prophet River east of the Rocky Mountains. The course changes towards north-east, as it receives water from Minaker River, Bunch Creek, Dethseda Creek, Chipesia Creek and Sass Creek. The river turns north as it flows through the Prophet River Wayside Provincial Park,[3] and is followed by the Alaska Highway for a while. Streams that flow into the river in this section include the Bougie Creek, Adsett Creek, ***Jackfish Creek***, Parker Creek and Little Beaver Creek as it flows through the Sikanni Forest. The course becomes meandered, and the Tenaka Creek, Big Beaver Creek, Cheves Creek, Tsachehdza Creek and ***Jackfish Creek*** flow into the Prophet River. It then flows into the Muskwa River immediately west of Fort Nelson, at an elevation of 304 meters (997 ft).

The Muskwa River flows into the Fort Nelson River, a tributary of the Liard River, which carries the waters into the Mackenzie River and ultimately in the Arctic Ocean.

The project area is in the Taiga Plains ecozone, specifically the Hay River Lowland ecoregion, represented by the broad, level lowland plain that is drained by the Fort Nelson and Liard Rivers in northeastern British Columbia, and the Hay River in northwestern Alberta, which all ultimately flow into the Mackenzie River in the Northwest Territories. (Environment Canada).

This ecoregion is classified as having a subhumid mid-boreal ecoclimate, which is marked by long cold winters and short, warm summers. The mean annual temperature is approximately -2.5°C. The mean summer temperature is 13°C and the mean winter temperature is -19°C. The mean annual precipitation ranges from 350 to 450 mm. (Environment Canada)

The ecoregion is composed of low-relief, flat-lying Palaeozoic strata near Great Slave Lake, and Cretaceous shale in its western section. Surface deposits are predominantly peat-covered clayey lacustrine and glacial till on nearly level to gently rolling topography. Gleysolic and Organic soils with some Organic Cryosols are dominant in the lowlands. Luvisols are the dominant upland soils. Sporadic discontinuous permafrost with low ice content is confined to organic deposits, and is characterized by sparse ice wedges. (Environment Canada)

Dominant vegetation is characterized by closed mixed stands of trembling aspen, balsam poplar, white spruce, balsam fir, and black spruce on drier sites. Poorly drained fens and bogs, about 30% of the ecoregion, are covered with tamarack and black spruce. (Environment Canada)

Biological Environment

Characteristic wildlife includes moose, black bear, wolf, beaver, and snowshoe hare. Woodland caribou are found in some areas. The most species-rich habitats are the mixed woods and shrublands associated with the fens, bogs, ponds, streams, and lakes. (Environment Canada).

Peterson Creek Bridge Site

Environmental Setting

Physical Description

The Liard River and its tributaries drain an area of approximately 275,000 square kilometers making it Canada's ninth largest watershed. The Liard River begins its journey in the Pelly Mountains of the Yukon, flows through northeastern British Columbia and then crosses into the Northwest Territories where it drains into the Mackenzie River. The Liard is Canada's eleventh longest river with an average annual discharge of 1,970 cubic meters per second, it ranks seventh among Canadian rivers in volume of water discharged.

This portion of the Alaska Highway is located in the Boreal Cordillera ecozone, specifically the Liard Basin ecoregion, which straddles the BC – Yukon border. (Environment Canada)

The Liard Basin ecoregion includes the Liard Plain, a broad, rolling, low-lying area mantled with glacial drift and outwash deposits in which the Liard River is entrenched. The mean annual temperature for the area is approximately -3°C with a summer mean of 11°C and a winter mean of -18.5°C. Annual precipitation is 350-450 mm. (Environment Canada).

The ecoregion is characterized by immense stands of boreal forest composed of lodgepole pine, white and black spruce, and aspen. Dry sites support lodgepole pine; moist sites have black spruce and larch with Labrador tea, horsetail, and moss. The ecoregion is underlain by Carboniferous Palaeozoic limestone and Cretaceous shale and lies 620-930 m asl. Luvisolic soils are associated with the productive upland boreal forests of the region. Cumulic Regosols support productive stands of white spruce along the floodplain of the Liard River and its larger tributaries. Eutric and Dystric Brunisols exist on coarse-textured fluvioglacial deposits. Permafrost is scattered, confined mainly to lower north-facing slopes and sphagnum bogs. (Environment Canada).

Biological Environment

Characteristic wildlife includes moose, black bear, wood bison, wolf, beaver, muskrat, snowshoe hare, waterfowl, crane, ruffed grouse, and other birds (Environment Canada).

Socio-economic Environment (For Jackfish and Peterson)

Logging occurs principally within the Fort Nelson Timber Supply Area, an area that encompasses much of the portion of the sub-basin that lies within British Columbia. The amount of wood harvested since 1994 has remained relatively constant at 1.5 million cubic meters per year. The Liard sub-basin contains extensive oil and reserves and there are many producing oil and gas fields.

Some pulpwood and local sawlog forestry, oil and gas extraction and exploration, water-oriented recreation, and wildlife trapping and hunting are the dominant uses of land in this region. The major communities include Hay River, Fort Nelson, Fort Simpson, and Fort Providence. The population of the

ecoregion is approximately 13,200. (Environment Canada)

Historically, trails and rivers were the main transportation routes for First Nations in the Fort Nelson area, who hunted, fished, and gathered materials from the abundant wilderness surroundings. First Nations people also used materials at hand to make tools and build homes. (Tourism British Columbia website)

Fur traders were the first European explorers drawn to the northeast corner of British Columbia. The Northwest Trading Company established the first fur trading post in the Fort Nelson area in 1805, using local rivers as main transportation routes. A series of five trading posts were built as earlier ones were burned or abandoned. In 1865, the Hudson's Bay Company built a fur trading post at Fort Nelson near the present day airport. (Tourism British Columbia website)

The north remained largely isolated from development in the early 1900's until the early 1940's. In 1942, World War II precipitated a need for a route from Northern British Columbia to Alaska. The US Army built the Alaska Highway from Dawson Creek to Alaska in just eight months. First known as the Alcan Highway (for Alaska-Canada), the Alaska Highway changed things in the north permanently. (Tourism British Columbia website)

In the 1990s, industry, conservation organizations, governments, First Nations, and others worked together to plan for land use in the region. Fort Nelson was one of three planning regions that were identified as key wilderness areas, and it was agreed that it required sustainable management 'to protect resources' into the future. In 1997, the BC government designated the Muskwa-Kechika Management Area (M-KMA) as a special wilderness area to be maintained forever. Just a small part of the M-KMA is accessible to vehicle travel. There are a number of routes designated for ATV travel, or travel along the Alaska Highway from Tetsa River to Liard River Hot Springs Provincial Park. (Tourism British Columbia website).

Species at risk

Promulgated in 2003 the purpose of the Species at Risk Act (SARA) is to prevent wildlife species from being extirpated or becoming extinct, to provide for wildlife recovery, and to manage species of special concern. In addition, SARA has certain implications for environmental assessment under CEAA. Specifically, the definition of "environmental effect" in the CEAA has been amended as follows: ". . . any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species." SARA requires notification of the competent minister if a proposed project is likely to affect a listed wildlife species or its critical habitat. An EA being carried out on a project that may affect a listed wildlife species or its critical habitat must identify potential adverse effects on the listed species, implement measures to avoid or lessen adverse effects, and must include monitoring of the effects on the listed species upon implementation of the project.

A desktop review of potential SARA-listed species revealed nine on Schedule 1 with ranges in the project area:

TABLE 2. SUMMARY OF SPECIES AT RISK & PROVINCIALLY-LISTED SPECIES AT RISK WITH RANGES IN PROJECT AREA.

Common Name	Taxonomic Group	Scientific Name	SARA Schedule 1 Designation	BC Wildlife Act Designation (Red/Blue)*	Habitat Description and Comments
Canada Warbler	**Birds (Parulidae Family)**	***Wilsonia canadensis***	**Threatened**	**N/A**	Found in a variety of forest types, but most abundant in wet, mixed deciduous-coniferous forest with a well-developed shrub layer. Also found in riparian shrub forests on slopes and in ravines and old-growth forests with canopy openings and a high density of shrubs.
Common Nighthawk	**Birds (Caprimulgidae Family)**	***Chordeiles minor***	**Threatened**	**N/A**	The Common Nighthawk nests in a wide range of open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks. This species also inhabits mixed and coniferous forests.
Olive-sided Flycatcher	**Birds (Tyrranidae Family)**	***Contopus cooperi***	**Threatened**	**N/A**	Most often associated with open areas containing tall live trees or snags for perching. Open areas may be forest clearings, forest edges located near natural openings (such as rivers or swamps) or human-made openings (such as logged areas), burned forest or openings within old-growth forest stands. Generally, forest habitat is either coniferous or mixed wood. In the boreal forest, suitable habitat is more likely to be in or near wetland areas.

Common Name	Taxonomic Group	Scientific Name	SARA Schedule 1 Designation	BC Wildlife Act Designation (Red/Blue)*	Habitat Description and Comments
Rusty Blackbird	Birds (Icteridae Family)	*Euphagus carolinus*	**Special Concern**	**Blue**	The Rusty Blackbird nests in the boreal forest and favours the shores of wetlands, such as slow-moving streams, peat bogs, marshes, swamps, beaver ponds and pasture edges. In wooded areas, the Rusty Blackbird only rarely enters the forest interior. During the winter, the Rusty Blackbird mainly frequents damp forests and, to a lesser extent, cultivated fields. In Canada, the conversion of wetlands into farmland or land suitable for human habitation is the primary cause of habitat loss, particularly in the Rusty Blackbird's wintering grounds. **(Environment Canada 2011)**
Short-eared Owl	**Birds (Strigidae family)**	***Asio flammeus***	**Special Concern**	**Blue**	Nests in the boreal forest and favours the shores of wetlands such as slow-moving streams, peat bogs, marshes, swamps, beaver ponds and pasture edges. This owl breeds in every Canadian province and territory. It inhabits extensive areas of open habitats including marshlands, estuaries, and grasslands, but is absent from heavily forested areas. Habitat losses have resulted in a relatively steep, long-term decline in Canada (23 percent in past decade). Small numbers breed in the Fraser Valley and the south central interior. The owl nests on the ground under low shrubs, reeds or grasses, usually near water. When not breeding short-eared owls are nomadic, roaming extensive ranges while hunting for small mammals and birds. Loss and fragmentation of habitat due to urban development and agricultural intensification are considered the primary threats. **(Stewardship Centre for British Columbia)**

Common Name	Taxonomic Group	Scientific Name	SARA Schedule 1 Designation	BC Wildlife Act Designation (Red/Blue)*	Habitat Description and Comments
Anatum Peregrine Falcon	**Birds (Falconidae Family)**	**Falco peregrinus anatum**	**Threatened**	**N/A**	The habitat requirements of the Peregrine Falcon can be divided into three components: 1) the nest site: nests are usually scrapes made on cliff ledges on steep cliffs, usually near wetlands -- including artificial cliffs such as quarries and buildings; 2) the nesting territory: the area defended around the nest prevents other pairs from nesting within 1 km or more, ensuring adequate food for all nesting pairs and their young; the density of nests tends to be related to food availability; 3) the home range: the extended, non-defended area in which the peregrines hunt for additional food and which can extend to 27 km from the nest; peregrines prefer open habitats such as wetlands, tundra, savanna, sea coasts and mountain meadows, but will also hunt over open forest. **(Parks Canada 2011)**
Wood Bison	**Mammals (Bovidae Family)**	***Bison bison athabascae***	**Threatened**	**Red**	Wood Bison are found in the open boreal and aspen forests where there are large wet meadows and slight depressions caused by ancient lakes. Historical estimates suggest that there were once over 168,000 wood bison in Canada. Today, the wood bison population in Canada is estimated at around 10,000 animals. Wood Bison are found in the open boreal and aspen forests where there are large wet meadows and slight depressions caused by ancient lakes. The population in the Mackenzie Bison Sanctuary (NWT) uses wet meadows and willow savannas in summer and winter and forests in the fall. **(Parks Canada 2011)**

Common Name	Taxonomic Group	Scientific Name	SARA Schedule 1 Designation	BC Wildlife Act Designation (Red/Blue)*	Habitat Description and Comments
Woodland Caribou	**Mammals (Cervidae Family)**	***Rangifer tarandus caribou (Boreal and Northern Mountain populations)***	**Special Concern**	**Red/Blue**	In winter use mature and old-growth coniferous forests that contain large quantities of terrestrial and arboreal (tree-inhabiting) lichens. These forests are generally associated with marshes, bogs, lakes, and rivers. In summer, the caribou occasionally feed in young stands, after fire or logging. Many subpopulations of the Woodland Caribou Boreal population show a preference for peatlands; they generally avoid clear cuts, shrub-rich habitat, and aspen-poplar dominated sites. **(Environment Canada 2011)**
Western Toad	**Amphibians (Bufonidae Family)**	***Anaxyrus boreas***	**Special Concern**	**Blue**	The Western Toad will breed in an impressive range of natural and artificial aquatic habitats — from the shallow margins of lakes to roadside ditches. It does not seem to matter if the sites have tree or shrub canopy cover, coarse woody debris, or emergent vegetation. Adult toads can be found in forested areas, wet shrublands, avalanche slopes, and meadows. They appear to favour dense shrub cover, perhaps because it provides protection from desiccation and predators. Western Toads are often found in clearcuts, and may prefer these habitats to closed canopy forests in coastal areas. The habitat requirements of hibernation sites for the Western Toad in Canada are not known. **(Environment Canada 2011)**
The following provincially-listed species are also potentially present in the general vicinity of the project area, but not necessarily on-site (this list was compiled for the entire Toad River watershed):					
Eastern Pine Elfin	**Insect (Lycaenidae Family)**	***Incisalia niphon***	**N/A**	**Red**	In general pine dominated or mixed pine forest or woodland. The species is known to feed on jack pine (*Pinus banksiana*) in BC (Guppy and Shepard 2001), although it has been reared on other pines (Layberry *et al.* 1998).

Common Name	Taxonomic Group	Scientific Name	SARA Schedule 1 Designation	BC Wildlife Act Designation (Red/Blue)*	Habitat Description and Comments
River Jewelwing	**Insect (Calopterigidae Family)**	***Calopteryx aequabilis***	N/A	**Red**	Larvae live in small to medium-sized, warm rivers and streams; especially along swiftly flowing riffle segments. They can typically be found in underwater tree roots and aquatic vegetation. Adults are often perched nearby in a head down position along streams and rivers (Cannings, 2003).
Northern Redbelly Dace	**Fish (Cyprinidae Family)**	***Chrosomus eos***	N/A	**Blue**	Boggy lakes, ponds; beaver ponds; pools of headwaters and creeks; often in tea colored water over fine detritus or silt; usually near vegetation (Lee et al. 1980, Page and Burr 1991). Spawns among mats of filamentous algae or aquatic plants (Faber 1985).
Cisco	**Fish (Salmonidae Family)**	***Coregonus artedi***	N/A	**Red**	Open waters of lakes and large rivers; coastal waters of Hudson Bay (Page and Burr 1991). Moves into deeper water, to just below thermocline, in summer. Sometimes in large rivers. Often spawns in shallow water (1-3 m) over gravel or stony substrate, but also may spawn pelagically in midwater. Eggs usually deposited on bottom.
Arctic Cisco	**Fish (Salmonidae Family)**	***Coregonus autumnalis***	N/A	**Red**	Near river mouths and in brackish lagoons (Page and Burr 1991). Leaves sea or estuary in spring and summer, ascends freshwater rivers to spawn, returns to sea after spawning. Young probably descend rivers to estuaries after hatching. Spawns over gravel in fairly swift water; eggs broadcast and abandoned.
Least Cisco	**Fish (Salmonidae Family)**	***Coregonus sardinella***	N/A	**Blue**	Non-migratory populations occur in large lakes and rivers. Anadromous populations inhabit Arctic coastal waters, estuaries, and rivers. After hatching, young of anadromous populations move downstream to deeper slower water. Spawns in shallows of rivers or along lakeshores over bottom of gravel and/or sand. Eggs sink to bottom and lodge in crevices in gravel, remain there until hatching in spring.

Common Name	Taxonomic Group	Scientific Name	SARA Schedule 1 Designation	BC Wildlife Act Designation (Red/Blue)*	Habitat Description and Comments
Hagen's Bluet	**Insect (Coenagrionidae Family)**	***Enallagma hageni***	N/A	**Blue**	No habitat information is available for this species.
Yellow-dotted Alpine	**Insect (Nymphalidae Family)**	***Erebia pawloskii***	N/A	**Red**	Wet tundra, small marshes or wet meadows often with shrub willows in or slightly below alpine zone; also, taiga and grassy openings in pine forests. Hosts in family Poaceae. The population in Stone Mountain Provincial Park is within the subalpine and alpine meadows, grassy areas and bogs (Guppy and Shepard 2001).
Wolverine *luscus* subspecies	**Mammals (Mustelidae Family)**	***Gulo gulo luscus***	N/A	**Blue**	Alpine and arctic tundra, boreal and mountain forests (primarily coniferous). Limited to mountains in the south, especially large wilderness areas. Usually in areas with snow on the ground in winter. Riparian areas may be important winter habitat. May disperse through atypical habitat. When inactive, occupies den in cave, rock crevice, under fallen tree, in thicket, or similar site. Terrestrial and may climb trees. Young are born in a den among rocks or tree roots, in hollow log, under fallen tree, or in dense vegetation, including sites under snow.
Goldeye	**Fish (Hiodontidae Family)**	***Hiodon alosoides***	N/A	**Blue**	Often in quiet turbid water of medium to large lowland rivers, the small lakes, ponds, and marshes connected to them, and muddy shallows of larger lakes. Overwinters in deep water. Prefers moderate to fast current in Illinois and Ohio. Spawns in shallow firm-bottomed sites in river pools or backwaters or over gravel shoals in tributary streams. Eggs are semi-buoyant and drift downstream or into quiet water (Page and Burr 1991).
Plains Forktail	**Insect (Coenagrionidae Family)**	***Ischnura damula***	N/A	**Red**	No habitat information is available for this species.

Common Name	Taxonomic Group	Scientific Name	SARA Schedule 1 Designation	BC Wildlife Act Designation (Red/Blue)*	Habitat Description and Comments
Bronze Copper	**Insect (Lacaenidae Family)**	***Lycaena hyllus***	N/A	**Blue**	Marshes, sedge meadows, moist to wet grassy meadows, ditches, fens, streamside or pondshore wetlands, or roads and right of ways through marshlands.
Pearl Dace	**Fish (Cyprinidae Family)**	***Margariscus margarita***	N/A	**Blue**	"Cool, clear headwater streams in the south, bog drainage streams, ponds and small lakes in the north, and in stained, peaty waters of beaver ponds" (Scott and Crossman 1973). Usually over sand or gravel (Page and Burr 1991). Spawns in clear water over sand or gravel in weak or moderate current (Scott and Crossman 1973).
Fisher	**Mammals (Mustelidae Family)**	***Martes pennanti***	N/A	**Blue**	Fishers inhabit upland and lowland forests, including coniferous, mixed, and deciduous forests. They occur primarily in dense coniferous or mixed forests, including early successional forest with dense overhead cover (Thomas et al. 1993). Fishers commonly use hardwood stands in summer but prefer coniferous or mixed forests in winter. They generally avoid areas with little forest cover or significant human disturbance and conversely prefer large areas of contiguous interior forest. Riparian areas may be important to fishers because they provide important rest site elements, such as broken tops, snags, and coarse woody debris.
Spottail Shiner	**Fish (Cyprinidae Family)**	***Notropis hudsonius***	N/A	**Red**	Western populations: more closely restricted to large rivers and lakes, usually over sandy or rocky shallows with scant vegetation (Lee et al. 1980). Spawns in aggregations over areas of gravelly riffles near mouths of brooks, or along sandy shoals of lakeshores (Becker 1983).
Philip's Arctic	**Insect (Numphalidae Family)**	***Oeneis philipi***	N/A	**Red**	Open spruce bogs (Layberry et al. 1998; Ople, 1998).

Common Name	Taxonomic Group	Scientific Name	SARA Schedule 1 Designation	BC Wildlife Act Designation (Red/Blue)*	Habitat Description and Comments
Hotwater Physa	**Mollusc (Physidae Family)**	***Physella wrighti***	N/A	**Red**	It occurs in habitat that maintains water temperature of 23-30 degrees C year round and occupies substrates near a water/air interface in areas of little or no water flow where the snails can position themselves and their eggs at temperatures optimal for life history requirements (COSEWIC, 2008).
Thicklip Rams-horn	**Mollusc (Planorbidae Family)**	***Planorbula armigera***	N/A	**Blue**	It is usually found in flowing, but sluggish water.
Cranberry Blue	**Insect (Lycaenidae Family)**	***Plebejus optilete***	N/A	**Blue**	Mostly boggy taiga, spruce bogs, and wet tundra.
Ninespine Stickleback	**Fish (Gasterosteidae Family)**	***Pungitius pungitius***	N/A	**Red**	Cool quiet waters of ponds, lakes, estuaries, and streams; usually in shallow vegetated areas, sometimes in open water over sand. In lakes, may occupy deep water in winter, shallows in summer. Spawns in fresh water; estuarine populations move into creeks and streams to spawn. Eggs laid in nest made by male among rocks or plants.
Bull Trout	**Fish (Salmonidae Family)**	***Salvelinus confluentus***	N/A	**Blue**	Bottom of deep pools in cold rivers and large tributary streams, often in moderate to fast currents with temperatures of 45-50 F; also large coldwater lakes and reservoirs. Migratory forms live in tributary streams for up to several years before migrating downstream into a larger river or lake, where they spend several years before returning to tributaries to spawn (Rieman and McIntyre 1993). In lakes, inhabits all depths in fall, winter, and spring; moves to cooler, deeper water for summer. Usually spawns in gravel riffles of small tributary streams, including lake inlet streams. Spawning sites often are associated with springs (Rieman and McIntyre 1993).

Common Name	Taxonomic Group	Scientific Name	SARA Schedule 1 Designation	BC Wildlife Act Designation (Red/Blue)*	Habitat Description and Comments
Kennedy's Emerald	**Insect (Corduliidae Family)**	***Somatochlora kennedyi***	N/A	**Blue**	No habitat information is available for this species.
Inconnu	**Fish (Salmonidae Family)**	***Stenodus leucichthys***	N/A	**Blue**	Anadromous in coastal areas; ascends streams from the sea to spawn. Also in inland lakes, from which it migrates up tributary streams in summer, returning to lake in fall. Spawns in clear, fairly swift streams over bottoms of gravel and sand in water 1-3 m deep. Eggs sink to bottom and lodge in gravel.

*Red listed species include any ecological community, and indigenous species and subspecies that is extirpated, endangered, or threatened in British Columbia. Blue listed species include any ecological community, and indigenous species and subspecies considered to be of special concern (formerly vulnerable) in British Columbia. (BC Ministry of Environment – Endangered Species and Ecosystems, 2011)

Scoping

This environmental effects evaluation, as defined in the appendix, considers the full range of project / environment interactions and the environmental factors that could be affected by the project as defined above and the significance of related effects after mitigation.

Table 1: Potential Project / Environment Interactions Matrix

P = Potential Effect of Project on Environment; ? = Not enough Information; ' - ' = No Interaction

Project Phase / Physical Work/Activity	*Soil (Surface and Subsurface) Quality*	*Groundwater Quality/Quantity*	*Rivers / Lakes / Streams (and Associated Drainage) Quality/Quantity*	*Marine/Estuary/Saltmarsh Water Quality*	*Wetlands (Bogs, Fens, Swamps)*	*Fish / Fish Habitat*	*Birds / Bird Habitat*	*Terrestrial Species*	*Aquatic Species*	*Agriculture / Aquaculture*	*Aboriginal Interests*	*Archaeology / Paleontology / Heritage*	*Socio-economic Environment*	*Land Use*	*Air Quality / Noise*	*Health/Safety*
Maintenance																
Mobilize to Site and Site Preparation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction of containment structures	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-
Washing of bridge components	-	-	P	-	-	P	-	-	P	-	-	-	-	-	-	-
Removal of existing lead based paint	P	-	P	-	-	P	-	-	P	-	-	-	-	-	-	-
Recoating structural steel with approved coating product	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rehabilitation of collision damage to steel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rehabilitation of concrete spalling due to collision	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.1 – 2.3: Potential Project / Valued Ecosystem Interactions and Mitigation Measures *(S.2(1))*

Table 2.1 Valued Ecosystem Component: Air Quality/Noise				
Potential Effect: Possible noise disturbance from constructing temporary storage components				
Potential Interaction	**Mitigation**			
There is the potential for long term building noise affecting terrestrial ecosystem.	Noise will be short term as structures are temporary and limited to mobilization and demobilization phase.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	**Reversible**	**Immediate**	**Short-term**	**Once**
Residual Effects:	**Insignificant**			
Monitoring:	**None required**			
Comments: The contractor is to provide PWGSC with an Environmental Effects Evaluation (EPP) which covers off all mitigation components for the structures.				
Table 2.2 Valued Ecosystem Component :Soil (Surface and Subsurface) Quality; Rivers, Lakes, Streams (and associated drainage) Quality/Quantity: Fish and Fish Habitat; Aquatic				
Potential Effect: Removal of existing lead based paint may enter into the surrounding ecosystem				
Potential Interaction	**Mitigation**			
If not properly contained, paint chips could enter surrounding soils, enter into the creek and cause detrimental effects to the fish, fish habitat and aquatic systems.	Contractor is to take all precautions in the removal of paint to ensure all wastes are properly containerized as per the approved EPP and taking into consideration and being compliant with all federal and provincial guidelines and regulations regarding lead paint removal, transport and disposal.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	**Reversible**	**Immediate**	**Short-term**	**Once**
Residual Effects:	**Insignificant**			

Monitoring:	**None required – an Environmental Monitor hired by the contractor will determine what phases of the project require monitoring during potential environmental effects to ensure required mitigation techniques are applied. This will form part of the EPP and will be approved by PWGSC ES.**
Comments: The contractor is to provide PWGSC with an Environmental Effects Evaluation (EPP) which covers off all mitigation components for the removal, storage and transportation of lead based paint.	

Table 2.3 Valued Ecosystem Component: Rivers, Lakes, Streams (and associated drainage) Quality/Quantity; Fish and Fish Habitat; Aquatic

Potential Effect: Washing of bridge structure components				
Potential Interaction	**Mitigation**			
If not properly contained, wash water could enter into the creek and affect fish, fish habitat and aquatic system.	Contractor is to take all precautions in washing bridge components to ensure compliance with federal and provincial regulations and guidelines. Water entering into the creek system or into the drainage area must not contain wastes or particulate matter above federal and provincial guidelines for suspended particles.			
Magnitude	**Reversibility**	**Geographic Extent**	**Duration**	**Frequency**
Small	**Reversible**	**Immediate**	**Short-term**	**Once**
Residual Effects:	**Insignificant**			
Monitoring:	**None required**			
Comments: The contractor is to provide PWGSC with an Environmental Effects Evaluation (EPP) which covers off all mitigation components for washing and containing wash water.				

D: CONSULTATIONS

Public Consultation

The potential for public concern is minimal due to the fact that these two sites are in an area of already disturbed linear infrastructure and the works to be completed are strictly painting and maintenance to an existing structure. Public consultation was not deemed necessary as part of this screening.

PART E: ENVIRONMENTAL EFFECTS EVALUATION CONCLUSION

Insignificant Adverse Environmental Effects

Potential impacts of this project are associated with maintenance disturbances. It is reasonable to conclude that with appropriate mitigation in place and good work practices, environmental effects will be of short duration and the potential zone of influence will be confined to the immediate vicinity of the work.

Mitigation

- Contractor is to take all precautions in washing bridge components to ensure compliance with federal and provincial regulations and guidelines. Water entering into the creek system or into the drainage area must not contain wastes or particulate matter above federal and provincial guidelines for suspended particles.
- Contractor is to take all precautions in the removal of paint to ensure all wastes are properly containerized as per the approved EPP and taking into consideration and being compliant with all federal and provincial guidelines and regulations regarding lead paint removal, transportation and disposal.
- Any and all stipulations of federal, provincial, or municipal authorities and/or their officers must be strictly followed. As a best practice the most stringent standards must be used where applicable. Any discrepancies must be successfully resolved before the pertinent work may begin.

PART F: ACCURACY AND COMPLIANCE MONITORING

Site monitoring (accuracy and compliance monitoring) may be conducted to verify whether required mitigation measures were implemented. The proponent must provide site access to Responsible Authority officials and/or its agents upon request.

PART G: DETERMINATION

The federal authority is required to provide a determination of the significance of environmental effects as a result of this project. The decision outlined below is based on the interpretation of environmental effects and mitigation measures described in Part D of this report.

Project Name: Painting of 2 Bridges, Jackfish Creek KM 424.8/Peterson Creek KM 678.6 Alaska Highway, BC
PWGSC Project #: R.017173.703
Location: Alaska Highway Corridor, BC

The Federal Authority has evaluated the project for significant adverse environmental effects as required under Section 67 of *Canadian Environmental Assessment Act (CEAA), 2012*. On the basis of this evaluation, the department has determined that the decision opposite the "X" applies to the proposed project.

X Project not likely to cause significant adverse environmental effects - proceed.

___ Project not likely to cause significant adverse environmental effects with mitigation - proceed using mitigative measures as determined.

___ Inadequate information available - further study and assessment is required.

___ Project likely to cause significant adverse environmental effects that cannot be justified in the circumstances - project will not proceed.

___ Project likely to cause significant adverse environmental effects that may be justified in the circumstances - refer to the Governor in Council for decision.

PART H: SIGNATURE CERTIFICATE

This document summarizes the results of an environmental effects evaluation related to the above project that has been performed and completed by the Federal Authority in accordance with the *Canadian Environmental Assessment Act, 2012.*

Environmental Specialist: _____ Date: _____
Environmental Services, PWGSC, Western

The above has completed this environmental effects evaluation (EEE) report to the best of their ability and knowledge, and ensures that it meets the requirement of the Canadian Environmental Assessment Act, 2012.

Project Manager: _____ Date: _____
Real Property Services, PWGSC, Pacific

The above has read and understood this environmental effects evaluation (EEE) report and acknowledges responsibility for ensuring the implementation of mitigation measures and for ensuring the design and implementation of 'accuracy and compliance monitoring', if any, identified in this report.

APPENDIX A

RECORD OF PUBLIC PARTICIPATION DETERMINATION

Record of Public Participation Determination

Stage of work plan: Early planning phase of screening (pre-scoping)

Is there an indication that…	Describe potential indication and issues	Consider public participation?	
There is an existing or likely public interest in the type, location or potential effects of the project?		□ Yes	X No
There are members of the public with a history of being involved in past proposed projects in the area?		□ Yes	X No
The project has the potential to generate conflict between environmental and social or economic values of concern to the public?		☐ Yes	X No
The project may be perceived as having the potential for significant adverse environmental effects? [1]	The fact that some levels of lead in the bridges existing paint may cause concern within the department that is mitigable by proper removal and containment of any lead wastes. This will be detailed in the Contractor's environmental protection plan that is reviewed and approved by the PWGSC Environmental Services representative.	X Yes	□ No
There is potential to learn from community ecological? knowledge or Aboriginal traditional knowledge?		□ Yes	X No
There is uncertainty about potential direct and indirect environmental effects or the significance of identified effects?		☐ Yes	X No
The project has been or will be subject to other public participation processes that would meet the objectives of the Ministerial Guideline http://www.ceaa.gc.ca/013/006/ministerial_guideline_e.htm		□ Yes	X No
There is any other reason why public participation is or is not appropriate?		□ Yes	X No

As a result of the scan above, is public participation under CEAA appropriate in the circumstances?

□ Yes X No

Additional comments to support determination:

[1] *Environmental Effect as per the definition in CEAA (2012) is*

- *Changes to the environment to components of the environment that are within the legislative authority of Parliament (fish as defined by the Fisheries Act, aquatic species under the Species at Risk Act, and migratory birds as defined in the Migratory Birds Convention Act (1994)*
- *Changes to the environment that occur on federal lands, or inter-provincially or outside of Canada.*
- *The effect of any change on health and socio-economic condition, physical and cultural heritage, use of resources for traditional purposes and structures of historical significance are limited with respect to Aboriginal peoples.*

APPENDIX B
DEFINITIONS AND METHODOLOGIES

Environment (defined in *S.2(1)*) – the components of the Earth, and includes land, water and air, including all layers of the atmosphere; and all organic and inorganic matter and living organisms (and the interacting natural systems of those).

Environmental Effects (defined in *S.5(1) and 5(2)*) – (a) a change that may be caused to the following components of the environment that are within the legislative authority of Parliament:

- Fish as defined in section 2 of the *Fisheries Act* and fish habitat as defined in subsection 34(1) of that Act,
- Aquatic species as defined in subsection 2(1) of the *Species at Risk Act (SARA)*,
- Migratory birds as defined in subsection 2(1) of the *Migratory Birds Convention Act, 1994,* and
- Any other component of the environment that is set out in Schedule 2.

(b) a change that may be caused to the environment that would occur on federal lands, or inter-provincially, or outside Canada; and

(c) with respect to aboriginal peoples, the effect of any change on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

Federal Authority (defined in *S.2(1)*) – a Minister of the Crown in right of Canada; an agency of the Government of Canada or a parent Crown corporation, as defined in subsection 83(1) of the *Financial Administration Act (FAA);* or any department or departmental corporation that is set out in Schedule I or II to the FAA.

Federal lands (defined in *S.2(1)*) – defined as follows:

- lands that belong to Her Majesty in right of Canada, or that Canada has power to dispose of, and all waters on and airspace above those lands, other than lands under the administration and control of the Commissioner of Yukon, the Northwest Territories or Nunavut;
- the internal waters of Canada, in any area of the sea not within a province;
- the territorial sea of Canada in any area of the sea not within a province;
- the exclusive economic zone of Canada, and the continental shelf of Canada; and
- reserves, surrendered lands and any other lands that are set apart for the use and benefit of a band and that are subject to the *Indian Act*, and all waters on and airspace above those reserves or lands.

Mitigation measures (defined in *S. 2(1)*) – measures for the elimination, reduction or control of the adverse environmental effects of a designated project, and includes restitution for any damage to the environment cause by those effects through replacement, restoration, compensation or any other means.

Project (defined in *S. 66*) – a physical activity that is carried out in relation to a physical work and is not a designated project.

Valued Ecosystem Component (defined on Agency - www.ceaa.gc.ca/default.asp?lang=En&n=B7CA71391&offset=3#v) - The environmental element of an ecosystem that is identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance.

The value of an ecosystem component may be determined on the basis of cultural ideals or scientific concern. Valued ecosystem components that have the potential to interact with project components should be included in the assessment of environmental effects.

Methodology

The environmental effects evaluation methodology used in this report focuses the evaluation on those environmental components of greatest concern. The Valued Ecological Components (VECs) most likely to be affected by the project as described are indicated in **Table 1.** VECs were selected based on ecological importance to the existing environment (above), the relative sensitivity of environmental components to project influences and their relative social, cultural or economic importance. The potential impacts resulting from these interactions are described below.

Evaluation of Environmental Effects

The VECs selected in Table 1 are addressed in Tables 2.1 through 2.3 in the EEE. The residual effects of the project on the environment are defined. Similarly, the physical works/activities and required mitigation measures are detailed and the significance of residual (post-mitigation) effects is estimated.

The following ratings are based on:

- **information provided by the proponent;**
- **a review of project related activities;**
- **an appraisal of the environmental setting, and identification of resources at risk;**
- **the identification of potential impacts within the temporal and spatial bounds; and**
- **personal knowledge and professional judgment of the assessor.**

The significance of project related impacts was determined in consideration of their frequency, the duration and geographical extent of the effects, magnitude relative to natural or background levels, and whether the effects are reversible or are positive or negative in nature. These criteria are indicated in Table 2.

Table 3. Assessment Criteria for Determination of Significance.

Magnitude	Magnitude, in general terms, may vary among Issues, but is a factor that accounts for size, intensity, concentration, importance, volume and social or monetary value. It is rated as compared with background conditions, protective standards or normal variability.	
	Small	Relative to natural or background levels
	Moderate	Relative to natural or background levels
	Large	Relative to natural or background levels
Reversibility	Reversible	Effect can be reversed
	Irreversible	Effects are permanent
Geographic Extent	Immediate	Confined to project site
	Local	Effects beyond immediate project site but not regional in scale
	Regional	Effects on a wide scale
Duration	Short Term	Between 0 and 6 months in duration
	Medium Term	Between 6 months and 2 years
	Long Term	Beyond 2 years

Frequency	Once	Occurs only once
	Intermittent	Occurs occasionally at irregular intervals
	Continuous	Occurs on a regular basis and regular intervals

APPENDIX C
MITIGATION TABLE

Environmental Component	Reference	PWGSC Commitment	Phase	Responsibility
Responsible Environmental Management	1.1	Complete the maintenance of bridges in an environmentally responsible manner, and employ Best Management Practices (BMPs) and comply with federal, provincial and municipal statutes.	Construction	Contractor
	1.2	Ensure that required Permits, Approvals and Authorizations are in place before proceeding to construction.	Pre Construction	PWGSC Contractor
	1.3	Prepare a final version of a construction-phase Environmental Protection Plan (EPP), prior to the start of construction. The EPP will provide contractors and on-site workers with procedures and requirements for meeting Permits, Approvals and Authorizations and for carrying out on-site activities using accepted BMPs. The EPP will be updated as required. The Contractor is responsible for completing the EPP using an environmental consulting firm who is knowledgeable in the field of lead and PCB based paint and its effects on the environment. PWGSC is responsible for reviewing and approving the EPP. Contractors must have an environmental monitor at site during those phases of work that require monitoring and testing.	Pre Construction	PWGSC Contractor
	1.4	Engage an Environmental Monitor for the construction phase of the Project where required. The Environmental Monitor will undertake regular environmental monitoring activities, and will ensure the implementation of PWGSC Environmental Effects Evaluation (EEE) and ensure the contractor's EPP is followed. The Environmental Monitor will review, evaluate, and report to regulators (where and when applicable) on the construction activities and the effectiveness of the environmental control strategies and mitigation measures, with respect to the terms and conditions of the EEE, the EPP and other regulatory Permits, Approvals and Authorizations that may apply.	Construction	Contractor PWGSC
	1.5	Provide relevant federal and provincial agencies with final design plans for review prior to construction of the Project.	Pre Construction	PWGSC
Hydrogeology and Groundwater	2.1	N/A	N/A	N/A
Air Quality	3.1	N/A	N/A	N/A
Aquatic Resources	4.1	Provide 30 m setbacks for fish-bearing streams and 15 m for non-fish bearing streams wherever possible.	Construction	PWGSC Contractor

Environmental Component	Reference	PWGSC Commitment	Phase	Responsibility
Fish and Fish Habitat	5.1	Ensure proper mitigation techniques are used during the washing of steel structures and the removal of paint to ensure no wastes (wash water/paint particulates etc.) enter into the water or riparian areas that would result in negative impacts to fish and fish habitat.	Construction	PWGSC Contractor
Creek Water Quality	6.1	As in the above point (5.1), ensure water quality is not impacted through the introduction of wastes (wash water/paint particulates etc.)	Construction	PWGSC Contractor

Mitigation Table

It is reasonable to conclude that with appropriate mitigation in place and good work practices, significant adverse environmental effects will be of short duration and the potential zone of influence will be confined to the immediate vicinity if the work.

Mitigation

- Contractor is to take all precautions in washing bridge components to ensure compliance with federal and provincial regulations and guidelines. Water entering into the creek system or into the drainage area must not contain wastes or particulate matter above federal and provincial guidelines for suspended particles.
- Contractor is to take all precautions in the removal of paint to ensure all wastes are properly containerized as per the approved EPP and taking into consideration and being compliant with all federal and provincial guidelines and regulations regarding lead paint removal, transportation and disposal.
- Any and all stipulations of federal, provincial, or municipal authorities and/or their officers must be strictly followed. As a best practice the most stringent standards must be used where applicable. Any discrepancies must be successfully resolved before the pertinent work may begin.
- Any and all stipulations of federal, provincial, or municipal authorities and/or their officers must be strictly followed. As a best practice the most stringent standards must be used where applicable. Any discrepancies must be successfully resolved before the pertinent work may begin.

Site monitoring (accuracy and compliance monitoring) may be conducted to verify whether required mitigation measures were implemented.

Fisheries and Oceans Canada

Cleaning or maintenance of bridges or other structures

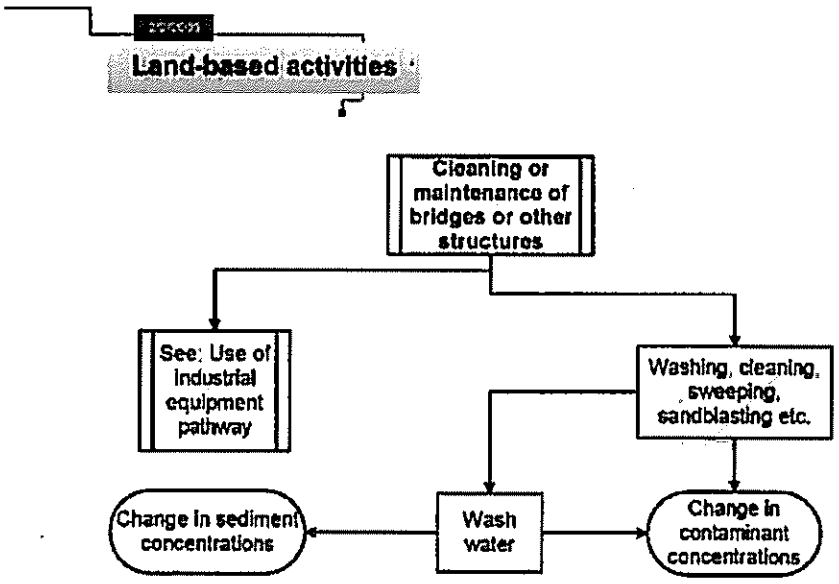
Land-Based Activities

- Cleaning or maintenance of bridges or other structures
- Excavation
- Grading
- Riparian Planting
- Streamside livestock grazing
- Use of explosives
- Use of industrial equipment
- Vegetation Clearing

The cleaning, maintenance, or surface preparation of bridges or other structures. This may involve industrial cleaning or surface preparation equipment such as high pressure water blasters, mechanical sweepers and scrubbers, sandblasters, or any other technique or chemical product used to clean, strengthen, or prepare surfaces for additional processing or to refine or roughen surfaces to meet finishing requirements.

NOTE:

Pathways of Effects diagrams have been developed by Fisheries and Oceans Canada as a tool to communicate potential effects of development proposals on fish and fish habitat and were developed through extensive consultation. It is expected that these diagrams will be updated to describe new activities and stressors as required.



Effects

Change in sediment concentrations: Increased erosion of stream bank soils and rocks result in an excess of fragmented organic and inorganic material which is transported by water, wind, ice, and

gravity. These sediments, which contain nutrifying elements and can capture or absorb contaminants, are suspended or else settle and collect in waterways affecting physical processes, structural attributes, and ecological conditions such as water clarity (by reducing visibility and sunlight and damaging fish gills) and reducing the availability and quality of spawning/ rearing habitat (through infilling)

Change in contaminant concentrations: An increase in concentrations of toxins and pollutants in sediments and waters can breach the range of chemical parameters that support healthy aquatic communities, seriously affecting fish and fish habitat. The ecological effects can range from direct fatality to organisms, alteration of the ecosystem structure through changes in the abundance, composition, and diversity of communities and habitats, and persistence and progressive accumulation in sediments or biological tissues (bioaccumulation, biomagnification). Deformities, alterations in growth, reproductive success, and competitive abilities can result

Date modified: 2010-03-02

PARSONS

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November 3, 2014 OUR REF: BM3447-D

Mr. Alex Taheri, P.Eng.
Project Manager
Public Works and Government Services Canada
800 Burrard Street, 12th Floor
Vancouver, B.C. V6Z 2V8

Dear Mr. Taheri:

Re: Post-Accident Inspection of the Jackfish Creek Bridge
Alaska Highway, BC, km 424.8
Contract No. E7899-131633/001/TPV dated 2013-03-18

A single vehicle truck accident occurred at the Jackfish Creek Bridge on or before October 27, 2014.

Parsons carried out a post-accident inspection of this bridge on October 30, 2014. Post-accident inspection photos were taken and are attached for reference including several pre-accident July 2013 photos for condition comparison.

I confirm that all inspection work was carried out by me, Stan Reimer, P.Eng.

Inspection Findings

1. Most of the collision damage caused was to the concrete barriers. The approach barriers on 3 corners of the bridge were shifted out of alignment with the SW barriers shifted the most (see Photos P02-P16). Pre-accident photos taken during the July 2013 bridge inspection are included for barrier condition comparison (see Photos P13,P17).
2. A delineator sign at the SW corner was damaged (see Photo P10).
3. The bridge barrier near the NE corner of the bridge has a large collision spall 2.6 m x 0.35 m (see Photos P19-P22).
4. There are 6 collision notches/dents in the top chord of the West truss (see Photos P26-P38). One notch has a tear 12 mm deep. The largest collision dent is 25 mm deep.
5. All anchor bolts on the 4 bearings are in place and not bent. So the bridge positioning was not affected by the collision (see Photos P48-P51).

Conclusions

1. No structural damage was discovered during the inspection that would indicate that this bridge is unsafe to carry existing highway traffic.

2. The concrete barriers functioned very well during this accident with minimal collision impact to the steel superstructure.

Recommended Actions

Immediately after inspections were completed, a discussion was held regarding the collision damage with George Smith, Manager of the Alaska Highway Maintenance Program, PWGSC.

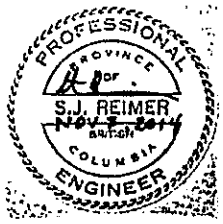
PWGSC has already arranged the following repair actions:

1. Realignment and/or replacement of precast concrete approach barriers as required,
2. Repair of the damaged delineator sign at the SW corner of the bridge,
3. Installation of a steel cover over the large spall in the NE bridge barrier. The cover plate will be bolted to the bridge barrier to provide a smooth barrier surface, and
4. Removal of concrete barrier spall debris from the bottom chord of the east truss.

These actions makes sense. More permanent repairs can be made to the concrete bridge barrier later during warmer weather.

None of the damage to the top chord of the west pony truss reduces the capacity of the bridge, but could initiate fatigue cracks in the future. It makes sense to repair these defects (at least grind them smooth) prior to and as part of the painting contract scheduled for 2015.

If you have any questions about the foregoing, please contact me to discuss.



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HRH/SJR

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P01 - West Side

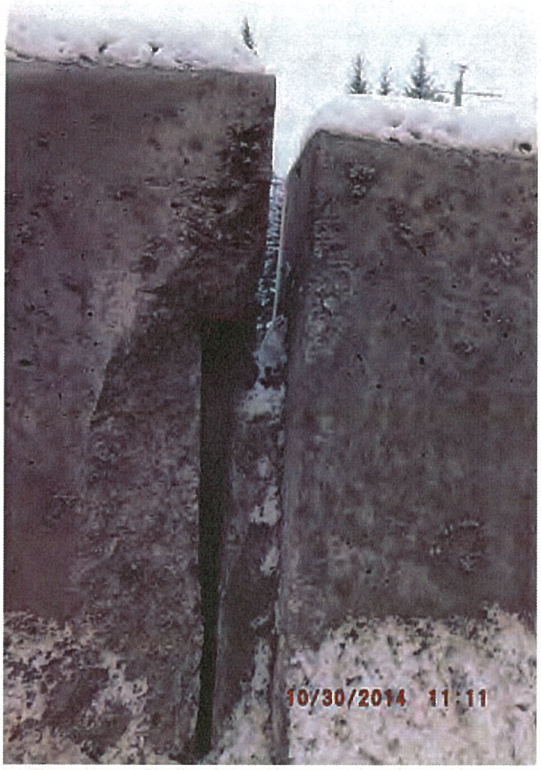
P02 - South Approach - Looking North - Both Approach Barriers Shifted after Collision

P03 - SW Approach Barrier - Shifted After Collision

P04 - SW Approach Barrier - Broken Hook at End of Yellow Section

P05 - SW Approach Barrier - Broken Hook at End of Yellow Section

P06 - SW Approach Barriers - 2 Spalled Barrier Joints



P07 - SW Approach Barriers - 2 Spalled Barrier Joints

P08 - SW Approach Barriers - 2 Spalled Barrier Joints

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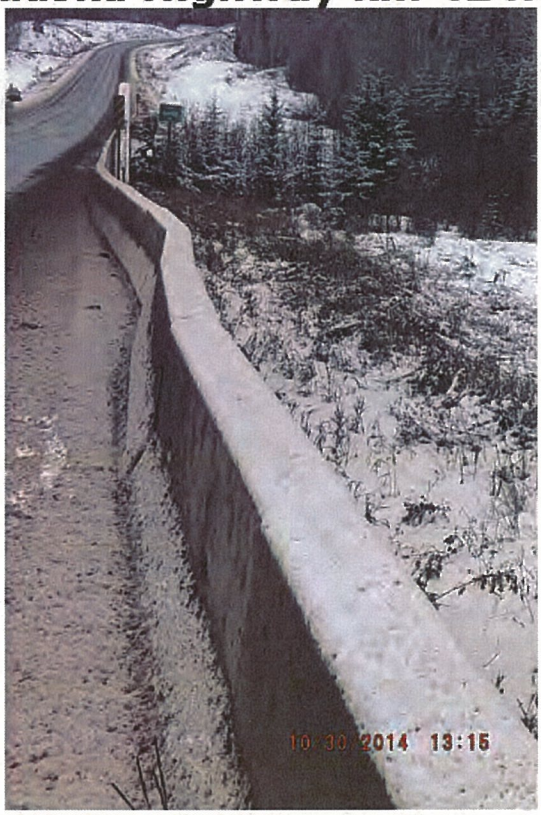
P09 - SW Approach Barriers - 2 Spalled Barrier Joints

P10 - SW Delineator Sign Pushed Over



P11 - SE Approach Barrier - Kink in Barrier Alignment due to Collision

P12 - SE Approach Barrier - Kink in Barrier Alignment due to Collision

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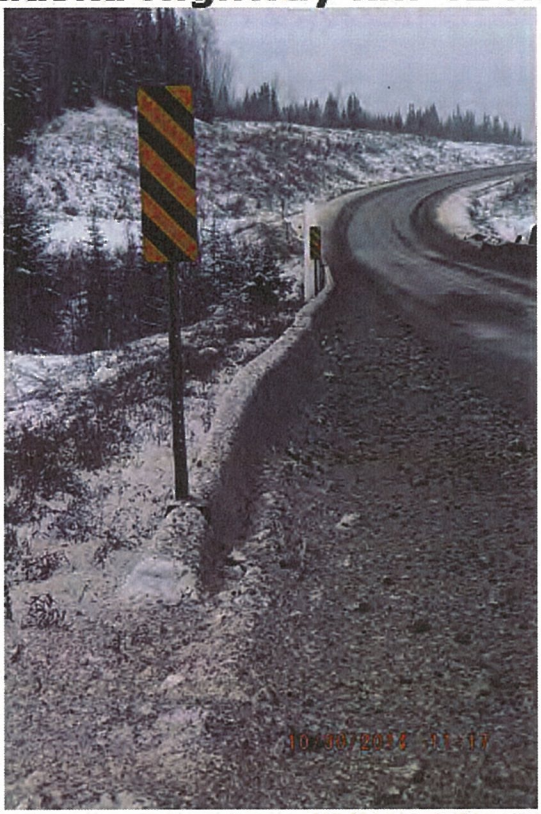
P13 - Previous July 2013 Inspection - South Approach - Both Approach Barriers Properly Aligned

P14 - North Approach - Looking South



P15 - NE Approach Barrier - Slight Kink in Alignment

P16 - NE Approach Barrier - Slight Kink in Alignment

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P17 - Previous July 2013 Inspection - North Approach - Both Approach Barriers Properly Aligned

P18 - East Barriers - Collision Spall in Bridge Barrier

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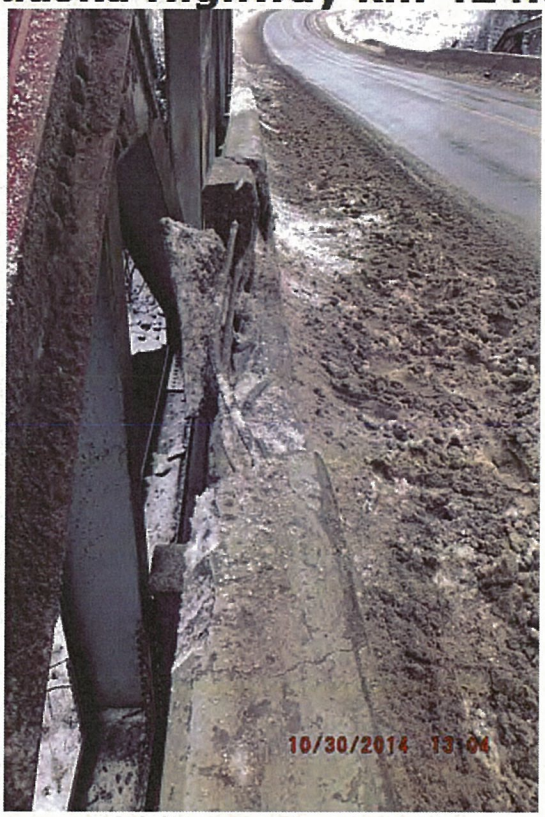
P19 - East Barriers - Collision Spall in Bridge Barrier - 2.6m x 0.35m - Exposed Rebar

P20 - East Truss - Collision Damage to Bridge Barrier at NE Corner - No Collision Damage to Truss



P21 - East Truss - Collision Damage to Bridge Barrier at NE Corner - No Collision Damage to Truss

P22 - East Bridge Barrier Spall

P23 - East Truss - Spalled Barrier Concrete below Spall

P24 - West Truss - Straight and Plumb

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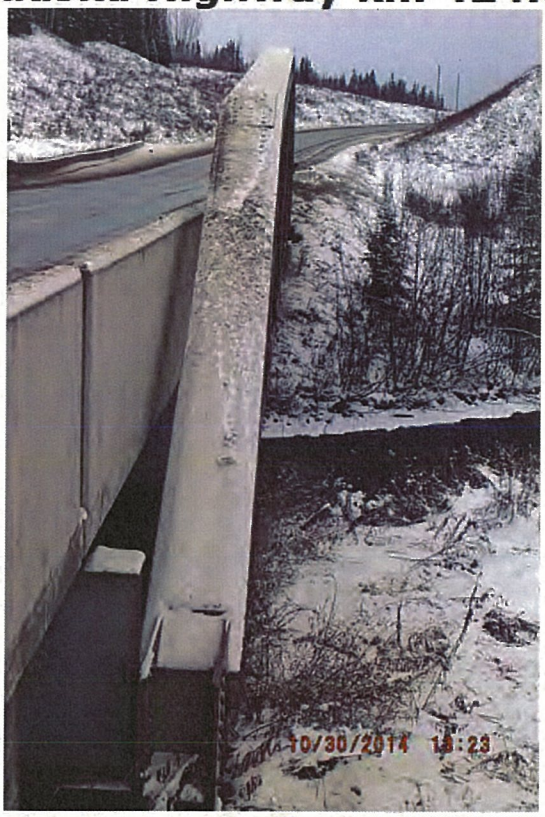
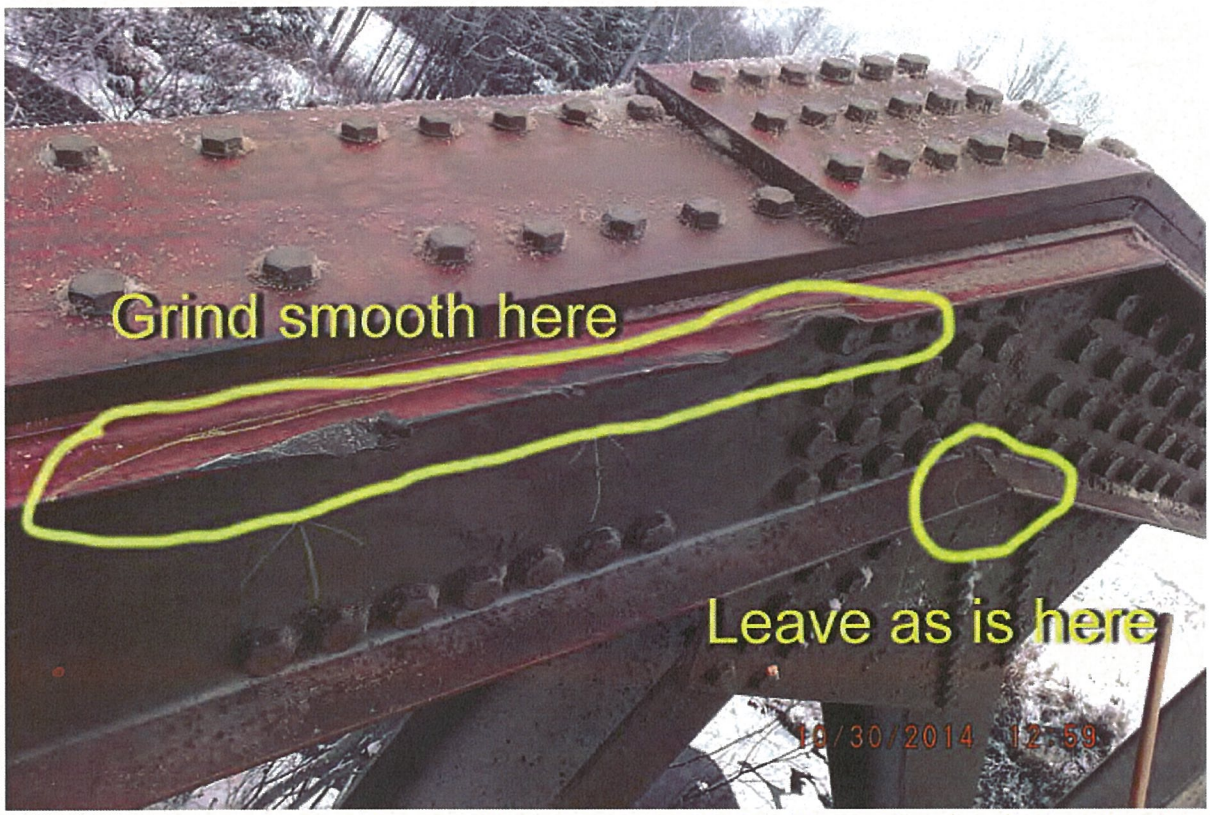


P25 - West Truss - Looking South - Straight and Plumb

P26 - West Truss - Top Chord - Minor Collision Damage to L0-U1

P27 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel - 5 Notches in Top Flange and 1 Notch in Bottom Flange



P28 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel - 5 Notches in Top Flange and 1 Notch in Bottom Flange

P29 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel - 5 Notches in Top Flange and 1 Notch in Bottom Flange

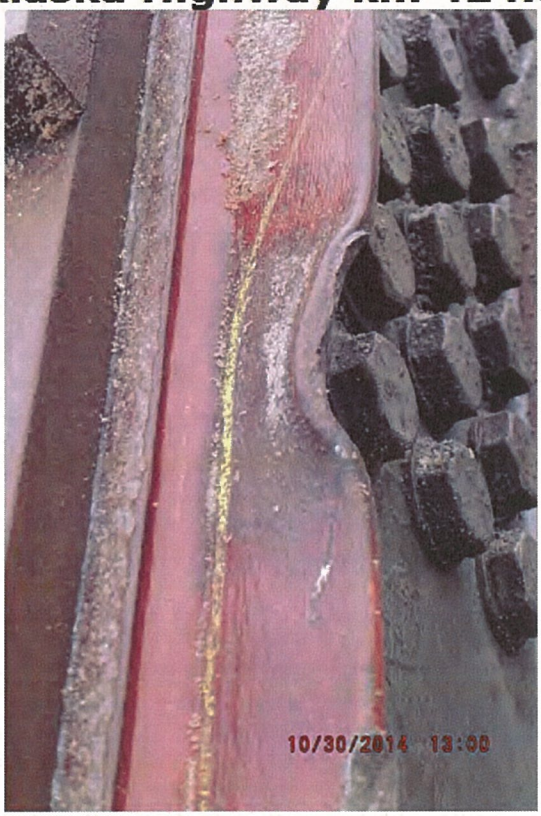
P30 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel - Notch 1 -110 mm x 12 mm Tear

P31 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel - Notch 1 -110 mm x 12 mm Tear

P32 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel - Notches 2, 3 and 4 - 3 mm Deep

P33 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel - Notches 2, 3 and 4 - 3 mm Deep

P34 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel - Notch 5 - 100 mm x 25 mm



P35 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel - Notch 5 - 100 mm x 25 mm

P36 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel - Notch 6 - 30 mm x 3 mm Deep

P37 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel - Notch 6 - 30 mm x 3 mm Deep

P38 - West Truss - Top Chord - Minor Collision Damage to L0-U1 - 6 Notches in Inside Channel

P39 - West Truss - Top Chord U1-U3 Straight

P40 - Previous July 2013 Inspection - West Truss - Looking North - Before Current Collision Damage

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P41 - West Truss - Vertical 1 - No Collision Damage

P42 - East Truss - Looking North - Straight and Plumb

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P43 - West Truss - Vertical 1 and Bottom Chord - No Collision Damage

P44 - East Truss - Looking North - Straight and Plumb

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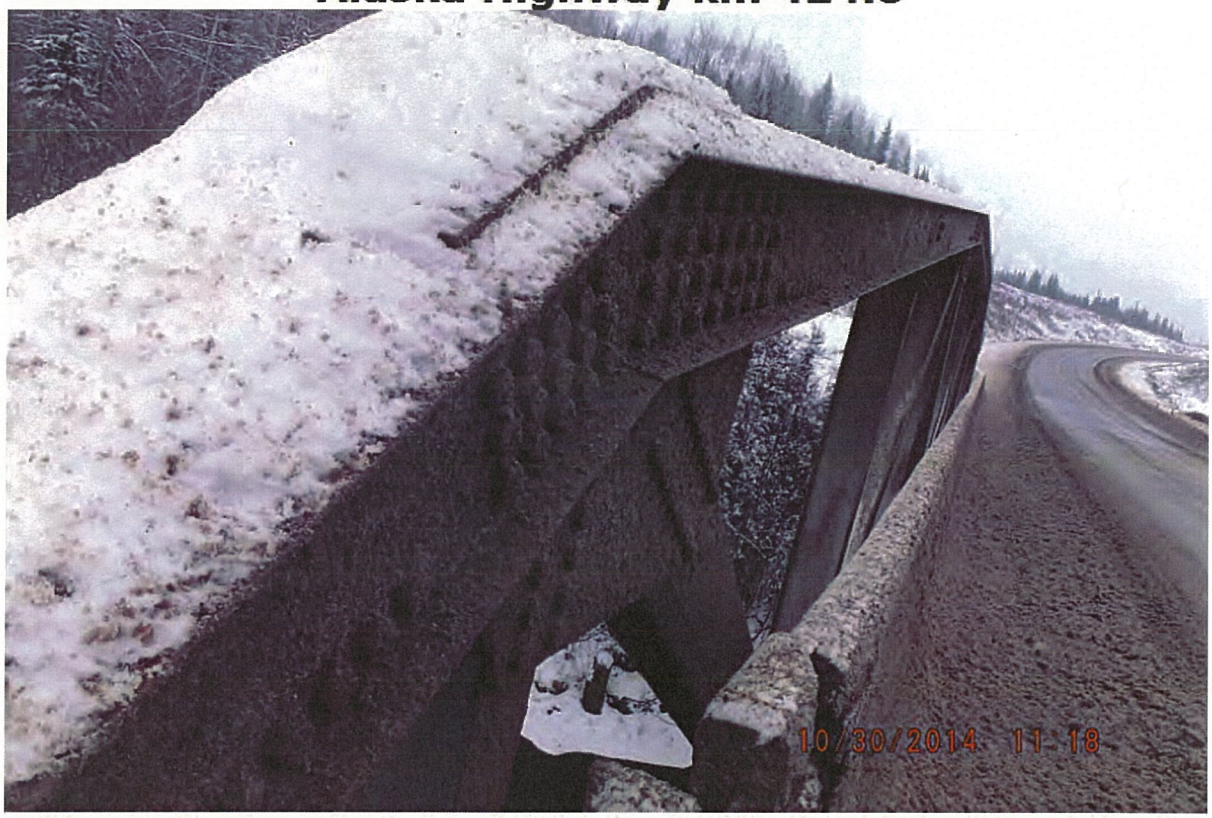

P45 - East Barrier - Top Chord - Looking South at Vertical 7 - No Impact Damage

P46 - East Truss - Vertical 7 - No Collision Damage

P47 - East Truss - Bottom Chord - No Collision Damage - Spalled Barrier Concrete in Bottom Chord

P48 - SE Bearing - Anchor Bolts in Place and Straight

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P49 - SW Bearing - Anchor Bolts in Place and Straight

P50 - NW Bearing - Anchor Bolts in Place and Straight

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P51 - NE Bearing - Anchor Bolts in Place and Straight

P52 - Overall Bridge - Looking South - Collision Damage to East Concrete Bridge Barrier

Jackfish Creek Bridge

Floor Beam System Facing South Abutment

(NW) West Truss

Jackfish Creek Bridge

Facing North abutment

Facing South abutment

Jackfish Creek Bridge

Jackfish Creek Bridge – Pony Truss

Floor Beam System (Facing north abutment)

Jackfish Creek Bridge

(SE Elevation) East Truss

Bottom Chord of Truss

Peterson Creek Bridge

West Elevation

Corroded Web & Bottom Flange

Peterson Creek Bridge

Corroded Girder & Bearing

Corroded Bottom Flange & Drain Pipe

Peterson Creek Bridge

Corroded Girder & Bearing

West Elevation

Peterson Creek Bridge

Corroded Bottom Flange

Girders (South abutment)