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Part 1 General

1.1 SECTION INCLUDES

- .1 General description of the work covered by the contract documents.

1.2 Background and Location of the Work

- .1 The work comprises of repairs to an existing bridge that was constructed inside Banff National Park in 2011.
- .2 The bridge was constructed over the Spray River immediately upstream of the confluence with the Goat Creek river. The bridge is constructed on a hiking, biking and cross country ski trail that connects Banff to Canmore.
- .3 The bridge is located approximately 12 KM from Banff. The Banff side of the bridge (west side) is accessed from a PCA parking lot behind the Banff Springs Hotel. The trail ends on the Canmore side at the Hai Ling Peak Parking Lot that is located past Whiteman's Dam on the Spray Lakes Trail.
- .4 Construction access is from the Banff side as narrow, un-rated bridge crossings from the Canmore side render this access route inaccessible.
- .5 During the floods of June 2013, the Canmore side abutment failed and the high water flows eroded approximate seven (7) meters of the existing east bank opposite the Canmore abutment. Gabion baskets used as for slope protection also failed and sloughed into the river.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Disassembly of Existing Bridge
 - .1 Remove existing bridge running boards, decking cross members. Existing bridge drawings are detailed on the following drawings:

Drawing Number	Year Issued	For Tender	For Reference
PCA S-001	2013	X	
PCA S-002	2013	X	
PCA S-003	2013	X	
PCA S-004	2013	X	
PCA S-005	2013	X	
PCA S-006	2013	X	
PCA C-001	2013	X	
PCA C-002	2013	X	
REI S-001	2011		X
REI S-002	2011		X
REI S-003	2011		X
REI S-004	2011		X
REI S-005	2011		X
REI S-006	2011		X

REI S-007	2011		X
REI S-008	2011		X
REI S-009	2011		X

- .2 Remove existing bridge cross bracing. Ensure existing trusses are securely fastened and will remain upright. Provide temporary support as needed.
 - .3 Disconnect each of the bridge trusses and using helicopter or other lift methods, remove both trusses and temporarily store at a secure location on site.
 - .4 Sawcut and remove a sufficient depth of the existing Banff abutment to ensure that the trail can be properly re-established in this area. No visible concrete is to remain within 300 mm of the finished trail elevation.
 - .5 Remove the entire existing footing on the Canmore side abutment. All concrete above and below the waterline is to be removed and disposed of offsite.
 - .6 Remove all failed gabion baskets that are currently in the river. Salvage all gabion rock for re-use on this project. Cut and dispose of the wire mesh gabion basket material.
- .2 NDT Testing of Existing Components
- .1 Complete NDT testing of the welds on the existing trusses as per Section 13 34 22 of the documents.
 - .2 Verify the following for the existing trusses. Notify Parks Canada if any deviations are found.
 - .1 Overall truss lengths are not as detailed on the drawings
 - .2 Trusses are to be planar and flat with no twist. Note that the initial trusses were fabricated with a slight camber – refer to original fabrication drawings for details.
 - .3 Visually check all wooden deck members for damage. Replace any members that are structurally or functionally unsound.
- .3 New Foundations and Footings
- .1 Design new micropile foundations as per the Drawings. Submit foundation design to Parks Canada for approval.
 - .2 Complete all required site survey and construction layout required for the work. Existing site survey was carried out by Measurements Sciences Inc, Calgary, Alberta, Office phone number (403) 219 0697.
 - .3 Construct new micropile foundations upon PCA approval of the submitted design.
 - .4 Excavate, form and pour new concrete abutments as per the drawings. Supply and install all specified reinforcement, anchor bolts, base plates, pins and pads as per the drawings.
 - .5 Strip and cure all formwork as per the referenced standards.

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- .6 Backfill abutments and grade as per drawings.
 - .4 New Bridge Installation
 - .1 Install the removed bridge trusses onto the new abutments as per the drawings.
 - .2 Re-install the cross bracing between the trusses. New bolting hardware is to be used.
 - .3 Re-install wood decking, running boards, curbs and other removed pieces. Cut and notch any new members supplied to match existing.
 - .5 New Trail Work
 - .1 Construct new trail approaches at either end to tie into the existing trails and into the new bridge alignment generally as shown on the drawings. Exact alignment and details will be coordinated with Parks Canada in the field.
 - .2 New trail construction to be generally in accordance with PCA Trail and Back Country Facility Design Guidelines R(2007).
 - .3 Construct new guardrail fence alongside new trail and in front of existing trail intersection with river on Canmore abutment side. New fence details to be coordinated with PCA and follow PCA Trail and Back Country Facility Design Guidelines. Where the new fence is constructed at the base of the hill on the existing trail width, it is recommended that appropriate sono-tube foundations for the posts be utilized.
 - .6 New Gabion Baskets
 - .1 Remove existing gabion baskets to open up river channel on Banff abutment side as per drawings. Slope area to restore a natural slope.
 - .2 Supply and install new gabion basket walls and boulder spurs as shown on the drawings. Existing gabion rock stockpile located on the approach to the Canmore abutment can be used by Contractor. This stockpile should be reviewed the Contractor for suitability and will not meet all of the volumetric requirements for this project.
 - .3 Supply and install new rip rap rock for the boulder spurs as detailed on the drawings.
 - .7 Restoration / Seeding Work
 - .1 Where new seeding is required, provide as per Mix # 1E, Riparian and Wetlands mix from Jasper National Park Seed Mixes as per the following mix details:
 - Hairy wild rye 13%
 - Awned wheatgrass 13%
 - Tufted hair grass 12%
 - Fringed brome 10%
 - Northern wheatgrass 10%

- Rocky Mountain fescue 10%
- June grass 9%
- Fowl bluegrass 8%
- Alpine bluegrass 7%
- Spike trisetum %

1.4 CONTRACTOR USE OF WORKSITE

- .1 Contractor shall limit use of the Site for the Work, for storage and for access purposes only.
- .2 The general public will continue to have pedestrian access from both sides up to the Worksite. Contractor shall erect sufficient barriers and other barricades to prevent the Public from inadvertently accessing the Worksite during the day or night.
- .3 Contractor shall at all times secure the laydown area and the bridge site from the general public. Contractor should be aware that cyclists and pedestrians may enter the Worksite at any time to continue along the trail.
- .4 The trail at the crossing site and within the construction site will be closed until the new bridge alignment is installed. Contractor is requested to allow for the trail to be open from the time the bridge is installed on the new foundations until in-stream works will need to be completed. Only in-stream work that is a hazard or danger to safety will be justification to temporarily close the trail.
- .5 Contractor is to leave the Worksite in a clean and safe manner at the end of each work day.
- .6 Coordinate use of the Worksite with PCA.
- .7 A small laydown area will be provided by PCA at the Banff side trailhead entrance parking lot. Contractor shall securely fence the laydown area to prevent public access to equipment or materials inside the laydown area.

1.5 DOCUMENTS REQUIRED

- .1 Maintain at the jobsite, one copy of each of the following documents:
 - .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 Copy of approved work schedule

- .9 Health and Safety Plan and other safety related documents
- .10 PCA issued Restricted Access Permit

Part 1 General

1.1 USE OF SITE AND FACILITIES

- .1 Execute all work with the least possible interference or disturbance to the existing access trails, laydown area or river.

1.2 SPECIAL REQUIREMENTS

- .1 No in-stream work activities will be permitted during the 2013 construction season.
- .2 In-stream activity for rip-rap placement and slope regrading work can only occur during the 2014 fish windows. These are to be confirmed with PCA but generally occur during the last two weeks of April and from August 15th to September 1st.
- .3 The Contractor shall provide containment for all construction operations to prevent deleterious material from entering the creek channel.
- .4 Submit intended construction procedures and schedules to confirm compliance with above restrictions.
- .5 The Contractor shall submit an Erosion and Sediment Control Plan for review and approval within 10 days of contract award.
- .6 Any damage to the surrounding vegetation shall be restored to as-is or better condition at Contractor's cost.
- .7 Damage to the access trail must be restored at Contractor's cost to as-is or better condition, to the satisfaction of PCA representative.
- .8 Substantial completion for the initial bridge re-alignment work is January 17, 2014.
- .9 Final project completion date is September 15, 2014.

1.3 SPECIAL ACCESS AND WILDERNESS AREA RESTRICTIONS

- .1 The worksite is within Banff National Park and is a wilderness designated area which results in a limitation on the use of heavy equipment for the work.
- .2 PCA will provide a Restricted Access Permit for the Contractor prior to any work commencing on the worksite.
- .3 Equipment for this site is limited to mini excavators JD 60G (or equivalent) and smaller skid steers, side by side ATV's and helicopters.
- .4 Access from the Banff side trailhead was authorized using Kubota RTV style utility vehicles.
- .5 If work continues through the winter months, Contractor shall be responsible for all required snow clearing and snow removal activities at the laydown area, the access trail to the worksite and the worksite itself. All activities are to be coordinated with and pre-approved by PCA prior to the work.

- .6 Pickup trucks and heavy equipment will not be allowed to access the worksite. The successful Contractor will be required to submit complete details on all proposed construction equipment prior to contract award.
- .7 No on site fuel storage will be allowed. Equipment re-fuelling to be completed from removable / relocatable containers that can be removed from the worksite each evening.
- .8 Contractor is responsible for temporary toilet facilities at the worksite.
- .9 PCA will provide a laydown area for Contractor use at the parking lot adjacent to the trailhead on the Banff side of the trail. This laydown area will be used for storage of equipment, materials, tools and safety supplies.
- .10 Laydown area will be suitably fenced by the Contractor to prevent public access and will be situated and sized to allow continued public access to the trail.
- .11 Public day use of the trail will continue during the construction work. Contractor shall take whatever steps are necessary and prudent to prevent injury to public users of the access trails from Contractor equipment or vehicles.
- .12 For construction equipment access and material transport to the Canmore abutment side, a suitably sized helicopter was used during the initial 2011 construction. Contractor shall be responsible to source a suitably sized helicopter to transport all equipment and material to the Canmore abutment side.
- .13 During the 2011 construction, all concrete for both abutments was transported to site via helicopter from the trailhead parking lot on the Canmore side of the trail. This Parking Lot (and a portion of the access trail from the Canmore side) is situated inside a provincial park and will require the issuance of a Letter of Authority (LOA) from Alberta Tourism, Parks and Recreation prior to use. Contractor is responsible for obtaining any required approvals and LOA's from provincial authorities for any Contractor use of provincial lands in support of the work.

Part 1 General

1.1 WORK INCLUDED

- .1 Preparatory work and operations including, but not limited to, those necessary for the movement of personnel, equipment, camp, buildings, shops, offices, supplies and incidentals to and from the project site.

1.2 RELATED SECTIONS

- .1 Section 01 14 00 Work Restrictions
- .2 Section 01 35 43 - Environmental Procedures
- .3 Section 01 51 00 - Temporary Utilities
- .4 Section 01 52 00 - Construction Facilities
- .5 Section 01 56 00 - Temporary Barriers

1.3 MEASUREMENT AND PAYMENT

- .1 Refer to Contract Documents for Payment Procedures

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 Coordination of the Work, progress meetings, schedules, submittals, and close out procedures.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 32 18 - Construction Schedules
- .3 Section 01 77 00 - Closeout Procedures
- .4 Section 01 78 00 - Closeout Submittals

1.3 COORDINATION

- .1 Coordinate mobilization and the work of this Contract with the work of other contractors where applicable.
- .2 Coordinate field engineering and layout work with the Departmental Representative.

1.4 CONSTRUCTION ORGANIZATION AND START-UP

- .1 The Contractor shall submit all required insurance certificates and bonds.
- .2 Parks Canada will schedule an initial meeting to be held on site within 5 days after award notification to discuss and confirm administrative procedures and responsibilities.
- .3 The initial meeting shall be attended by the Contractor (Project Manager, Project Superintendent, Safety Representative), Parks Canada, and Engineer Representatives (Project Manager and Site Inspectors).
- .4 Meeting agenda shall include, but not necessarily be limited to, the following:
 - .1 Appointment of official representative of participants in Work.
 - .2 Issued for construction documents.
 - .3 Review of construction schedule in accordance with Section 01 32 18.
 - .4 Review of schedule for submission of shop drawings, samples, product literature , etc. in accordance with Section 01 33 00.
 - .5 Review and confirmation of requirements for temporary facilities, offices, storage sheds, utilities, fences in accordance with Section 01 51 00.
 - .6 Review and confirmation of site safety and security procedures in accordance with Section 01 52 00.
 - .7 Review of environmental management plan and procedures.

- .8 Review and confirmation of contract administration documents, procedures, and requirements.
- .9 Discussion of specific technical issues.
- .10 Other relevant project requirements.
- .5 Cost of attending the above meeting will be considered incidental to the Unit Price items and no additional payment will be made.

1.5 REGULAR MEETINGS

- .1 The Work includes attending bi-weekly progress meetings between the Contractor and the Parks Canada at the site or at the Warden's Compound in Banff. The meetings will be called and chaired by Parks Canada.
- .2 Each meeting agenda shall include, but necessarily be limited to, the following:
 - .1 Review and approval of minutes of previous meeting.
 - .2 Review of work progress since previous meeting.
 - .3 Field observations, problems, and conflicts.
 - .4 Problems which impede the construction schedule.
 - .5 Review of material fabrication and delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revisions to construction schedule.
 - .8 Review of the Environmental Management Plan and conformance to the plan.
 - .9 Review of submittal schedules.
 - .10 Conformance to quality standards.
 - .11 Review of site safety and security issues.
 - .12 Other business.
- .3 The Contractor shall attend additional meetings that may be necessary to discuss and resolve specific issues as determined by the Parks Canada.
- .4 The Contractor shall:
 - .1 Be represented at all meetings to the satisfaction of the Parks Canada.
 - .2 Provide physical space and make arrangements for meetings.
 - .3 Reproduce and distribute copies of minutes within three days after each meeting to participants and affected parties not in attendance.
- .5 Parks Canada shall:
 - .1 Prepare agenda for meeting
 - .2 Record minutes to document significant proceedings and decisions and identify action by Parties.
- .6 Cost of attending the above meetings will be considered incidental to the Unit Price items and no additional payment will be made.

1.6 ON-SITE DOCUMENTS

- .1 Maintain at job site, one copy each of the following:
 - .1 Building Permit
 - .2 Contract drawings
 - .3 Specifications
 - .4 Addenda
 - .5 Reviewed shop drawings
 - .6 Change orders
 - .7 Other modifications to Contract
 - .8 Traffic Accommodation Plan
 - .9 Safety Plan
 - .10 Environmental Management Plan
 - .11 Field test reports
 - .12 Project Schedule
 - .13 Product literature
 - .14 Manufacturers' installation and application instructions.

1.7 SCHEDULES

- .1 Prepare, update, and submit construction schedules in accordance with Section 01 32 18 to the Parks Canada.

1.8 SUBMITTALS

- .1 Prepare and submit in accordance with Section 01 33 00 all documents required by the general and technical specification sections of this Contract. Ensure field dimensions and conditions are incorporated where applicable.
- .2 Submit requests for interpretation of Contract Documents to the Departmental Representative.
- .3 Submit requests for product substitutions to the Departmental Representative.
- .4 Submit closeout documents to the Departmental Representative.

1.9 CLOSEOUT PROCEDURES

- .1 Notify Parks Canada when Work is considered ready for Substantial Performance.
- .2 Accompany Parks Canada representative(s) on preliminary inspection to confirm items that are complete or require correction.
- .3 Comply with Parks Canada's instructions for correction of items of Work listed in executed Certificate of Substantial Performance.

- .4 Notify Parks Canada when deficiencies have been corrected and schedule Parks Canada final inspection.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 Preparation and submission of construction progress schedules.

1.2 DEFINITIONS

- .1 Activity: An element of Work performed during course of Project. An activity normally has an expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): A 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, plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Sunday, inclusive, will provide seven 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 non-working periods) required to complete an activity or other Project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: A summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: A significant event in Project, usually completion of major deliverable.
- .8 Project Schedule: The planned dates for performing activities and the planned dates for meeting milestones. A dynamic, detailed record of tasks or activities that must be accomplished to satisfy project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: Overall system operated by Parks Canada to enable monitoring of project work in relation to established milestones.

1.3 REQUIREMENTS

- .1 Ensure 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 20 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.

1.4 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule.
- .2 Ensure detailed Project Schedule includes as a minimum all specific activities and milestones relating to the construction requirements from contract award through to final commissioning.
- .3 Submit detailed schedule to Parks Canada for review and approval.
- .4 Parks Canada will review and return the schedule within 48 hours.

1.5 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on monthly 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.

1.6 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.

1.7 MEASUREMENT AND PAYMENT

- .1 Cost for providing Construction Progress Schedules will be considered incidental to the Work and no additional payment will be made.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Procedures for submitting construction - related documentation.

1.2 RELATED SECTIONS

- .1 Section 01 45 00 - Quality Control.

1.3 GENERAL REQUIREMENTS

- .1 Provide specified submittals to Parks Canada for review. Submit with reasonable promptness and in an orderly sequence to avoid delays in the Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Work affected by submittal shall not proceed 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 Parks Canada. 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 will be considered rejected.
- .6 Notify Parks Canada, in writing at time of submission, of all deviations from requirements of Contract Documents and provide reasons for deviations.
- .7 Obtain field measurements and incorporate into shop drawings and other submittals as required.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Parks Canada review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Parks Canada review.
- .10 Keep one reviewed copy of each submission on site.

1.4 SHOP DRAWINGS AND CONSTRUCTION PROCEDURES

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 The term "construction procedures" means drawings, diagrams, illustrations, schedules, and other documents provided by the Contractor describing the procedure to be implemented to complete a portion of Work.

- .3 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.
- .4 Allow 10 working days for Parks Canada review of each submission.
- .5 Adjustments made on shop drawings by Parks Canada are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Parks Canada and prior to proceeding with Work.
- .6 Make changes in shop drawings as Parks Canada may require, consistent with Contract Documents. When resubmitting, notify Parks Canada in writing of any revisions other than those requested.
- .7 Accompany submissions with transmittal letter containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 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, such as:
 - .1 Fabrication.
 - .2 Layout, dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Mill certificates.
 - .7 Calibration charts.
 - .8 Standards.
 - .9 Operating weights.
 - .10 Concrete mix designs.
 - .11 Schedules and material quantities.

- .9 After Parks Canada review, distribute copies.
 - .1 Submit 6 prints (or one digital copy) of shop drawings for each requirement requested in specification Sections and as the Departmental Representative may reasonably request.
 - .2 Submit 6 copies (or one digital copy) of product data sheets or brochures for requirements requested in specification Sections and as requested by the Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
 - .3 Delete information not applicable to project.
 - .4 Supplement standard information to provide details applicable to project.
 - .5 If upon review Parks Canada discovers no errors or omissions 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.
- .10 The review of shop drawings by the Parks Canada is for sole purpose of ascertaining conformance with general concept. This review will not mean that Parks Canada 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 all requirements of construction and Contract Documents. 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 coordination of Work of all sub-trades.

1.5 SAMPLES

- .1 Submit for review samples as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Parks Canada office.
- .3 Notify Parks Canada in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit product literature and full range of samples.
- .5 Adjustments made on samples by the Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples that the 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.

1.6 REQUIRED CONTRACTOR SUBMITTALS

.1 General

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

.3 Pre-Mobilization Submittals

.4 Submittal Schedule and Acceptance

.1 The Contractor shall submit the plans and programs noted below to the Departmental Representative for review a minimum of 10 working days prior to mobilization to the project site. The Contractor shall not begin any site Work until Parks Canada has authorized acceptance of the submittals in writing.

.2 The Contractor shall not construe the Departmental Representative approval 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 will not relieve the Contractor from the responsibility to conduct the Work in strict accordance with the requirements of Federal or Provincial 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.

.3 Project Schedule - The Contractor shall provide the Departmental Representative with a detailed schedule of the workdays and manpower required to complete each phase of the project (e.g., mobilization, construction sequencing, and demobilization).

.4 Contractor Chain of Command - The Contractor shall submit a list of 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.

.5 Work Plan - The Contractor shall submit a Work Plan describing the Contractor's intended methods of construction including but not limited to the type, numbers and operation of suspended access platforms, type and numbers of coring machines, environmental mitigation strategies and projected number of personnel on site.

.6 Quality Plan - The Contractor shall provide a Quality Plan, as documented in Section 01 45 00 - Quality Control, documenting its written procedures for maintaining the quality of work.

.1 The Contractor shall provide samples of the forms that will be completed to document the results of the inspections.

.2 Construction Access Plan which shall include, but not be limited to, detailed procedures for accessing all areas of the Work.

.3 Environmental Protection Plans which shall meet the requirements of Section 01 35 43 - Environmental Procedures.

- .7 Occupational Health And Safety Program - 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.
- .5 Construction Phase Submittals
- .1 Monthly Progress Reports, on the fifth working day after the end of the month the Contractor shall submit to the Departmental Representative three copies (or one digital copy) of a progress report which shall show actual progress of the Work compared to the Contract Schedule up to the end of that month. The progress report will include a written statement for each work item highlighting progress against the Contract Schedule, and clearly identifying actual or anticipated delay together with the Contractor's proposed corrective action to overcome such delay.
- .2 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. Upon request, the reports shall be made available for review by the Departmental Representative. The Contractor shall submit a summary of all Quality Control inspections conducted to date with each request for payment.
- .3 Shop Drawings - The Contractor shall submit all shop drawings required to fabricate and conduct the work a minimum 10 working days prior to fabrication.
- .4 Reinforcement Schedule indicating bar bending details, lists, quantities of reinforcement, sizes, spacing, locations of reinforcement and mechanical splices if approved by Parks Canada, with identifying code marks to permit correct placement without reference to structural drawings.
- .1 Prepare reinforcement drawings in accordance with Reinforcing Steel Manual of Standard Practice by Reinforcing Steel Institute of Canada.
- .2 Detail lap lengths and bar development lengths to CAN3 A23.3, unless otherwise indicated.
- .3 Provide tension lap splices as indicated on the drawings.
- .4 Construction Procedures - The contractor shall submit procedures for each major component of work describing the order of assembly, the schedule and highlighting milestones.
- .6 Project Completion Submittals
- .1 Record Drawings - The Contractor shall submit sepias 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.

1.7 PROGRESS PHOTOGRAPHS

- .1 Submit professional quality colour photographs (with informative captions) on a bi-weekly basis to clearly illustrate the progress of construction. Photos shall document the existing site conditions prior to any work commencing.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Description of health and safety requirements.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.

1.3 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Province of Alberta.
- .1 Occupational Health and Safety Act.
- .3 American National Standards Institute (ANSI):
- .1 ANSI-10.3, Operations - Safety Requirements for Powder Activated Fastening Systems
- .4 Canadian Standards Association (CSA):
- .1 CSA S269.1 1975 (R1998), Falsework for Construction Purposes
- .2 CSA S269.2 - M87 (R1998), Access Scaffolding for Construction Purposes
- .5 Fire Commission of Canada (FCC):
- .1 FCC No. 301-1982, Standard for Construction Operations
- .2 FCC No. 302-1982, Standard for Welding and Cutting
- .6 National Building Code of Canada (NBC):
- .1 Part 8, Safety Measures at Construction and Demolition Sites

1.4 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 10 working days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
- Contractor's safety policy.
 - Identification of applicable compliance obligations.
 - Definition of responsibilities for project safety/organization chart for project
 - General safety rules for project.
 - Job specific safe work procedures
 - Inspection policy and procedures.
 - Incident reporting and investigation policy and procedures.
 - Occupational Health and Safety meetings
 - Occupational Health and Safety communications and record keeping procedures
 - Results of site specific safety hazard assessment.

- Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Submit 4 copies (or one digital copy) of Contractor's authorized representative's work site health and safety inspection reports to Parks Canada and the authority having jurisdiction, weekly.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit Material Safety Data Sheets (MSDS) to Parks Canada.
- .7 Parks Canada will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 10 days after receipt of plan. Revise plan as appropriate and resubmit plan to Parks Canada within 5 days after receipt of comments from Parks Canada.
- .8 Parks Canada's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 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 Parks Canada.
- .10 On-site Contingency and Emergency Response Plan: Address standard operating procedures to be implemented during emergency situations.

1.5 FILING OF NOTICE

- .1 File Notice of Project with Federal Government or Provincial authorities prior to commencement of Work.

1.6 SAFETY ASSESSMENT

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

1.7 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Parks Canada prior to commencement of Work.

1.8 REGULATORY REQUIREMENTS

- .1 Perform Work in accordance with local regulations of the Parks Canada Agency.

1.9 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Parks Canada may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.10 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.11 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety Act, General Safety Regulation, in Province of Alberta.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.12 UNFORESEEN HAZARDS

- .1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, and follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction. Advise Parks Canada verbally and in writing.

1.13 HEALTH AND SAFETY COORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
 - Have minimum 2 years' site-related working experience specific to activities associated with construction.
 - Have working knowledge of occupational safety and health regulations.
 - 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.
 - Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - Be on site during execution of Work and report directly to and be under direction of the site supervisor.

1.14 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Federal Government and Province having jurisdiction, and in consultation with Parks Canada.

1.15 CORRECTION OF NON-COMPLIANCE

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

1.16 BLASTING

- .1 Blasting or other use of explosives is not permitted without prior receipt of written permission by Parks Canada.

1.17 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Parks Canada.

1.18 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

END OF SECTION

Part 1 General

.1

1.2 REPORTING FIRES

.1 Know location of nearest telephone, including emergency phone number for reporting of fires.

.2 Report immediately all fire incidents to Parks Canada as follows:

.1 Telephone – use Contractor provided satellite phone.

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

.4

1.3 FIRE EXTINGUISHERS

.1 Supply sufficient fire extinguishers, necessary to protect work in progress and contractor's physical plant on site.

1.4 SMOKING PRECAUTIONS

.1 Observe smoking regulations.

1.5 RUBBISH AND WASTE MATERIALS

.1 Keep rubbish and waste materials at minimum quantities.

.2 Burning of rubbish is prohibited.

.3 Removal:

.1 Remove rubbish from work site at end of work day or shift or as directed.

.4 Storage:

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

.2 Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles and remove daily.

1.6 FLAMMABLE AND COMBUSTIBLE LIQUIDS

.1 Handling, storage and use of flammable and combustible liquids governed by current National Fire Code of Canada.

.2 Keep flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing Underwriters' Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires permission of Parks Canada.

.3 Transfer of flammable and combustible liquids will not be carried out in vicinity of open flames or any type of heat-producing devices.

.4 Do not use flammable liquids having flash point below 38 degrees C such as naphtha or gasoline as solvents or cleaning agents.

- .5 Store flammable and combustible waste liquids, for disposal, in approved containers located in safe ventilated area. Keep quantities to a minimum.

1.7 HAZARDOUS SUBSTANCES

- .1 Work entailing use of toxic or hazardous materials, chemicals and/or explosives, or otherwise creating hazard to life, safety or health, in accordance with National Fire Code of Canada.
- .2 When Work is carried out in dangerous or hazardous areas involving use of heat, provide fire watchers equipped with sufficient fire extinguishers.
- .3 Provide ventilation where flammable liquids, such as lacquers or urethanes are used, eliminate sources of ignition.

1.8 QUESTIONS AND/OR CLARIFICATION

- .1 Direct questions or clarification on Fire Safety in addition to above requirements to Parks Canada.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 35 30 - Health and Safety
- .3 Section 01 51 00 - Temporary Utilities
- .4 Section 01 56 00 - Temporary Barriers And Enclosures

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 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.

1.3 National Parks Act

- .1 Contractor shall ensure that all work is performed in accordance with the ordinances, laws, rules and regulations set out in the National Parks Act.

1.4 Environmental Assessment

- .1 Contractor shall ensure that all work is performed in accordance with the ordinances, laws, rules and regulations set out in the included Environmental Assessment.

1.5 FIRES

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

1.6 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site. All construction wastes are to be disposed of at a certified disposal site outside of Banff National Park.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.7 DRAINAGE

- .1 Provide erosion and sediment control plan that identifies type and location of erosion and sediment controls to be provided. The Plan shall 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.
- .2 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

- .3 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .4 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.8 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 the Parks Canada Agency.

1.9 WORK ADJACENT TO WATERWAYS

- .1 Do not operate construction equipment in waterways.
- .2 Do not use waterway beds for borrow material.
- .3 Do not dump excavated fill, waste material or debris in waterways.
- .4 Do not skid logs or construction materials across waterways.
- .5 Avoid indicated spawning beds when constructing temporary crossings of waterways.
- .6 Do not blast under water.

1.10 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.11 HISTORICAL / ARCHAEOLOGICAL CONTROL

- .1 Notify Departmental Representative immediately upon identifying any historical, archaeological, cultural resources, biological resources or wetlands not previously identified.

1.12 NOTIFICATION

- .1 The Parks Canada or Environmental Monitor will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Parks Canada or Environmental Monitor of proposed corrective action and take such action for approval by Parks Canada or Environmental Monitor.
- .3 The Parks Canada or Environmental Monitor 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.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Inspection and testing, administrative and enforcement requirements.
- .2 Contractor's Quality Control Program

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 78 00 - Closeout Submittals.

1.3 TESTING BY THE CONTRACTOR

- .1 Testing required to provide quality control to assure that the Work strictly complies with the Contract requirements will include, but not be limited to:
 - .1 Testing all cast-in-place concrete, grout, reinforcing steel, backfill, precast concrete, structural steel, weld integrity, miscellaneous metals, bearings and all source acceptance testing in accordance with CSA, ASTM and all other applicable standards.
 - .2 All testing specified in the Contract Documents; and
 - .3 Any other testing required as a condition for deviation from the specified Contract procedures.
- .2 The Contractor shall be fully responsible and bear all costs for all quality control testing and shall conduct such testing in the following manner:
 - .1 Provide testing facilities and personnel for the tests and inform the Departmental Representative in advance to enable the Departmental Representative to witness the tests if it so desired;
 - .2 Notify the Departmental Representative when sampling will be conducted;
 - .3 Within one Day after completion of testing, submit test results to the Departmental Representative; and
 - .4 Identify test reports with the name and address of the organization performing all tests, and the date of the tests.
- .3 Approval of tested samples will be for characteristics or use named in such approval and will not change or modify any Contract requirements.
- .4 Testing agencies, their inspectors, and their representatives are not authorized to revoke, alter, relax, enlarge or release any requirement of the Contract Documents, nor to approve or accept any part of the Work.

1.4 CONTRACTOR'S QUALITY CONTROL PROGRAM

- .1 The Contractor shall prepare a Quality Control Program. The purpose of the program is to ensure the performance of the Work in accordance with Contract requirements.

- .2 The Quality Control Program shall be described in a Quality Control Plan. The Contractor shall submit the Plan to the Departmental Representative for review in accordance with Section 01 33 00, Submittal Procedures. The Plan shall develop a logical system for tracking and documenting the Quality Control of the Work. A systematic format and a set of procedures patterned on a recognized Quality Control Standard will be acceptable, subject to review by the Departmental Representative.
- .3 The Quality Control Plan shall include the following information:
 - .1 Details of any non-conformance, including identification and recording of deficiencies, tagging procedures for "HOLD" or "REJECT" items, and final disposition of non-conformance forms by the Quality Control Manager;
 - .2 Inspection and test checklists, including tabulated checklists describing all manufacturing and delivery activities such as Inspection or Test, frequency of tests, description of tests, acceptance criteria of tests, such as verification, witnessing or holding tests and sign-off by the Quality Control Manager and Parks Canada, if Parks Canada witnesses the tests; and
- .4 The Contractor shall appoint a Quality Control Manager who shall report regularly to the Contractor's management at a level which shall ensure that Quality Control requirements are not subordinated to manufacturing, construction or delivery. The Quality Control Manager shall be empowered by the Contractor to resolve quality matters.
- .5 The Quality Control Plan shall include samples of all forms to be filled in by the Quality Control Inspectors. All forms shall be signed by the Quality Control Manager and submitted promptly to the Departmental Representative who will add its review signature.
- .6 An independent check of all Work shall be performed by the Contractor. The Contractor shall appoint Quality Control Inspectors to ensure compliance of products and workmanship with Contract requirements. The same personnel may not be used to perform a given task and to check the quality and accuracy of the task.
- .7 At completion of the Work a bound and itemized copy of all Quality Control documents and reports shall be prepared by the Contractor's Quality Manager and submitted to the Departmental Representative.

1.5 INSPECTION

- .1 Allow Parks Canada access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give 10 days notice requesting inspection if Work is designated for special tests, inspections or approvals by Parks Canada instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Parks Canada may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

1.6 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Parks Canada for purpose of inspecting and/or Quality Assurance testing portions of Work. Cost of such services will be borne by Parks Canada.
- .2 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .3 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 Parks Canada at no cost to Parks Canada. Pay costs for retesting and re-inspection.

1.7 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Cooperate to provide reasonable facilities for such access.

1.8 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Parks Canada 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 Parks Canada it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Parks Canada may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Parks Canada.

1.9 REPORTS

- .1 Submit 3 copies (or one digital copy) of inspection and test reports to Departmental Representative.
- .2 Provide copies to Subcontractor of work being inspected or tested.

1.10 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as may be requested.

1.11 MILL TESTS

- .1 Submit mill test certificates as required of specification Sections.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 Temporary utilities during construction.

1.2 RELATED SECTIONS

- .1 Section 01 52 00 - Construction Facilities.
- .2 Section 01 35 43 - Environmental Procedures

1.3 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.4 DEWATERING

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

1.5 WATER SUPPLY

- .1 Contractor to supply potable water for construction use, and potable bottled water for all on site personal.
- .2 Refer to Section 01 35 43 Environmental Procedures for use of natural water sources.

1.6 TEMPORARY HEATING AND VENTILATION

- .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- .2 Construction heaters used inside confined spaces must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.
- .3 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.
- .4 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .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.

1.7 TEMPORARY POWER AND LIGHT

- .1 Contractor shall provide and pay for temporary power during construction for temporary lighting, offices, operating of power tools or other construction requirements.

1.8 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for temporary telephone, satellite phone, fax, and data hook up, lines necessary for own use and use of Parks Canada.

1.9 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work as per Section 01 35 43 Environmental Procedures.
- .2 Burning rubbish and construction waste materials is not permitted on site.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 This Section applies to construction aids, parking, offices, and temporary barriers. These are to be generally used in the Laydown Area to be established offsite as per Section 01 14 00 Site Restrictions. Scaffolding and Barrier requirements as applicable to on site work.

1.2 RELATED SECTIONS

- .1 Section 01 14 00 Site Restrictions
- .2 Section 01 51 00 - Temporary Utilities.
- .3 Section 01 35 43 - Environmental Procedures

1.3 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-Z321-96, Signs and Symbols for the Occupational Environment.
- .2 National Building Code

1.4 CONSTRUCTION SIGNAGE

- .1 No signs or advertisements other than warning signs are permitted on site.
- .2 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN3-Z321.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose off site on completion of project or earlier if directed by Parks Canada.

1.5 FENCING

- .1 Provide fences around trees and plants designated to remain. Protect from damage by equipment and construction procedures.
- .2 Fence all dangerous areas, such as open excavations, to isolate them from the public and wildlife.

1.6 SCAFFOLDING

- .1 Scaffolding or temporary platforms supporting workers shall be designed by a Professional Engineer registered in Alberta.
- .2 Stamped drawings showing all details and erection procedure shall be provided 10 working days prior to erecting scaffolding for workers.
- .3 The Departmental Representative shall inspect the scaffolding or temporary platform to ensure conformance to the design.

1.7 CONSTRUCTION PARKING

- .1 All access and parking is to be strictly in accordance with Section 01 14 00 Work Restrictions.
- .2 Provide and maintain adequate access and parking at the project site, which complies with Section 01 35 43 Environmental Procedures.
- .3 Build and maintain temporary access roads with the approval of the Departmental Representative and provide snow removal during periods of Work.
- .4 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

1.8 SECURITY

- .1 If required by the Contractor, provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays. For extended shut downs the Contractor shall provide the level of security as required to protect the Work.

1.9 OFFICES

- .1 Provide office heated to 22 °C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.

1.10 BARRIERS

- .1 Provide temporary traffic barriers between construction facilities or activities occurring within 10m of public roads or property unless it is deemed by the Departmental Representative that the facility or activity does not pose a traffic hazard.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 The Contractor shall supply, erect, maintain and dismantle all necessary platforms, scaffolds, swing stages and related access equipment to facilitate execution and inspection of work.

1.2 REQUIREMENTS

- .1 Access and support structures shall incorporate such safeguards as curtains, drop sheets, framed barriers or similar devices to protect the public, site personnel, vehicles, building components, property and the environment from damage and/or contamination caused by the Contractor's operations in accordance with governing standards.
- .2 Scaffolding systems and support structures shall be designed, erected, maintained and dismantled in accordance with CAN/CSA S269.2-M87 and the requirements of the Alberta Occupational Health and Safety Standards and any local regulations applicable to the specific workplace. In any case of conflict or discrepancy, the most stringent requirements shall apply.
- .3 At least 10 working days prior to commencement of the work, the Contractor shall prepare and submit to the Parks Canada five (5) sets (or one digital copy) of detailed drawings and specifications for the proposed work platforms, scaffolds, swing stages and related access equipment. The drawings shall bear the seal and signature of a qualified Professional Engineer, registered in the Province of Alberta.
- .4 Cutting or drilling of existing structure components for support of access structures must not be done without written permission by the Departmental Representative. Where permission is granted, all anchors shall be removed and the existing components appropriately repaired to the Departmental Representative's satisfaction upon completion of work.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 Provide temporary controls to prevent unauthorized entry to the laydown area or the work site and in order to execute Work safely and securely.
- .2 Remove from site all such work after use.

1.2 ENCLOSURES AND BARRIERS

- .1 Erect temporary site enclosure.
- .2 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.3 GUARDRAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations and as required by governing authorities.

1.4 ACCESS TO SITE

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

1.5 FIRE ROUTES

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.6 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Requirements pertaining to quality of products and workmanship, product availability, storage, handling, and protection, manufacturers' instructions, concealment, and remedial work.

1.2 REFERENCE STANDARDS

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether any product or system is in conformance with applicable standards, Parks Canada reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be borne by Parks Canada in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .5 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.

1.3 PRODUCT 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 Contractor of his 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 Parks Canada based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

1.4 AVAILABILITY

- .1 Immediately after signing contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Parks Canada 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 the event of failure to notify Parks Canada at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Parks Canada reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 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 Remove and replace damaged products at own expense and to satisfaction of Parks Canada.
- .5 Touch-up damaged factory finished surfaces to Park's satisfaction. Use touch-up materials to match original. Do not paint over nameplates.

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 Parks Canada in writing, of conflicts between specifications and manufacturer's instructions, so that Parks Canada may establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Parks Canada to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 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 the Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in his or her required duties. Parks Canada 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 the Departmental Representative whose decision is final.

1.8 CONCEALMENT

- .1 Departmental Representative will inspect all work prior to any concrete pours. The Contractor shall notify the Parks Canada 24 hours before any pour for inspection.

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.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 Field survey services to verify existing dimensions and elevations and for setting out new work.
- .2 Recording of existing conditions found.

1.2 QUALIFICATIONS OF SURVEYOR

- .1 A qualified registered surveyor licensed to practise in Alberta, acceptable to the Departmental Representative, shall do the surveying of critical elements.

1.3 SURVEY REFERENCE POINTS

- .1 Initial survey of the site was completed by:

Measurement Sciences Inc.
6921 48th Street SE
Calgary, AB T2C 5A4
Contact: Purdy Smith
Email: purdy.smith@msciences.ca
Cell: (403) 512 1230

- .2 Where required, existing base horizontal and vertical control points will be provided by the Contractor.

1.4 SURVEY VERIFICATION

- .1 Departmental Representative may elect to verify surveys. Verification of the survey by Parks Canada does not affect the Contractor's responsibility for the correctness and accuracy of the survey.

1.5 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 On completion of construction, prepare a certified survey showing dimensions, locations, angles and elevations of the Work.

1.6 SUBMITTALS

- .1 Submit name and address of Surveyor to the Departmental Representative.
- .2 On request of the Departmental Representative, submit documentation to verify accuracy of field engineering work.
- .3 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with the Contract Documents.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Administrative procedures preceding preliminary and final inspections of Work.

1.2 RELATED SECTIONS

- .1 Section 01 78 00 - Closeout Submittals.

1.3 INSPECTION AND DECLARATION

- .1 Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
- .2 Notify the Departmental Representative in writing of satisfactory completion of Contractor's Inspection, that corrections have been made and request Departmental Representative's inspection.
- .3 Conduct a joint inspection of the Work with the Departmental Representative to identify observable defects or deficiencies. Contractor shall correct Work accordingly.
- .4 Submit written certificate that Work has been completed and inspected for compliance with Contract Documents and that all defects have been corrected and deficiencies have been completed.
- .5 When items noted above are completed, request final inspection of Work. If Work is deemed incomplete by the Departmental Representative, complete outstanding items and request re-inspection.

END OF SECTION

Part 1

General

1.1 WORK INCLUDED

- .1 Preparation and submission of as-built records, product data, warranties, and final site survey information.

1.2 RELATED SECTIONS

- .1 Section 01 45 00 - Quality Control.
- .2 Section 01 77 00 - Closeout Procedures.
- .3 Section 01 33 00 - Submittal Procedures

1.3 SUBMISSION

- .1 Prepare closeout submittals using personnel experienced in bridge construction and maintenance.
- .2 Copy will be returned after final inspection, with the Departmental Representative's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 Within three weeks following Substantial Performance of the Work, submit to the Departmental Representative, four final copies and one digital copy of closeout submittals in English.
- .5 Furnish evidence as to type, source and quality of products provided.

1.4 FORMAT

- .1 Organize data in the form of an instructional manual and one all-encompassing PDF digital file.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose-leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by Section numbers and sequence with Table of Contents.
- .6 Provide tabbed flyleaf for each separate product and system, with typed description of product.
- .7 Text: Manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dwg format on CD along with corresponding PDF files.

1.5 CONTENTS - EACH VOLUME

- .1 Table of Contents: provide title of project;
 - .1 date of submission; names of those who prepared submittals.
 - .2 addresses, and telephone numbers of Owner, Engineer, and Contractor with name of responsible parties,

- .3 schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.6 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for the Departmental Representative 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 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Parks Canada.

1.7 AS BUILT RECORDS

- .1 Record information on set of black line bond drawings.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Legibly mark each item to record actual construction, including:

- .1 Measured locations, dimensions and elevations of all key bridge components and approach roadworks.
- .2 Measured locations of utility accommodation referenced to features of construction.
- .3 Field changes of dimension and detail.
- .4 Changes made by change orders.
- .5 Details not on original Contract Drawings.
- .6 References to related shop drawings and modifications.
- .5 Specifications: legibly 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.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.

1.8 FINAL SURVEY

- .1 Submit final site survey certificate to confirm that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.9 MATERIALS AND FINISHES

- .1 Provide specifications for applied materials and finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.

1.10 WARRANTIES AND BONDS

- .1 Separate each warranty or bond with index tab sheet keyed to Table of Contents listing.
- .2 Warranty period for all bridge bearings and assemblies shall be five (5) years from the date of final acceptance as determined by the Departmental Representative.
- .3 Unless otherwise specified, all materials incorporated into the Work must be new and undamaged. Both workmanship and materials must be of the quality specified in the Contract Documents.
- .4 The Contractor shall maintain, at no cost to Parks Canada, the work and every part thereof in reasonable working order and complete repair during the period of two years from the date of written acceptance. Notwithstanding the generality of the foregoing, the Contractor will not be liable for:
 - .1 Damage caused by Parties who are strangers to the Contract, or
 - .2 Damage resulting from malicious acts of other parties, or
 - .3 Damage resulting directly from the operations of Parks Canada or its equipment, or
 - .4 Damages for which Parks Canada Agency has specifically assumed responsibility in writing, or
 - .5 Any condition which in the opinion of the Departmental Representative results from normal wear and tear, or

- .6 Acts or omissions which in the opinion of the Departmental Representative are beyond the control of the Contractor

Where in each case the damage or condition arose subsequent to the issuance of acceptance of work.

1.11 MEASUREMENT AND PAYMENT

- .1 Cost for providing Closeout Submittals will be considered incidental to the Work and no additional payment will be made.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Requirements pertaining to the use, handling, transportation, and disposal of hazardous materials.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 43 - Environmental Procedures

1.3 REFERENCES

- .1 Export and Import of Hazardous Waste Regulations (EIHWR Regulations), SOR/92-637.
- .2 National Fire Code of Canada (Latest Edition).
- .3 Transportation of Dangerous Goods Act (TDG Act) 1992, (T-19.01).
- .4 Transportation of Dangerous Goods Regulations (TDGR), (SOR/85-77, SOR/85-585, SOR/85-609, SOR/86-526).

1.4 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.

1.5 SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Parks Canada 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 Parks Canada that identifies all hazardous materials, their use, their location, personal protective equipment requirements, and disposal arrangements.

1.6 STORAGE AND HANDLING

- .1 Coordinate storage of hazardous materials with Parks Canada and abide by internal requirements for labelling 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 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.
- .7 Report spills or accidents immediately to the Departmental Representative and the ESO. Submit a written spill report to the Departmental Representative within 24 hours of incident.

1.7 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 Parks Canada.
 - .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 the Departmental Representative.
 - .8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to the 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 or 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

Part 1 General

1.1 WORK INCLUDED

- .1 Formwork and related accessories for new concrete construction work.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 35 43 - Environmental Procedures.
- .3 Section 03 20 00 - Concrete Reinforcing
- .4 Section 03 30 00 - Cast-In-Place Concrete

1.3 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA-A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices.
 - .2 CAN/CSA-O86-01, Engineering Design in Wood (Limit States Design).
 - .3 CSA O121-M1978, Douglas Fir Plywood.
 - .4 CSA O151-04, Canadian Softwood Plywood.
 - .5 CSA O153-M1980 (R2003), Poplar Plywood..
 - .6 CSA O437 Series-93 (R2006), Standards for OSB and Waferboard.
 - .7 CSA S269.1-1975 (R2003) Falsework for Construction Purposes.
 - .8 CAN/CSA-S269.3-M92, (R2003) Concrete Formwork.
- .2 Council of Forest Industries of British Columbia (COFI)
 - .1 COFI Exterior Plywood for Concrete Formwork.

1.4 SHOP DRAWINGS

- .1 Submit shop drawings for formwork in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, ties, liners, and locations of temporary embedded parts. Comply with CAN/CSA-S269.3 for formwork drawings.
- .3 Indicate formwork design data such as permissible rate of concrete placement and temperature of concrete in forms.
- .4 Indicate sequence of erection and removal of formwork.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 35 43, Environmental Procedures.
- .2 Place materials defined as hazardous or toxic waste in designated containers.
- .3 Ensure emptied containers are sealed and stored safely for disposal away from the public and unauthorized personnel.
- .4 Use sealers, form release and stripping agents that are non-toxic, biodegradable and have zero or low VOC's.

1.6 MEASUREMENT AND PAYMENT

- .1 No measurement will be made under this Section. Include costs in items of work for which concrete formwork is required.

Part 2 Products

2.1 WOOD FORMING MATERIALS

- .1 For concrete without special architectural features, use wood and wood product formwork materials to CSA-O121 - CAN/CSA-O86 - CSA O437 Series - CSA-O15].

2.2 FABRICATION AND ERECTION

- .1 Verify lines, levels and centres before proceeding with formwork and ensure dimensions agree with drawings.
- .2 Fabricate and erect in accordance with CSA S269.1.
- .3 Do not place shores and mud sills on frozen ground.
- .4 Provide site drainage to prevent washout of soil supporting mud sills and shores.
- .5 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA-A23.1.
- .6 Align form joints and make watertight. Keep form joints to minimum.
- .7 Use 20 mm chamfer strips on external corners and/or 25 mm fillets at interior corners and joints, unless specified otherwise.
- .8 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.
- .9 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections. Assure that all anchors and inserts will not protrude beyond surfaces designated to receive applied finishes.

2.3 REMOVAL AND RESHORING

- .1 Leave formwork in place for a minimum period of 5 days after placing concrete.
- .2 Remove formwork when concrete has reached 75% of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate re-shoring.

- .3 Provide all necessary re-shoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.
- .4 Re-use of formwork material is subject to requirements of CAN/CSA-A23.1.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 Supply and placement of reinforcing steel for new concrete construction work.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 43 - Environmental Procedures.
- .3 Section 03 30 00 - Cast-In-Place Concrete.

1.3 SHOP DRAWINGS

- .1 Prepare and submit shop drawings of concrete reinforcing in accordance with Section 01 33 00.
- .2 Clearly indicate bar sizes, locations, and spacing, bending and cutting schedules, finishes, supporting and spacing devices, and quantities. Use large scale details for areas of congested reinforcement.
- .3 Detail concrete reinforcing in accordance with the RSIC Manual of Standard Practice
- .4 Review of shop drawings by the Parks Canada shall not relieve the Contractor from responsibility for errors and omissions

1.4 MEASUREMENT AND PAYMENT

- .1 No measurement will be made under this Section. Include costs for reinforcing steel in items of work for which it is required.

1.5 REFERENCES

- .1 American Concrete Institute (ACI)
 - .1 ACI 315R-80, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure.
- .2 American National Standards Institute/American Concrete Institute (ANSI/ACI)
 - .1 ANSI/ACI 315-80, Details and Detailing of Concrete Reinforcement.
- .3 American Society for Testing and Materials (ASTM)
 - .1 ASTM A 775/A 775M- 91c, Specification for Epoxy-Coated Reinforcing Steel Bars.
- .4 Canadian Standards Association (CSA)
 - .1 CAN/CSA-A23.1- 04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices.
 - .2 CAN3-A23.3- 04, Design of Concrete Structures.

- .3 CSA G30.3-M1983 (R1998), Cold Drawn Steel Wire for Concrete Reinforcement.
- .4 CSA G30.5-M1983 (R1998), Welded Steel Wire Fabric for Concrete Reinforcement.
- .5 CSA G30.14-M1983 (R1998), Deformed Steel Wire for Concrete Reinforcement.
- .6 CSA G30.15-M1983 (R1998), Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
- .7 CAN/CSA-G30.18-M92 (R2002), Billet-Steel Bars for Concrete Reinforcement.
- .8 CSA-G40.21-04, Structural Quality Steel.
- .9 CSA W186-M1990 (R2007) Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 35 43, Environmental Procedures.

Part 2 Products

2.1 MATERIALS

- .1 Substitute different size bars only if permitted in writing by Parks Canada.
- .2 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18.
- .3 Welded Wire Mesh: weldable low alloy steel, deformed bars to CAN/CSA-G30.18.
- .4 Cold-drawn annealed steel wire ties: to CSA G30.3.
- .5 Chairs, bolsters, bar supports, spacers: to CAN/CSA-A23.1.
- .6 Mechanical splices: subject to approval of Parks Canada.
- .7 Plain round bars: to CAN/CSA-G40.21.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CAN/CSA-A23.1, ANSI/ACI 315, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada, unless indicated otherwise.
- .2 Obtain Parks Canada approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Upon approval of Parks Canada, weld reinforcement in accordance with CSA W186.
- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

2.3 SOURCE QUALITY CONTROL

- .1 Provide Parks Canada with certified copies of all mill test reports for reinforcing steel, showing physical and chemical analysis, minimum 4 weeks prior to commencing reinforcing work.
- .2 Inform Parks Canada of proposed source of material to be supplied.

Part 3 Execution

3.1 FIELD BENDING

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Parks Canada.
- .2 When field bending is authorized, bend without heat, applying a slow and steady pressure.
- .3 Replace bars which develop cracks or splits.

3.2 PLACING REINFORCEMENT

- .1 Place reinforcing steel as indicated on reviewed placing drawings and in accordance with CAN/CSA-A23.1.
- .2 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.
- .3 Ensure cover to reinforcement is maintained during concrete pour.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 Cast-in-place concrete for bridge substructure components include abutments pile cap and abutments curbs.

1.2 RELATED SECTIONS

- .1 Section 01 35 43 - Environmental Procedures.
- .2 Section 03 10 00 - Concrete Forming.
- .3 Section 03 20 00 - Concrete Reinforcing.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM). In all cases the latest edition of the specified code shall apply.
 - .1 ASTM C109/C109M, Test Method for Compressive Strength of Hydraulic Cement Mortars using 50-mm Cube Specimens.
 - .2 ASTM C260, Specification for Air-Entraining Admixtures for Concrete.
 - .3 ASTM C309, Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - .4 ASTM C494, Specification for Chemical Admixtures for Concrete.
 - .5 ASTM C827 Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures.
 - .6 ASTM D1751, Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non extruding and Resilient Bituminous Types).
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

- .3 Canadian Standards Association (CSA)
 - .1 CAN/CSA-A5, Portland Cement.
 - .2 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.
 - .3 CAN/CSA-A23.2, Methods of Test for Concrete.
 - .4 CAN/CSA-A23.5-M86(R1992), Supplementary Cementing Materials.
 - .5 CAN/CSA A363-M88(R1996), Cementitious Hydraulic Slag.

1.4 CERTIFICATES

- .1 Submit certificates in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Minimum 10 working days prior to starting concrete work, submit to the Departmental Representative manufacturer's test data and certification by qualified independent inspection and testing laboratory that following materials will meet specified requirements:
 - .1 Portland cement.
 - .2 Supplementary cementing materials.
 - .3 Admixtures.
 - .4 Aggregates.
 - .5 Water.
- .3 Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CAN/CSA-A23.1.
- .4 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CAN/CSA-A23.1.
- .5 Provide certification that the alkali-aggregate reactivity and iron content of the materials has been examined and meets the requirements.

1.5 QUALITY ASSURANCE

- .1 Minimum 10 working days prior to starting concrete work, submit proposed quality control procedures in accordance with Section 01 45 00 - Quality Control for Departmental Representative's approval for following items:
 - .1 Hot weather concreting;
 - .2 Cold weather concreting;
 - .3 Curing;
 - .4 Finishing;
 - .5 Formwork removal.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 35 43, Environmental Procedures.
- .2 Use trigger operated spray nozzles for water hoses.
- .3 Designate a cleaning area for tools to limit water use and runoff.
- .4 Carefully coordinate the specified concrete work with weather conditions.
- .5 Ensure emptied containers are sealed and stored safely for disposal away from the public and unauthorized personnel.
- .6 Prevent plasticizers, water-reducing agents and air-entraining agents from entering drinking water supplies or streams. Using appropriate safety precautions, collect liquid or solidify liquid with an inert, non-combustible material and remove for disposal. Dispose of all waste in accordance with applicable local, provincial and national regulations.
- .7 Choose least harmful, appropriate cleaning method which will perform adequately.

Part 2 Products

2.1 MATERIALS

- .1 Normal Portland cement: Type GU, to CAN/CSAA3001-03.
- .2 Supplementary cementing materials: to CAN/CSA-A23.5.
- .3 Cementitious hydraulic slag: to CAN/CSA-A363.
- .4 Fly Ash: To CAN/CSA - A3001-03, Type "F:" or "CI". Only approved compatible super plasticizing admixtures and air entraining agents shall be used with the fly ash. Characteristic data for fly ash showing conformance to standards must be submitted.
- .5 Water: to CAN/CSA-A23.1.
- .6 Aggregates: to CAN/CSA-A23.1. Coarse aggregates to be normal density.
- .7 Air entraining admixture: to ASTM C260.
- .8 Chemical admixtures: to ASTM C494. Calcium chloride, accelerators and air-reducing agents shall not be used.
- .9 Concrete retarders: to ASTM C494 water based. Do not allow moisture of any kind to come in contact with the retarder film. Parks Canada to approve set retarding admixtures.
- .10 Weep hole tubes: PVC plastic.

2.2 MIXES

- .1 Proportion normal density concrete in accordance with CAN/CSA-A23.1, Alternative 1

- .2 Proportion all concrete mixes in accordance with the following Table:

Component	Minimum 28 - Day Compressive Strength (MPa)	Cement Type	Supplementary Cementing Materials	Total Air Content (%)	Nominal Size of Coarse Aggregate (mm)	Slump Range* (mm)	Maximum Water/Cementitious Material Ratio
Abutment Pile Caps	35	GU	Max 15% Fly Ash	5 - 8	20	50 - 80	0.45
Abutment Curbs	35	GU	Max 15% Fly Ash	5 - 8	20	50 - 80	0.45

* Slump shall not exceed 150 mm with superplasticizer.

- .3 Gradation limit for the fine aggregate shall conform to CSA A23.1 except that the amount of material passing the 160 µm shall not exceed 5%.
- .4 Gradation limits for the 20 mm aggregate shall conform to CSA A23.1 and the maximum combination of flat and elongated particles (3:1 ratio), as determined by CSA A23.2-13A, shall not exceed 10% of the mass of coarse aggregate.
- .5 The temperature of the centre of the in-situ concrete shall not fall below 10°C or exceed 60°C and the temperature difference between the centre and the surface shall not exceed 20°C.
- .6 Concrete mixes that will be placed by concrete pump shall be designed for pumping.
- .7 For initial mixing operations or changes in source of water or aggregates, the mix adopted shall be designed for an excess compressive strength of 10% above the specified 28 day nominal compressive strength. After the mix has been adequately proven as to strength and performance, adjustment may be undertaken, but only with the acceptance of the Parks Canada. If, during the progress of the work, the mix design is found to be unsatisfactory for any reason including poor workability, the Contractor shall make the necessary adjustments. Notwithstanding Parks Canada review of the design mix, it remains the Contractor's responsibility that the concrete meets all the requirements of this Specification.

2.3 AGGREGATE TESTS

- .1 For each mix design the following aggregate analysis shall be provided:
- .1 "Fine and Coarse Aggregate Sieve" (CSA A23.2-2A)
 - .2 Amount of material finer than 80 µm in aggregate (CSA A23.2-5A)
 - .3 "Organic Impurities in Sands for Concrete" (CSA A23.2-7A)
 - .4 "Results of deleterious substances and physical properties of aggregates included in Table 12, CSA A23.1-04"
 - .5 "Assessment of Potential for Deleterious Alkali-Aggregate Reactivity (AAR)" (CSA A23.2-27A)
 - .6 "Petrographic Examination of Coarse Aggregate for Concrete" shall be required for mixes containing silica fume.
 - .7 "Sources of proposed aggregate"

- .2 The analysis of the aggregates shall be current and fully represent the material to be used in production. Sampling and testing shall have been done no more than 90 days prior to concrete production. Additional analyses of more recent sampling shall be provided as required to confirm that the aggregates continue to meet requirements. A break in production of a particular class of concrete shall not constitute the need for additional testing when the Contractor provides conclusive evidence that the material initially tested, is still representative.
- .3 If the fine aggregate consists of a blend from more than one source, the "Fine Aggregate Sieve" analysis shall show the gradation of the blended fine aggregates. Similarly in the case of blended coarse aggregates, the "Coarse Aggregate Sieve" analysis shall indicate the gradation of the blended coarse aggregates.
- .4 Fine aggregate, tested in accordance with CSA Test Method A23.2-7A, "Organic Impurities in Sands for Concrete", shall produce a colour not darker than the Standard colour (Organic Plate Number 3). Aggregate producing a colour darker than the Standard colour will be rejected in the absence of a satisfactory record of performance of a similar class of concrete (minimum 30 tests over the last 12 months); provisions 4.2.3.3.2 (a) & (b) of CSA Standard CAN3-A23.1-04 shall not apply.
- .5 The potential for deleterious alkali-aggregate reactivity shall be assessed in accordance with CSA A23.2-27A. This assessment shall include the risk level associated with structure size and environment, the level of prevention related to service life requirements and the determination of the appropriate preventative measures. Current (less than 18 months old) test data evaluating the potential alkali-silica reactivity of aggregates tested in accordance with CSA A23.2-14A or CSA A23.2-25A is required. In the absence of current test data and outside of areas of known highly reactive aggregate, the aggregate shall be presumed to be moderately reactive.
- .6 Petrographic analysis shall be performed by an experienced qualified petrographer of a CSA certified laboratory in accordance with CSA A 23.2-15A. The (weighted) petrographic number shall not exceed 130, and the ironstone content shall not exceed 0.8%. The results shall be certified by a Professional Geologist, or Geological Engineer registered in the Province of British Columbia and indicate that the aggregate is suitable for the intended use.

Part 3 Execution

3.1 PREPARATION

- .1 Obtain Parks Canada approval before placing concrete. Provide 48 hours notice prior to placing of concrete.
- .2 Pumping of concrete is permitted only after approval of equipment and mix.
- .3 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .4 Prior to placing of concrete, obtain Parks Canada approval of proposed method for protection of concrete during placing and curing.
- .5 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .6 Do not place load upon new concrete until authorized by Parks Canada.

3.2 CONSTRUCTION

- .1 Do cast-in-place concrete work in accordance with CAN/CSA-A23.1.
- .2 Sleeves and Inserts.
 - .1 Where approved by Parks Canada, set sleeves, ties, pipe hangers and other inserts and openings as indicated on the Drawings or specified elsewhere.
 - .2 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of modifications from Parks Canada before placing of concrete.
 - .3 Check locations and sizes of sleeves, inserts, and openings shown on drawings.
- .3 Delivery
 - .1 Concrete shall be delivered and discharged within 90 minutes from the time of batching.
 - .2 Truck mixers may be used to batch concrete on site provided they are of the revolving drum type, watertight, and so constructed that uniform distribution of the materials is ensured.
- .4 Temperature of concrete at discharge shall be between 10° C and 22° C
- .5 Finishing
 - .1 Finish concrete in accordance with CAN/CSA-A23.1 and the Drawings.
 - .2 Use procedures acceptable to Parks Canada to remove excess bleed water. Ensure surface is not damaged.
 - .3 Use curing compounds compatible with applied finish on concrete surfaces.

3.3 PROTECTION

- .1 Protection and curing for concrete placed between September 30 and March 15 shall comply with following requirements in addition to the cold weather requirements of CAN/CSA-A23.1.
 - .1 Protect concrete with windproof shelter of canvas or other material to allow free circulation of inside air around fresh concrete. At no point let walls of shelter touch formwork. Provide sufficient space for removal of formwork for finishing. Use heating equipment approved by Parks Canada. Vent the products of combustion outside protective shelter. Equipment to be capable of keeping inside air at a constant temperature that is sufficiently high enough to maintain concrete at following curing temperatures:
 - .1 For initial 3 days: minimum temperature of 15 deg C, maximum of 27 deg C at concrete surfaces.
 - .2 Keep concrete surfaces continually moist while protected.
 - .2 Unformed Surfaces: cure with burlap, water and polythene. Carefully place two layers of damp burlap on surface of concrete. Overlap each strip by minimum 75 mm and secure

against displacement by wind. Maintain burlap in place and keep thoroughly wet for seven days after placement. Place polythene sheeting on wetted burlap to maintain moisture.

- .3 Formed Surfaces: No additional curing will be required if formwork is left in place for seven days or more. If formwork removed in less than seven days, cure in manner specified for unformed surfaces for remainder of seven day period.
- .4 During the curing period, only uncover areas needed for finish treatment. Re-cover and continue curing.

3.4 FIELD QUALITY CONTROL

- .1 Inspection and testing of concrete and concrete materials shall be carried out by a Testing Laboratory in accordance with CAN/CSA-A23.1 and Section 01 45 00 - Quality Control.
- .2 Contractor shall pay for costs of quality control testing.
- .3 Contractor shall take additional sets of test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.
- .4 Non-destructive Methods for Testing Concrete shall be in accordance with CAN/CSA-A23.2.
- .5 Inspection or testing by the Parks Canada will not augment or replace Contractor quality control nor relieve him of his contractual responsibility.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 Supply and install of steel plates (including anchor bolt assemblies).

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control

1.3 REFERENCE STANDARDS

- .1 All standards to be latest issue at time of tendering.
- .2 CAN/CSA G40.20/G40.21, "General Requirements for Rolled or Welded Structural Quality Steel".
- .3 CAN/CSA S16-01, "Limit States Design of Steel Structures".
- .4 CSA W47.1, "Certification of Companies for Fusion Welding of Steel Structures".
- .5 CSA W59, "Welded Steel Construction (Metal Arc Welding)".
- .6 CSA W178, "Qualification Code for Welding Inspection Organizations".
- .7 ASTM A307, "Specification for Carbon Steel Bolts and Studs".
- .8 ASTM A325, "Specifications for Bolts for Structural Steel Joints" (Metric).
- .9 ASTM A490M, "Specifications for Heat Treated Steel Structural Bolts, Classes 10. * and 10.9.3, for Structural Steel Joints" (Metric).

1.4 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00.
- .2 Provide complete fabrication and erection drawings for all work and items.
- .3 Shop drawings shall clearly indicate the arrangements, sizes, material types and grades, and finishes of all handrail components. Show welded connections using standard welding symbols.
- .4 Shop drawings to be checked by the Contractor prior to submission to the Departmental Representative.
- .5 Review by the Departmental Representative in no way relieves the Contractor of his responsibility for the accuracy of the Shop Drawings.

1.5 QUALIFICATIONS

- .1 The organization undertaking to weld under this Section is to be fully approved by the Canadian Welding Bureau under the requirements of CSA W47.1.
- .2 Weld Inspection: The organization undertaking to perform weld inspection under this Section is to be fully approved by the Canadian Welding Bureau under the requirements of CSA W178.

1.6 INSPECTION AND TESTING

- .1 Materials and workmanship shall be inspected and tested by an inspection and testing firm certified in accordance with CSA W178, retained and paid for by the Contractor and approved by the Departmental Representative.
- .2 Provide access for inspection to all places where work is being done, or stockpiled prior to shipment.
- .3 Submit copies of mill test reports properly correlated to the materials used to the Departmental Representative upon request.
- .4 Inspection and testing firm to test welds in accordance to CSA-W178. Testing of welds to include visual examination of all welding procedures, at the plant and in the field, plus magnetic particle, x-ray, ultrasonic, or other means deemed necessary by the testing agency to permit certification of welds.
- .5 Inspection and testing firm to test bolts in accordance to CSA-W178.
- .6 Departmental Representative may request additional testing of welds and bolts to ascertain the full amount of defects if the test noted above indicates excessive deficiencies. Additional costs for extra testing to be paid for by the Contractor.
- .7 Pay for all costs for re-testing and re-inspection as a result of defective workmanship.
- .8 Pay for all costs of repairs to correct defective work.
- .9 Inspection and testing firm to submit to the Departmental Representative, a final report certifying all welds and connections, including confirmation that required repairs have been completed. This report must be submitted under the seal and signature of a Professional Engineer registered in the Province of Alberta.
- .10 Notify Departmental Representative and inspection and testing firm 10 working days prior to commencement of shop work for all testing and inspection.

Part 2 Products

2.1 MATERIALS

- .1 Structural steel shall conform to CAN/CSA G40.20/G40.21 with minimum grade as follows:
 - .1 Plates and Angles: Grade 300W.
 - .2 Hollow Structural Sections: Grade 350W.
 - .3 Anchor Bolts: ASTM A193 Grade B7

- .4 Bolts, Nuts, and Washers: High strength type recommended for structural steel joints, conforming to requirements of ASTM A325, medium-carbon steel, unless noted otherwise on drawings.
- .5 Welding Materials: CSA W48.

Part 3 Execution

3.1 FABRICATION

- .1 Verify dimensions prior to commencing fabrication.
- .2 Fabricate to reviewed shop drawings in accordance with CAN/CSA S16-01.
- .3 Weld to CSA W59.
- .4 Joint surfaces to be free from fins and tears.
- .5 Clean all steel to remove rust, loose mill scale and all foreign matter and hot dip galvanize all steel components to CAN/CSA G164.
- .6 Do not splice materials without the written consent of the Departmental Representative.
- .7 Grind all welds smooth and flush on exposed steel surfaces.

3.2 ERECTION

- .1 Erect to CAN/CSA S16-01 and CISC Code of Standard Practice for Buildings.
- .2 Fix and attach all members by bolting, unless specified otherwise.
- .3 Level, plumb and align all members to CAN/CSA S16-01.
- .4 Provide and install all temporary bracing where required.
- .5 Do not provide any holes or openings in steel members unless specifically shown on the drawings or approved by the Departmental Representative. Where approval is granted, provide reinforcing plates around all openings to maintain design strength.
- .6 Correct all errors in member fit and erection to the Departmental Representative's satisfaction.

3.3 DAMAGE

- .1 Make good all areas damaged in connection with the contract regardless of the limits of the contract as shown on the drawings.

3.4 CLEAN-UP

- .1 Clean up and remove from the site all rubbish and surplus material remaining from this work.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 Disassembly of an existing pedestrian steel bridge and installation of it at new location adjacent to the existing location.
- .2 The superstructure shall include the primary trusses, floor bracing, wood decking, and handrails, bearing plates, embedded anchor bolts, grout, and all connection hardware for a complete installation.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control

1.3 REFERENCE STANDARDS

- .1 All standards to be latest issue at time of tendering.
- .2 CAN/CSA-S6-06, "Canadian Highway Bridge Design Code".
- .3 AASHTO Guide Specifications for Pedestrian Bridges.
- .4 CAN/CSA G40.20/G40.21, "General Requirements for Rolled or Welded Structural Quality Steel".
- .5 CAN/CSA S16-01, "Limit States Design of Steel Structures".
- .6 CSA W47.1, "Certification of Companies for Fusion Welding of Steel Structures".
- .7 CSA W59, "Welded Steel Construction (Metal Arc Welding)".
- .8 CSA W178, "Qualification Code for Welding Inspection Organizations".
- .9 ASTM A307, "Specification for Carbon Steel Bolts and Studs".
- .10 ASTM A325, "Specifications for Bolts for Structural Steel Joints" (Metric).
- .11 ASTM A490M, "Specifications for Heat Treated Steel Structural Bolts, Classes 10. * and 10.9.3, for Structural Steel Joints" (Metric).

1.4 SUBMITTALS

- .1 Submit all required documentation in accordance with Section 01 33 00.
- .2 Prepare and submit erection procedures plan for dismantling the existing bridge and installation of it at new location.
- .3 Submit documentation to confirm that the company inspection and testing of structural steel welding is certified by the Canadian Welding Bureau and meets the requirements of CSA W178.
- .4 Submit copies of all weld inspection and testing reports.
- .5 Erection procedures shall include all drawings and documents necessary to describe the following:

- .1 Traffic Accommodation Strategy (as applicable).
- .2 Access to work site.
- .3 Type and capacity of lifting equipment.
- .4 Lifting points.
- .5 Temporary support and bracing works.
- .6 Fall protection and safe work procedures.
- .6 All submittals must be reviewed and signed (acknowledging review) by the General Contractor prior to submission to the Departmental Representative.
- .7 Erection of the superstructure shall not commence until all submittals relating to quality control and erection procedures have been provided to the Departmental Representative and the Departmental Representative's review of such documents has been completed.
- .8 Review of submittals by the Departmental Representative in no way relieves the Contractor of his responsibility for the completeness, quality, and accuracy of the Work in accordance with the Contract requirements.

1.5 QUALIFICATIONS

- .1 The company(s) that will undertake the structural steel welding shall be fully approved by the Canadian Welding Bureau under the requirements of CSA W47.1 Division 1 or Division 2.1.
- .2 The company(s) that will perform weld inspection and testing work shall be fully approved by the Canadian Welding Bureau under the requirements of CSA W178.2.

1.6 QUALITY CONTROL

- .1 The Contractor is fully responsible for quality control to ensure that the Work strictly complies with the Contract requirements.
- .2 In accordance with Sections 01 45 00 and 01 33 00, submit a quality control plan which shall include personnel qualifications, certifications, written procedures, and reporting formats.
- .3 Materials and workmanship shall be inspected and tested by inspection and testing firm(s) certified in accordance with CSA W178.2, retained and paid for by the Contractor and approved by the Departmental Representative.
- .4 Provide access for inspection to all places where work is being done, or stockpiled prior to erection.
- .5 Contractor shall verify all drawing provided dimensions for the existing bridge structure on site. This will include center to center lengths for all anchor bolts and any other existing bridge dimension that may have been affected by the flood damage.
- .6 Inspection and testing of welds shall include visual examination, magnetic particle, x-ray, ultrasonic, or other means deemed necessary by the testing agency to permit certification that the welds meet design specifications. As a minimum, the following non-destructive testing of welds shall be carried out:

- .1 Visual examination of all welds
- .2 Ultrasonic inspection of 100% of the groove or butt welds in truss chords and web members that will be required to carry tensile forces.
- .3 Ultrasonic inspection of 100% of the groove or butt welds in truss chords and web members that will be required to carry compression forces.
- .4 Magnetic particle inspection of 25% of the fillet welds for connecting web members and miscellaneous plates / shapes to the bottom chords of the trusses.
- .5 Magnetic particle inspection of 25% of the fillet welds for connecting web members and miscellaneous plates / shapes to the top chords of the trusses if the submerged-arc welding process is used.
- .7 The acceptance standards for dynamically loaded structures specified in Clause 12.5.4 of CSA W59 shall apply to weld defects.
- .8 Inspection and testing of bolts shall be carried out in accordance with Clause 10.24.6.7 of CAN/CSA-S6-06.
- .9 Correct all defective work and carry out re-inspection and testing to verify compliance with the Contract requirements.
- .10 Inspection and testing firm to submit to the Departmental Representative, a final report certifying all welds and connections, including confirmation that required repairs have been completed. This report must be submitted under the seal and signature of a Professional Engineer registered in the Province of Alberta.
- .11 Inspection and testing of the Work may be carried out by Parks Canada or appointed independent agencies for quality assurance purposes. Allow access to the work and provide reasonable facilities for such access. Parks Canada's inspections or those of the independent agencies shall not relieve the Contractor of his responsibility to perform the Work in accordance with the Contract requirements.
- .12 Notify Departmental Representative and inspection and testing firm 24 hours prior to commencement of shop work for all testing and inspection.

Part 2

2.1 Execution

- .1 Erection of the superstructure shall comply with the approved erection procedures, CAN/CSA-S6-06, and CAN/CSA S16-01.
- .2 The Contractor shall exercise utmost care and provide the necessary protection to prevent staining or marking of the weathering steel trusses and other steel components that will be exposed to view.
- .3 The Contractor shall be responsible for protecting the concrete pier caps and abutment components from rust staining that could occur during erection of the structural steel. If staining occurs, the Contractor shall remove it to the satisfaction of the Departmental Representative at no additional cost to the Owner.

2.2 DAMAGE

- .1 Make good all areas damaged in connection with the contract regardless of the limits of the contract as shown on the Drawings.

2.3 CLEAN-UP

- .1 Clean up and remove from the site all rubbish and surplus material remaining from this work.

END OF SECTION

Part 1 General

1.1 WORK INCLUDED

- .1 Excavation and backfilling for bridge construction work.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 35 43 - Environmental Procedures
- .3 Section 01 45 00 - Quality Control

1.3 MEASUREMENT AND PAYMENT

- .1 No measurement for excavation and backfilling will be made.
- .2 Payment for excavation and backfilling shall be made at the Tendered Lump Sum Price, which shall be full compensation for all materials, labour, equipment, tools, and incidentals to satisfactorily carry out the work.

1.4 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-63-2002 , Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698-00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ;) (600 kN-m/m ;).
 - .5 ASTM D1557-02e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ;) (2,700 kN-m/m).
 - .6 ASTM D4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.5 DEFINITIONS

- .1 Excavation Classes: one class of excavation will be recognized; common excavation.
- .2 Common Excavation: excavation of materials of whatever nature.
- .3 Topsoil:
 - .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
 - .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters in any dimension.

- .4 Waste Material: excavated material unsuitable for use in Work or surplus to requirements.
- .5 Borrow Material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .6 Recycled Fill Material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .7 Unsuitable Materials:
 - .1 Weak, chemically unstable, and compressible materials.
 - .2 Frost Susceptible Materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136: Sieve sizes to CAN/CGSB-8.1.
 - .2 Gradation:

<u>Sieve Designation</u>	<u>% Passing</u>
2.00 mm	100
0.10 mm	45 - 100
0.02 mm	10 - 80
0.005 mm	0 - 45
 - .3 Coarse grained soils containing more than 20% by mass passing 0.075 mm sieve.
- .8 Unshrinkable Fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.6 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Quality Control: in accordance with Section 01 45 00 - Quality Control:
 - .1 Submit condition survey of existing conditions as described in EXISTING CONDITIONS article of this Section.
 - .2 Submit to Parks Canada written notice when bottom of excavation is reached.
- .3 Preconstruction Submittals:
 - .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.

1.7 QUALITY ASSURANCE

- .1 Keep design and supporting data on site.
- .2 Do not use soil material until written report of soil test results are reviewed by Parks Canada.
- .3 Health and Safety Requirements:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction Waste Management.

1.9 EXISTING CONDITIONS

- .1 Existing structures and surface features:
 - .1 Conduct, condition survey of existing structures, trees and other plants, lawns, survey bench marks and monuments which may be affected by Work.
 - .2 Protect existing structures and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Parks.

Part 2 Products

2.1 MATERIALS

- .1 Type 1 and Type 2 Fill: properties to Section 31 05 16 - Aggregate Materials and the following requirements:
 - .1 Crushed, pit run or screened stone, gravel or sand.
 - .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1.
 - .3 Table:

% Passing		
Sieve Designation	Type 1	Type 2
75 mm	-	100
50 mm	-	-
37.5 mm	-	-
25 mm	100	-
19 mm	75-100	-
12.5 mm	-	-
9.5 mm	50-100	-
4.75 mm	30-70	22-85
2.00 mm	20-45	-
0.425 mm	10-25	5-30
0.180 mm	-	-
0.075 mm	3-8	0-10

- .2 Type 3 fill: selected material from excavation or other sources, approved by Parks Canada for use intended, unfrozen and free from rocks larger than 75mm, cinders, ashes, sods, refuse or other deleterious materials.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties according to sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.

- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

3.3 PREPARATION/PROTECTION

- .1 Protect existing features in accordance with Section 01 56 00 - Temporary Barriers and applicable local regulations.
- .2 Keep excavations clean, free of standing water, and loose soil.
- .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Parks approval.
- .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees and embankments from damage or contamination.

3.4 STRIPPING OF TOPSOIL

- .1 Begin topsoil stripping of areas after area has been cleared of brush, weeds, and grasses and removed from site.
- .2 Strip topsoil to depths required to carry out construction. Do not mix topsoil with subsoil.

3.5 STOCKPILING

- .1 Stockpile fill materials in areas designated by Parks Canada.
- .2 Stockpile granular materials in manner to prevent segregation.
- .3 Protect fill materials from contamination.
- .4 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.6 SHORING, BRACING AND UNDERPINNING

- .1 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Section 01 35 30 - Health and Safety and Safety Act for the Province of Alberta.
- .2 Construct temporary works to depths, heights and locations as approved by Parks Canada.
- .3 During backfill operation:
 - .1 Unless otherwise indicated or directed by Parks, remove sheeting and shoring from excavations.

- .4 Upon completion of substructure construction:
 - .1 Remove shoring and bracing.
 - .2 Remove excess materials from site and restore site to the Park's satisfaction.

3.7 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while Work is in progress.
- .2 Protect open excavations against flooding and damage due to surface run-off.
- .3 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures to approved collection in manner not detrimental to public property, or portion of Work completed or under construction.
 - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.
- .4 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to, watercourses or drainage areas.

3.8 EXCAVATION

- .1 Advise Parks Canada at least 10 working days in advance of excavation operations for initial cross sections to be taken.
- .2 Excavate to lines, grades, elevations and dimensions as indicated.
- .3 Do not disturb soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw..
- .4 Restrict vehicle operations directly adjacent to open excavations.
- .5 Dispose of surplus and unsuitable excavated material off site.
- .6 Do not obstruct flow of surface drainage or natural watercourses.
- .7 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .8 Notify Departmental Representative when bottom of excavation is reached.
- .9 Obtain Departmental Representative's approval of completed excavation.
- .10 Correct unauthorized over-excavation as follows:
 - .1 Fill under other areas with Type 2 fill compacted to not less than 95% of corrected Standard Proctor maximum dry density.
- .11 Hand trim, make firm and remove loose material and debris from excavations.
 - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.

3.9 FILL TYPES AND COMPACTION

- .1 Use types of fill as indicated or specified below. Compaction densities are percentages of maximum densities obtained from ASTM D698 in accordance with Section 31 05 10 Corrected Maximum Dry Density for Fill.

- .1 Excavated areas for Column Re-Construction: Type 3 fill compacted to 95%.

3.10 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 Departmental Representative has inspected and approved installations.
 - .2 Departmental Representative has inspected and approved of construction below finish grade.
 - .3 Removal of concrete formwork.
 - .4 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

3.11 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 21 - Construction Waste Management, trim slopes, and correct defects as directed by the Departmental Representative.
- .2 Replace topsoil as indicated.
- .3 Reinstate pavements disturbed by excavation to thickness, structure and elevation which existed before excavation.
- .4 Clean and reinstate areas affected by Work as directed by Departmental Representative.
- .5 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.
- .6 Where new seeding is required, provide as per Mix # 1E, Riparian and Wetlands mix from Jasper National Park Seed Mixes. See Section 01 11 00 – Summary of Work for details.

END OF SECTION

1 GENERAL

1.1 Waste Management and Disposal

- 1.1.1 Divert left over aggregate materials from landfill to local quarry for reuse as approved by Engineer.
- 1.1.2 Divert left over hardened cement materials from landfill to local quarry for reuse as approved by Engineer.
- 1.1.3 Divert left over geotextiles to local plastic recycling facility for reuse as approved by Engineer.

2 PRODUCTS

2.1 Gabion baskets:

- 2.1.1 Factory fabricated so that sides, ends, lid and internal diaphragms can be readily assembled at site into rectangular baskets of sizes as indicated.
- 2.1.2 Single unit construction or with joints having strength and flexibility equal to that of mesh.
- 2.1.3 Provide diaphragms of same mesh as gabion walls, when length exceeds horizontal width. Diaphragms to divide basket into equal cells of length not to exceed horizontal width.
- 2.1.4 Wire mesh gabions:
 - 2.1.4.1 Wire mesh: uniform hexagonal pattern wire woven in triple twist pattern with openings of approximately 80 x 100 mm, non-ravelling.
 - 2.1.4.2 Securely selvedge perimeter edges to form joints connecting selvedges with same strength as mesh body.
 - 2.1.4.3 Wire to have following dimensions:
 - i) Mesh: 3.0 mm diameter.
 - ii) Selvedges: 3.8 mm diameter.
 - iii) Binding: 2.0 mm diameter.
 - 2.1.4.4 Wire: hot dip galvanized with minimum coverage of 260 g/m² to CAN/CSA G164. Cover with minimum 0.5 mm thick polyvinyl chloride coating.
 - 2.1.4.5 Interlocking wire fasteners: galvanized steel to ASTM A 764, finish 1, class 1, type 3 stainless steel to ASTM A 313.
- 2.1.5 Geogrid gabions:
 - 2.1.5.1 Geogrid mesh: rigid type, uniform, square pattern, non corrosive, high density polyethylene with inhibitors added to resist deterioration by ultra-violet and heat exposure:

i) Geogrid openings: 50 x 50 mm.

2.1.5.2 Geogrid mechanical properties: tensile modulus at 2% elongation: modified to manufacturer's recommendations, minimum 290 kN/m:

i) Junction strength: minimum 90% of single rib strength.

2.2 Gabion Mats:

2.2.1 Factory fabricated sides, ends, lid and internal diaphragms ready to assemble at site into rectangular mats.

2.2.2 Single unit construction or with joints having strength and flexibility equal to that of mesh.

2.2.3 Provide diaphragms of same mesh as gabion walls, when length exceeds horizontal width. Diaphragms to divide mat into equal cells not to exceed 1 m x 3 m.

2.2.4 Wire mesh gabion mats.

2.2.4.1 Wire mesh: uniform hexagonal pattern wire woven in triple twist pattern with openings of approximately 80 x 100 mm, non raveling.

i) Securely selvedge perimeter edges of mesh to form joints connecting selvedges with same strength as mesh body.

2.2.4.2 Wire to have following dimensions:

i) Mesh: 2.20 mm diameter

ii) Selvedges: 2.65 mm diameter

iii) Binding: 2.20 mm diameter

2.2.4.3 Wire: hot dip galvanized with minimum coverage of 260 g/m² to CAN/CSA G164.

2.2.5 Geogrid gabion mats.

2.2.5.1 Geogrid mesh: rigid type, uniform, square pattern, non corrosive, high density polyethylene with inhibitors added to resist deterioration by ultra-violet and heat exposure. Geogrid opening: 50 x 50 mm.

2.2.5.2 Geogrid mechanical properties:

i) A Tensile modulus at 2% elongation: minimum 290 kN/m.

ii) Junction strength: minimum 90% of single rib strength.

2.3 Stone Fill:

2.3.1 Hard, durable, abrasion resistant, capable of resisting degradation from action of wetting and drying, wave action, freezing and thawing cycles.

2.3.2 Minimum 100 mm to maximum 200 mm dimension for individual stones.

2.4 Geotextile Filter:

2.4.1 Geotextile: medium weight non-woven geotextile.

3 EXECUTION

3.1 Installation

3.1.1 Install gabions and geotextiles to lines and grades as indicated. Follow manufacturer's instructions in assembling baskets and mats.

3.1.2 Excavate for and backfill behind gabions in accordance with Section 31 23 10 - Excavating Trenching and Backfilling.

3.2 Placing Gabions

3.2.1 Wherever possible, place baskets and mats in position prior to filling with stones.

3.2.2 Join adjacent baskets and mats together at corners as recommended by manufacturer, to ensure joints are as strong as mesh.

3.2.3 For underwater placement, prefill gabions. Provide special devices to handle filled baskets and mats without distortion and to place them in position. Connect adjacent gabions together when in place using a diver.

3.3 Filling Baskets and Mats

3.3.1 Tension geogrid gabions according to manufacturer's instructions before filling with stone. Do not release wall tension until sufficient stone fill has been placed to prevent wall slackening.

3.3.2 On exposed faces of gabions, place stones by hand with flattest surfaces bearing against face mesh to produce satisfactory alignment and appearance.

3.3.3 For wire mesh gabions, fill gabion cells in lifts not to exceed 300 mm and connect opposite walls with two tie wires after each lift.

3.3.4 For geogrid gabions, fill cells in lifts not to exceed 300 mm and connect opposite walls with two polyethylene braids after each lift.

END OF SECTION