

COWI North America Ltd.

Parks Canada Agency

1945.043.03

# Johnston Canyon Railing Extension

March 31, 2022

Issued for Tender Rev.A

## Contents

SECTION 00 01 07 Seals page .....	1
SECTION 01 11 00 Summary of work .....	4
SECTION 01 14 00 Work restrictions .....	6
SECTION 01 25 20.10 Use of Helicopter .....	3
SECTION 01 29 01 Measurement and payment .....	6
SECTION 01 31 19 Project meetings .....	2
SECTION 01 32 16.19 Construction progress schedule - bar (gantt) chart .....	3
SECTION 01 33 00 Submittal procedures .....	6
SECTION 01 35 29.06 Health and safety requirements .....	3
SECTION 01 35 43 Environmental procedures .....	13
SECTION 01 45 00 Quality control.....	5
SECTION 01 52 00 Construction facilities .....	2
SECTION 01 55 26 Traffic control .....	3
SECTION 01 56 00 Temporary barriers and enclosures .....	2
SECTION 01 61 00 Common product requirements .....	3
SECTION 01 71 00 Examination and preparation .....	2
SECTION 01 73 00 Execution .....	2
SECTION 01 74 00 Cleaning .....	2
SECTION 01 77 00 Closeout procedures .....	1
SECTION 01 78 00 Closeout submittals.....	2
SECTION 02 41 16.09 Structure demolition - short form .....	3
SECTION 03 30 00.09 Cast-in-place concrete - short form .....	4
SECTION 05 50 00 Metal fabrications .....	4
SECTION 31 11 00 Clearing and grubbing.....	3
SECTION 31 23 33.01 Excavating, trenching, and backfilling .....	4
SECTION 32 12 16.01 Asphalt paving - short form .....	3

### Appendix A – Drawings

- 1945.043-03-001 Cover Sheet, Drawing List and Location Plans
- 1945.043-03-002 Site Plan
- 1945.043-03-003 Footings
- 1945.043-03-004 Railing System
- 1945.043-03-005 Existing Railing Connections
- 1945.043-03-006 Railing at Bridge Crossing

Appendix B – Tetra Tech Geotechnical Report

Appendix C – 2022 Environmental Assessment Amendment Mitigations

Appendix D – Flight Path and 75m Buffer Map

Appendix E – Environmental Reference Documents

E1 - 2015 Basic Impact Assessment Mitigations

E2 - Interim Code of Practice: End-of-Pipe fish protection screens for small water intakes in freshwater

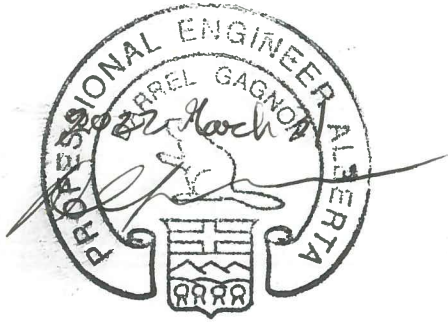
E3 – BFU Whirling Disease Protocol

Appendix F - Images of Catwalk 6 Railing Damage

## SECTION 00 01 07 Seals page

### Part 1 General

#### 1.1 Engineer of Record



### Part 2 Products

#### 2.1 Not used

1. Not Used

### Part 3 Execution

#### 3.1 Not used

1. Not Used

End of Section

## **SECTION 01 11 00**

### **Summary of work**

#### **Part 1 General**

##### **1.1 Work covered by contract documents**

1. Work of this Contract comprises general construction of new railing sections along the Johnston Canyon Trail above Catwalk 6, located at Johnston Canyon in Banff National Park and further identified as the Work.
2. The area of new railing extension is located along the Johnston Canyon Trail approximately between kilometer 1.3 and kilometer 2.6 from the Johnston Canyon Day Use Area Parking Lot P1. The Work includes the extension of the existing railing along the trail and asphalt walking surface to provide a continuous barrier along the canyon side. There are sections of existing railing within the work area that are to remain in place unless noted otherwise.
3. The alignment of the new railing and post locations shall be established by the Contractor in accordance with Section 01 71 00 Examination and preparation, while satisfying the following requirements:
  - 3.1. Front face of new railing to overhang the existing trail to minimize any trip hazard between the existing asphalt walking surface and the new railing. Contractor to minimize amount of edge patching of the asphalt surface and trail reconstruction.
  - 3.2. Maintain maximum possible trail width, while eliminating damaged/irregular trail edge.
  - 3.3. Maintain a minimum trail width of 1.5m, if 1.5m width cannot be achieved, the Departmental Representative to determine need for trail widening with cold mix asphalt.
  - 3.4. Posts shall not be placed directly adjacent to tree trunks and will be off set 1 metre to either side of the tree.
4. Preparation of an Environmental Protection Plan for the Work.
  - 4.1. An "Environmental Protection Plan" (EPP) is to be prepared and followed by the Contractor to meet the requirements of Section 01 35 43 – Environmental Procedures, to ensure all required mitigations are addressed and adverse effects are minimal. The Contractor's EPP must be approved by the Departmental Representative prior to the commencement of construction. The Departmental Representative and Parks Canada's Environmental Surveillance Officer (ESO) will refer to the approved EPP and these specifications in determining compliance with the plan and contract specifications. The EPP will form part of this contract.
5. Without limiting the scope of work, the work of this Contract generally comprises the following:
  - 5.1. Mobilization and site preparation
  - 5.2. Project management and coordination.
  - 5.3. Quality control and quality assurance of all construction activities.
  - 5.4. Environmental management during construction.
  - 5.5. Health and Safety management during construction
  - 5.6. Construction of new railing, including but not limited to:
    - 5.6.1. Use of helicopter
    - 5.6.2. Tree removal
    - 5.6.3. Supply and installation of new concrete footings
    - 5.6.4. Supply, fabrication, and installation of new railing
    - 5.6.5. Remove and dispose portions of existing railing

- 5.6.6. Supply, and placement of cold patch asphalt
- 5.7. Repair existing railing on Catwalk 6
  - 5.7.1. Images of the existing railing condition provided in Appendix F – Images of Catwalk 6 Railing Damage.
- 5.8. Decompaction of Soil
- 5.9. Site Restoration, reseeding and non-native vegetation control
- 5.10. Demobilization

## **1.2 Contract method**

- 1. Construct Work under combined price contract.

## **1.3 Work by others**

- 1. Where it is necessary that work is to proceed in areas of this project common to both the Contractor and forces of others, the Contractor shall cooperate with the other Contractors, sharing their workspace, and shall coordinate their operations with the other Contractors.
- 2. Other contractors may be working in Banff National Park. The Contractor shall coordinate their operations with others. No claims for any delays or inconvenience will be entertained.

## **1.4 Work sequence**

- 1. Construct Work to provide for continuous public usage of Johnston Canyon Trail from Johnston Canyon Day Use Area Parking Lot P1 to the Lower Falls.
- 2. Schedule work progress to allow Departmental Representative unrestricted access to inspect all phases of the Work.
- 3. Required stages:
  - 3.1. Contractor to coordinate a pre-mobilization site visit with the Departmental Representative a minimum of 14 days prior to mobilization.
  - 3.2. Site work is to begin August 16, 2022. Work to be phased to allow completion of all in ground work (footings) prior to freeze up, excess material placement locations to be confirmed and completed prior to snow accumulation, and all work to be completed within 15 weeks.
  - 3.3. The restrictions for the helicopter use shall be in accordance with Section 01 25 20.10 Use of Helicopter.
- 4. Maintain fire access/control.
- 5. Work shall be carried out in accordance with Section 01 14 00 – Work Restrictions and Section 01 35 43 – Environmental Procedures.

## **1.5 Contractor use of premises**

- 1. Limit use of premises for access, for storage, for Work, to allow:
  - 1.1. Owner occupancy.
  - 1.2. Public usage.
  - 1.3. Commercial Operations of the Johnston Canyon Lodge and Bungalow.
    - 1.3.1. Access to the Johnston Canyon Fire Road is through the property included in the Johnston Canyon Lodge and Bungalow leasehold.
- 2. Co-ordinate use of premises under direction of Departmental Representative.
- 3. Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- 4. The Contractor and any Subcontractors shall obtain a business license from the Parks Canada Administration Office in Banff, prior to commencement of the contract.

5. All Contractor's business and private vehicles are required to obtain a vehicle work pass from Parks Canada. These permits may be obtained at the Parks Canada Administration in Banff.
6. Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
7. During work, excavations are to be completed or covered at the end of each day.
8. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
9. At completion of operations, the condition of existing work to be equal to or better than that which existed before new work started.

## **1.6 Owner occupancy**

1. Owner will occupy premises during entire construction period for execution of normal operations.
2. Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

## **1.7 Existing services**

1. Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
2. Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
3. Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
4. Protect, relocate, or maintain existing active services.
5. Record locations of maintained, re-routed, and abandoned service lines.

## **1.8 Construction Signage**

1. No sign or advertisements, other than warning signs, are permitted on site.
2. Signs and notices for safety and instruction shall be in both official languages.
  - 2.1. Graphic symbols shall be diamond grade and shall conform to CAN3-Z321
  - 2.2. Use approved translation list for signage.
3. Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by the Departmental Representative.
4. Signage shall be coordinated with other Contractors.

## **1.9 Documents required**

1. Maintain at job site, one copy each document as follows:
  - 1.1. Environmental Protection Plan.
  - 1.2. Contract Drawings.
  - 1.3. Specifications.
  - 1.4. Addenda.
  - 1.5. Reviewed Shop Drawings.
  - 1.6. List of Outstanding Shop Drawings.
  - 1.7. Change Orders.
  - 1.8. Other Modifications to Contract.
  - 1.9. Field Test Reports.

- 1.10. Copy of Approved Work Schedule.
- 1.11. Health and Safety Plan and Other Safety Related Documents.
- 1.12. Quality Management Plan.
- 1.13. Restricted Activity Permits.
- 1.14. Helicopter Execution Plan.
- 1.15. Other documents as specified.

## **Part 2 Products**

### **2.1 Not used**

- 1. Not used.

## **Part 3 Execution**

### **3.1 Execution**

- 1. The Contractor shall execute work in an efficient and expeditious manner. The Departmental Representative reserves the right to order the removal from the work site any employee of the Contractor who fails to work in an efficient and expeditious manner. This may include but is not limited to the Project Superintendent. This shall be strictly enforced.
- 2. The Departmental Representative reserves the right to order removal from work site, any piece of equipment that is not in good operating condition and the Contractor shall immediately rectify problem or replace faulty equipment with an equivalent unit within 48 hours.

End of Section



## **SECTION 01 14 00**

### **Work restrictions**

#### **Part 1 General**

##### **1.1 Access and egress**

1. Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial, and other regulations.
2. Access to the site is limited due to its backcountry location. Access will be via the Johnston Canyon Fire Road and connecting trail. The connecting trail is a narrowed section that will not fit anything larger than a small ATV or tracked carrier. The Johnston Canyon Fire Road past the connection trail to Section 2 is less maintained and condition should be confirmed by the Contractor. During adverse weather or when road is saturated, minimize number of trips. Materials may be transported to site by helicopter.
3. The Johnston Canyon Trail will remain open to the public from the Johnston Canyon Day Use Area Parking Lot P1 to the Lower Falls. The Contractor will not use this portion of the Johnston Canyon Trail.
4. The Contractor is responsible to safely restrict public access to the work site from the Johnston Canyon Trail, the Johnston Canyon Fire Road, the Moose Meadows Trail, and the Inkpots Trail. This includes erecting signage indicating the trail closure and actively managing the closures.
5. The general location of the Johnston Canyon Fire Road and connecting trail is indicated on the Contract Drawings.
6. The use of the Johnston Canyon Fire Road is not allowed Between April 15 to August 15 to prevent degradation.
7. The Contractor may utilize half of the public parking lot specified by Parks Canada Staff as a lay down/staging area during construction. The remaining half of the PI lot will remain open to the public throughout, except for times when closure is required to complete helicopter long lining work. To minimize disruption to the Johnston Canyon Day Use Area Parking Lot P1, the materials laydown and staging will be split between the East half of the parking lot P1 and the area at the junction of the Johnston Canyon Fire Road and Connecting trail (Potential Laydown Area 2).
  - 7.1. The Potential Laydown Area 2 has been used as an emergency helicopter landing pad in case of rescue in the past.

##### **1.2 Use of site and facilities**

1. The Work Sites shall be specified by the Departmental Representative and shall only be used for the purpose of the Work. The Work Sites will be made available by Parks Canada to the Contractor for its non-exclusive use for the duration of the Work, unless otherwise provided in the Contract Documents.
  - 1.1. Work Site to be made available to the Contractor August 16, 2022. Work Site will not be available to the Contractor prior to August 16, 2022, except for the pre-mobilization site visit.
  - 1.2. The restrictions for the helicopter use shall be in accordance with Section 01 25 20.10 Use of Helicopter.
    - 1.2.1. The Contractor will not be permitted to work during the Labour Day weekend between 7:00 pm September 1, 2022 and 8:00 am September 6, 2022.
2. Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.

3. The Contractor will not be permitted to establish a worker's accommodation camp inside Banff National Park.
4. While the Work Sites and laydown areas are under the Contractor's control, the Contractor shall be entirely responsible for their security. The definition of the work site will be taken to mean any place or location the Contractor is working, has personnel (either working or on standby), or has equipment (being used or stored). This includes making the site safe after work hours.
5. The Contractor shall keep the Work Sites clean and free from accumulation of waste materials and rubbish regardless of source. Snow shall be removed by the Contractor as necessary for the performance and inspection of the Work.
6. Where security is reduced by work provide temporary means to maintain security.
7. Office/tool trailer and compound may be set up at a laydown area indicated or at a location approved by the Departmental Representative.
8. The Contractor shall provide sanitary facilities for work force in accordance with governing regulations and the Environmental Procedures for this project. The Contractor shall post notices and take such precautions as required by local health authorities and keep area and premises in sanitary condition.
9. Any damage to the Work Site(s) caused by the Contractor shall be repaired by the Contractor at its expense.
10. Contractor shall maintain adequate drainage at the Worksite.
11. Accessing site by either helicopter or the Johnston Canyon Fire Road will require a Parks Canada Restricted Activity Permit.
12. Pets shall not be brought to or maintained at the construction site.

### 1.3 Working times

1. In order to reduce sensory disturbance to wildlife, work is only permitted during the following daylight hours:

Month	Start Time	End Time
January	9:00 am	4:30 pm
February	8:30 am	5:00 pm
March	8:30 am	6:00 pm
April	7:30 am	8:00 pm
May	7:30 am	8:30 pm
June	7:30 am	9:00 pm
July	7:30 am	9:00 pm
August	7:30 am	8:00 pm
September	8:00 am	7:00 pm
October	9:00 am	5:30 pm
November	9:00 am	4:00 pm
December	9:00 am	4:00 pm

2. Workers may access the trail to access the work earlier than the prescribed hours, providing they do not run equipment outside the allocated hours.
3. The Contractor may work weekends and holidays except the Labour Day weekend September 2-5, 2022

#### **1.4 Alterations, additions, or repairs to existing building**

1. Execute work with least possible interference or disturbance to public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

#### **1.5 Snow Clearing**

1. Snow clearing necessary for the completion of the work will be the responsibility of the Contractor.
2. Contractor is responsible for plowing the road for access if required. Plowing can cause damage and should be done on frozen ground only.
3. Contractor to submit a plan identifying the frequency, method, and equipment proposed for snow clearing for approval by Departmental Representative.

#### **1.6 Work conducted over or adjacent to waterways**

1. All components of the Work shall be conducted in accordance with Section 01 35 43 - Environmental Procedures.
2. All components of the Work shall be conducted without equipment entering into wetlands, water bodies, streams and rivers unless as directed by the Departmental Representative. Refer to Section 01 35 43 - Environmental Procedures for detail.
3. All waste materials from the Work shall be contained and collected in a manner to prevent any contact with the river valleys and waterways. All collected waste materials shall be disposed of in accordance with Section 01 35 43 - Environmental Procedures and the Environmental Protection Plan prepared for the project.

#### **1.7 Existing services**

1. Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
2. The locations of Utilities, if any, shown or not shown on the Drawings, are subject to verification by the Contractor.
3. Whenever working in the vicinity of Utilities, the Contractor shall locate such Utilities and expose those that may be affected by the work, using hand labour as required.
4. The Contractor shall assess the possible impact of its operations on all Utilities that may be affected by its operations, and shall protect, divert, temporarily support or relocate, or otherwise appropriately treat such Utilities to ensure that they are preserved.
5. The Contractor shall immediately report any damages to Utilities to the Departmental Representative and to the Utility owner or authority affected and shall promptly undertake such remedial measures as are necessary at no additional cost to the Owner.

#### **1.8 Survey of existing property conditions**

1. Submission of a tender is deemed to be confirmation that the contractor has inspected the site and is completely familiar with all conditions or restrictions affecting execution and completion of work.
2. The Contractor shall regularly monitor the condition of the Work Site and of property on and adjoining the Work Site throughout the construction period and shall immediately notify the Departmental Representative if any deterioration in condition is detected. Such monitoring shall cover all pertinent features and property including, but not limited to, buildings, structures, roads, walls, fences, slopes, sewers, culverts, and landscaped areas.
3. The Contractor shall submit a record of the existing condition of the Work Site and of properties on or adjoining the Work Sites prior to the commencement of construction.
4. The Departmental Representative may, but shall not be obligated to survey and record the condition of the Work Sites and of properties on or adjoining the Work Sites prior to the commencement of

construction by the Contractor. If requested, the Departmental Representative will provide a copy of the survey records to the Contractor for reference.

5. Whenever supplied with survey records, the Contractor shall satisfy itself as to the accuracy and completeness of the survey records provided by the Departmental Representative for any area before commencing construction in that area. Commencement of construction in any area shall be interpreted to signify that the Contractor has accepted such survey records as being a true record of the existing conditions prior to construction.
6. The provision of the records of a survey of existing conditions by the Departmental Representative shall in no way limit or restrict the Contractor's responsibility to exercise proper care to prevent damage to all properties within or adjacent to the Work Sites, whether all such properties are covered by the survey or not.

### **1.9 Protection of persons and property**

1. The Contractor shall comply with all applicable safety regulations of the Workers' Compensation Board of Alberta (WCB) including, but not limited to, WCB's Industrial Health and Safety Regulations, Industrial First Aid Regulations, and Workplace Hazardous Materials Information System Regulations.
2. The Contractor shall comply with the Canada Labour Code, Canada Occupational Safety and Health Regulations.
3. The Contractor shall take all necessary precautions and measures to prevent injury or damage to persons and property on or adjacent to the Work Site to the extent that may be affected by conduct of work.
4. The Contractor shall promptly take such measures as are required to repair, replace, or compensate for any loss or damage caused by the Contractor to any property, or if Parks Canada so directs, shall promptly reimburse to Parks Canada the costs resulting from such loss or damage
5. Within the Site, the Contractor has all the responsibilities of an "employer" under the Workers Compensation Act and the Occupational Health and Safety Regulation and is designated as the "Prime Contractor". Other contractors will be working within the limits of construction of this project.
6. Prime Contractor must comply with Workers Compensation Act and Occupational Health and Safety Regulation Section 20.3 Coordination of multiple employer workplaces.

### **1.10 Use of public areas**

1. The Contractor shall ensure that its vehicles and equipment do not cause nuisance in public areas.
2. Steel tracked equipment with cleats will not be allowed on pavement. Rubber tracked equipment to be used for work on Johnston Canyon Trail.
3. All vehicles and equipment leaving the Work Site and entering public roadways shall be cleaned of mud and dirt clinging to the body and wheels of the vehicle.
4. All vehicles arriving at or leaving the Work Site and transporting materials shall be loaded in a manner which will prevent dropping of materials or debris on the roadways, and where contents may otherwise be blown off during transit such loads shall be covered by tarpaulins or other suitable covers. Spill of materials in public areas shall be removed or cleaned immediately by the Contractor at its own expense.
5. Flag persons shall be provided when vehicles are entering or exiting Work Site access points.
6. All activities shall be in accordance with Section 01 35 43 – Environmental Procedures and the Environmental Protection Plan prepared for the project.

### **1.11 Supervisory personnel**

1. Within five Days after award notification, the Contractor shall submit to the Departmental Representative confirmation of the names of the supervisory personnel and other key staff designated for assignment on the Contract.
2. The following personnel shall be included in the list:
  - 2.1. Project Manager/Contract Manager;
  - 2.2. Project Superintendent;
  - 2.3. Deputy Project Superintendent;
  - 2.4. Environmental Representative;
  - 2.5. Traffic Control Representative;
  - 2.6. Quality Control Representative;
  - 2.7. Health and Safety Coordinator.
3. The Project Superintendent shall be employed full time with full authority to supervise the Work, who shall be directly available to the Department Representative during all active periods of Work. Either they or their designated deputy shall be present on the Work Site each and every workday that Work is being performed, from the commencement of Work to Total Performance of the Work. The Site Superintendent shall have;
  - 3.1. A minimum of five (5) years of experience in the role of Site Superintendent;
  - 3.2. Operational experience as Site Superintendent successfully completing a minimum of two (2) projects of similar value, and;
  - 3.3. The Project Superintendent shall nominate a Deputy Project Superintendent who shall have the authority of the Project Superintendent during the latter's absence.
4. Environmental Representative must:
  - 4.1. Be responsible for completing Environmental Protection Plan and ensuring personnel adhere to contract requirements as related to environmental activities.
5. Quality Control Representative must:
  - 5.1. Be responsible for development, implementation and execution of the Quality Management Plan.
6. Health and Safety Coordinator must:
  - 6.1. Have minimum 2 years site-related working experience specific to activities associated with backcountry construction and helicopter work.
  - 6.2. Have working knowledge of occupational safety and health regulations.
  - 6.3. Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
  - 6.4. Be responsible for implementing, enforcing daily, and monitoring site-specific Contractor's Health and Safety Plan.
  - 6.5. Be on site during execution of Work and report directly to and be under direction of the site supervisor.

### **1.12 Meetings**

1. Hold meetings in accordance with Section 01 31 19 – Project Meetings.
2. The Work includes attending meetings between the Contractor and the Departmental Representative. The meetings will be called and chaired by the Departmental Representative as required. The Contractor shall be represented at such meetings to the satisfaction of the Departmental Representative.

3. The Departmental Representative will schedule an initial meeting to be held on site after award notification. Senior representatives of Parks Canada, the Departmental Representative, Contractor, major subcontractors, and field inspectors, shall attend this meeting.
4. Cost of attending the above meetings shall be considered incidental to the Contract items and no additional payment will be made.

### **1.13 Waste Disposal**

1. Refer to Section 01 35 43 – Environmental Procedures.
2. All surplus, unsuitable, and waste materials shall be removed from the job site to approved sites outside Banff National Park unless specified otherwise in other sections of these Specifications.
3. Deposits of any construction debris into any waterway are strictly forbidden.
4. Cost for waste disposal described above shall be considered incidental to the Contract items and no additional payment will be made unless specified otherwise in other sections of these Specifications.

### **1.14 Work Stoppage**

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

## **Part 2 Products**

### **2.1 Not used**

1. Not Used.

## **Part 3 Execution**

### **3.1 Not used**

1. Not Used.

End of Section

## **SECTION 01 25 20.10**

### **Use of Helicopter**

#### **Part 1 General**

##### **1.1 Section includes**

1. In order to support the work outlined in Section 01 11 00 – Summary of Work, and complete the work by the Contract completion date, it is anticipated that the Contractor will need to use a helicopter to increase efficiency and transport heavy items. A helicopter may be used for long lining material such as equipment and materials in and out of the work site.

##### **1.2 Restrictions**

1. The use of a helicopter will not be permitted from 12:00 noon September 1, 2022 until the Black Swifts have fledged and permission is granted from the Departmental Representative. Previous fledging periods were observed between September 6 to September 18.
2. Helicopter use will be permitted from 09:00 am to 12:00 noon, from August 16, 2022 to September 1, 2022 (active nesting period for Black Swifts). Flight times may be adjusted, depending on data collected in summer of 2022. After the fledging period, helicopter use shall be permitted during daylight hours only, as outlined in section 1.3.1 Working Hours.
3. The use of helicopter will not be permitted to operate in the area defined in Appendix D – Flight Path and 75m Buffer Map.
  - 3.1. To reduce disturbance and downwash effects helicopter flights shall not laterally fly/hover over known nesting locations and will apply at minimum a 75m buffer.
  - 3.2. The buffers zones may be adjusted according to the type of helicopter used.
4. The use of a helicopter will be restricted to long lining material in and out of the worksite from approved laydown areas. The helicopter may not land within the National Park without prior approval from the Departmental Representative.
5. A Restricted Activity Permit will be required for helicopter use.
6. The use of the helicopter, long lining and movement of materials will be according to the rules and regulations of Transport Canada Civil Aviation Directorate. Nothing within their specification supersedes or should be construed as superseding the Transport Canada Civil Aviation Directorate rules.
7. The use of the helicopter is at the sole discretion of the pilot in all activities including weather, access, lifting equipment etc.
8. The Contractor should plan and coordinate the use of the helicopter around potential weather and other factors which might cause delay.

##### **1.3 Submittals**

1. Contractor is to provide an execution plan for all use of helicopter machines for review and approval after contract award and updated prior to booking any helicopter time. Plan is to be updated weekly and as required. Plans to include:
  - 1.1. Number of lifts
  - 1.2. Details of each lift (component, weight, sequence, and other necessary details)
  - 1.3. Details of pick up and drop off locations
  - 1.4. Detailed Schedule of each lift
  - 1.5. Long Line Rigging procedures for each lift

- 1.6. Traffic control requirements for each lift
- 1.7. Communication procedures
- 1.8. Emergency procedures
- 1.9. Optimization details of overall lift plan to minimize helicopter use
- 1.10. Lift schedule
  - 1.10.1. Initial Schedule
  - 1.10.2. Rolling two week lift plan
  - 1.10.3. Estimated weather days
- 1.11. Weekly coordination and work plan
- 1.12. Weekly weather outlook
2. Safe work procedures and the plan for the movement of material by helicopter shall be submitted by the Contractor, reviewed and approved prior to mobilization.
3. Prior to completing any helicopter work, the Contractor must receive approval from the Departmental Representative in writing a minimum of 24 hours prior to helicopter usage. In addition to the helicopter execution plan and as part of the approval process, the Contractor shall provide the Departmental Representative a brief description of the helicopter work including the approximate schedule for the helicopter, type of helicopter, and pick-up and drop-off points a minimum of 48 hours prior to the flight.
4. At the request of the Departmental Representative, the Contractor shall produce a copy of the original helicopter log book completed for the purposes of Transport Canada Civil Aviation Directorate. This log book should present details of each flight to Johnston Canyon and the number of hauls or loads moved.
5. At the request of the Departmental Representative, the Contractor shall produce a copy of the helicopter insurance details which must cover long lining and equipment transportation and include provisions in the event that items are dropped from the helicopter (both in terms of damage caused therefrom and cost of cleanup etc.).

#### **1.4 Coordination**

1. The Contractor shall be responsible for all arrangements and provisions related to helicopter usage. The Contractor is expected to use helicopters in order to facilitate the completion of the work by the contract completion date.
  - 1.1. The Contractor shall provide for a helicopter that provides suitable rotor wash for an area with known deadfall and sensitive wildlife areas. The helicopter shall also be suitable to navigate the steep terrain and tight, treed canyon.
2. The Contractor should satisfy themselves with the site specific lifting capacity of the helicopters at the Johnston Canyon site.
3. The Contractor shall use East half of Johnston Canyon Day Use Parking Lot P1 as a pick-up point unless otherwise approved by the Departmental Representative. The Contractor is responsible for closure of the parking lot to public access on days with helicopter operation and to cordon off to prevent pedestrians or vehicles from entering. Closures must be communicated to the Departmental Representative with minimum 48 hr notice so information can be posted.
4. To prevent public vehicles from entering the parking lot on closure days, the Contractor shall close and cordon off P1 lot the prior evening to allow safe lifting of materials from the laydown area the next day.
5. The Contractor is responsible for arranging safe drop off points within the work site.
6. It is the sole responsibility of the Contractor to ensure that the load does not exceed the allowable load for the helicopter, and that all materials are adequately secured to the long line. The use of nets



is allowed, but the Contractor is responsible for all damage, costs, and third party costs if items or equipment drop from a secured load and damage anything.

7. The Contractor shall have a radio and be in direct communication with the pilot of the helicopter over the site. When lifting and dropping a load the pilot shall have visual line of sight contact with the Contractors lifting supervisor or banksman.

## **Part 2 Products**

### **2.1 Not used**

1. Not used

## **Part 3 Execution**

### **3.1 Not used**

1. Not used

End of Section

## **SECTION 01 29 01**

### **Measurement and payment**

#### **Part 1 General**

##### **1.1 Description**

1. Payments shall be made on the basis of the lump sum prices and the unit prices bid in the Combined Price Form.
2. The prices bid for various items of work, unless specifically noted otherwise, shall include the supply of all labour, material, and equipment required to construct the work in accordance with the drawings and specifications.
3. The method of measurement of the quantities for payment and the basis for payment will be in accordance with the following items of this section. All measurement for the determination of payment will be done by the Departmental Representative. For items which require survey for quantity verification, the Contractor shall submit all supporting survey data in electronic format to the Departmental Representative for review a minimum of five business days prior to claiming those items for payment.
4. The prices bid for supply and installation of materials shall be full compensation for supplying, delivering, loading, unloading, handling, storage, breakage, waste, hauling, installing, cleaning, testing, and placing in service the work together with all work subsidiary and incidentals thereto for which separate payment is not provided elsewhere. Payment shall be only for materials actually installed unless otherwise approved in writing in advance by Departmental Representative.
5. The sum of the payments in the Combined Price Form shall constitute full payment for the complete works as described in these documents. Extra payment will only be made for items adding to the scope of the works as described in these documents and/or shown on the drawings and as evident from inspection of the site of the works.

#### **Part 2 Non-payment items**

##### **2.1 Description**

1. Supply of all equipment, labour, materials, plant, and services required to complete the Work for which no specific payment item has been assigned in the Combined Price Form shall be considered incidental to the Works.
2. There shall be no separate payment for incidental work. Payment for incidental work shall be considered to be included in the total tendered price of the Combined Price Form.
3. All work shown on the plans and drawings, or referred to in the General Conditions, the Supplementary General Conditions, or the Specifications shall be considered as part of the complete work unless specifically deleted.

## Part 3 Measurement and payment clauses

### 3.1 General Works

#### 1. Mobilization and Demobilization

- 1.1. Payment for this item shall be compensation in full for costs of mobilization and demobilization: permits; moving personnel, equipment, fencing, safety measures, and materials to the site; setting up temporary facilities; public notices; storage of materials; environmental measures; all preparation for performing the work; full demobilization of the above; site cleanup; and costs associated with the warranty period. This item shall include pre-mobilization site visit(s) to establish the railing alignment with the Departmental Representative.
- 1.2. Payment: Lump sum price bid.
- 1.3. Measurement:
  - 1.3.1. 50% of Lump Sum Contract Price for Mobilization and Demobilization to be paid when mobilization to site is complete.
  - 1.3.2. The remainder of the Lump Sum Price for Mobilization and Demobilization to be paid when work is complete and all materials, equipment, buildings, shops, offices, and other facilities have been removed from site and site cleaned and left in condition to the satisfaction of the Departmental Representative and all other Agencies having Jurisdiction.
  - 1.3.3. Only one mobilization and demobilization will be paid for the entire project. No additional mobilization and demobilization will be paid due to a winter shutdown.
  - 1.3.4. Payment of only 5% of the total price tendered will be scheduled as outlined above. If the amount bid for mobilization and demobilization is greater than 5% of the total price tendered, payment of the remainder of the amount will be authorized when the contract has been completed.

#### 2. Use of Helicopter

- 2.1. Payment for this item shall be full compensation for Helicopter Use, including supplying a helicopter with pilot and other labour and equipment as might be deemed necessary to execute the work, including ground support manpower, banksman etc. The Contractor is responsible for all costs associated with the ferrying of the helicopter to and from site. This shall include the helicopter execution plan, coordination the work, traffic control, administration of the plan and any other incidental work for which payment is not specified elsewhere is included.
- 2.2. Payment: Lump sum price bid.
- 2.3. Measurement:
  - 2.3.1. Lump sum payable based on percent of helicopter lifts used compared to the total number of helicopter lifts submitted in the helicopter execution plan.

#### 3. Repair Existing Railing on Catwalk 6

- 3.1. Payment for this item shall be full compensation for the repair of the existing railing on Catwalk 6. The damage to the railing occurs along a 6m long stretch of railing. The Contractor will be responsible to remove any damaged material and replace with new in accordance with Section 05 50 00 Metal Fabrications. Also included labour, materials, equipment to remove damaged materials, weld or fasten new material, field coating touch-ups and satisfactory disposal of waste materials. This shall include site inspections, shop drawings, submittals, all cleanup and any other incidental work for which payment is not specified elsewhere is included.
- 3.2. Payment: Lump sum price bid.
- 3.3. Measurement: Lump sum payable at the completion of the repair.

#### 4. Tree Removal

- 4.1. Payment for this item shall be full compensation for tree removal including flagging trees for removal, application for restricted activity permit, and labour and equipment to fell, cut, trim into

- sections, and satisfactory disposal of trees. This shall include any other incidental work for which payment is not specified elsewhere is included.
- 4.2. Payment: Lump sum price bid.
- 4.3. Measurement: Lump sum payable upon the satisfactory disposal of all removed trees.
5. Decompaction of Soil
- 5.1. Payment for this item shall be full compensation for labour and equipment for decompaction up to a maximum of 100 square metres. Areas shall be targeted as per direction from the Departmental Representative. This shall include any other incidental work for which payment is not specified elsewhere is included.
- 5.2. Payment: Lump sum price bid.
- 5.3. Measurement: Lump sum payable upon the field measured area and satisfactory completion of the decompaction.
6. Site Restoration, reseeding and non-native vegetation control
- 6.1. Payment for this item shall be full compensation for labour, equipment, and materials to complete non-native vegetation control and reseeding of the work site as described in the contract specifications. This includes non-native vegetation control during the construction phase, non-native vegetation control during the post-construction phase and reseeding of specified areas. This shall include restoration work in 2023 that may not be able to be completed in 2022, submission of control products and seed mix, any other incidental work for which payment is not specified elsewhere is included.
- 6.2. Payment: Lump sum price bid.
- 6.3. Measurement: Lump sum payable upon the satisfactory completion of the site restoration.
7. All other scope not otherwise noted in bid table.
- 7.1. Payment for this item shall be full compensation for all other items outlined in the contract drawings, specifications, Appendix A, Appendix B, Appendix C, Appendix D, Appendix E, and Appendix F but which are not otherwise noted or presumed included elsewhere in the bid table. The contractor shall request clarification regarding any scope limitations they feel are unclear prior to submitting their bid.
- 7.2. Payment: Lump sum price bid.
- 7.3. Measurement: Lump sum payable based on percentage of overall work completed according to contract amount billed.
8. Post & Footing - Type 1
- 8.1. Payment for this item shall be full compensation for labour, equipment, and materials to excavate footing, install Type 1 concrete footings, and supply and install steel HSS posts described on the Drawings, Specifications, and to meet the necessary design. This shall include submittals, testing, placing excavated material on site, all cleanup, and any other incidental work for which payment is not specified elsewhere is included. This item does not include disposal of surplus excavated material off site, site restoration or decompaction.
- 8.2. Payment: Unit rate bid per each Type 1 post & footing installed.
- 8.3. Measurement: Each installed and reviewed by the Departmental Representative. Contractor to establish numbering system for footings/posts (i.e. Section 1 – Footing 1). The termination depth, soils encountered and type of footing to be recorded and submitted to the Departmental Representative for approval and payment.
9. Post & Footing - Type 2
- 9.1. Payment for this item shall be full compensation for labour, equipment, and materials to excavate footing, install Type 2 concrete footings, and supply and install steel HSS posts described on the Drawings, Specifications, and to meet the necessary design. This shall include submittals, testing, placing excavated material on site, all cleanup, and any other incidental work

for which payment is not specified elsewhere is included. This item does not include disposal of surplus excavated material off site, site restoration or decompaction.

9.2. Payment: Unit rate bid per each Type 2 post & footing installed.

9.3. Measurement: Each installed and reviewed by the Departmental Representative. Contractor to establish numbering system for footings/posts (i.e. Section 1 – Footing 1). The termination depth, soils encountered and type of footing to be recorded and submitted to the Departmental Representative for approval and payment.

#### 10. Post & Footing - Type 3

10.1. Payment for this item shall be full compensation for labour, equipment, and materials to excavate footing, install Type 3 concrete footings, and supply and install steel HSS posts described on the Drawings, Specifications, and to meet the necessary design. This shall include submittals, testing, placing excavated material on site, all cleanup, and any other incidental work for which payment is not specified elsewhere is included. This item does not include disposal of surplus excavated material off site, site restoration or decompaction.

10.2. Payment: Unit rate bid per each Type 3 post & footing installed.

10.3. Measurement: Each installed and reviewed by the Departmental Representative. Contractor to establish numbering system for footings/posts (i.e. Section 1 – Footing 1). The termination depth, soils encountered and type of footing to be recorded and submitted to the Departmental Representative for approval and payment.

#### 11. Post & Footing - Type 4

11.1. Payment for this item shall be full compensation for labour, equipment, and materials to excavate footing, install Type 4 concrete footings, and supply and install steel HSS posts described on the Drawings, Specifications, and to meet the necessary design. This shall include submittals, testing, placing excavated material on site, all cleanup, and any other incidental work for which payment is not specified elsewhere is included. This item does not include disposal of surplus excavated material off site, site restoration or decompaction.

11.2. Payment: Unit rate bid per each Type 4 post & footing installed.

11.3. Measurement: Each installed and reviewed by the Departmental Representative. Contractor to establish numbering system for footings/posts (i.e. Section 1 – Footing 1). The termination depth, soils encountered and type of footing to be recorded and submitted to the Departmental Representative for approval and payment.

#### 12. Competent Bedrock Embedment

12.1. Payment for this item shall be full compensation for labour and equipment to excavate into competent bedrock for the post footings. Competent bedrock is defined as the bedrock below the 200 mm weathered rock profile. Wherever bedrock is encountered, the footing must be embedded 400 mm into competent bedrock or to the full design depth. This item will apply to all footing types when bedrock is encountered before the design depth. The top 200 mm of the bedrock profile is considered part of the weathering profile and is not considered as bedrock drilling for payment purposes. The payment for the labour, equipment, and materials to install concrete is included in the Concrete Footing items above. This shall include submittals, testing, placing excavated material on site, all cleanup, and any other incidental work for which payment is not specified elsewhere is included. This item does not include disposal of surplus excavated material off site, site restoration or decompaction.

12.2. Payment: Unit rate bid per linear metre of competent bedrock embedment, rounded to the nearest 50 mm.

12.3. Measurement: Linear metre installed (Rounded to the nearest 50mm) and reviewed by the Departmental Representative. Contractor to establish numbering system for footings (i.e. Section 1 – Post 1). The depth of competent embedment to be recorded for each footing and submitted to the Departmental Representative for approval and payment.

#### 13. Disposal of Surplus Excavation Material

- 13.1. Payment for this item shall be full compensation for the removal and transportation of surplus excavated material off site, if an appropriate location to place the material cannot be established within the work limits. Material may be transported to Peyto Pit on Tunnel Mountain Road in Banff, AB, approximately 35km from Johnston Canyon Trailhead. This shall include any other incidental work for which payment is not specified elsewhere is included.
- 13.2. Payment: Unit rate bid per cubic metre removed.
- 13.3. Measurement: Cubic metre appropriately removed and transported to Peyto Pit. The Contractor shall complete a pre and post construction survey of the disposal area. The Contractor is responsible for grading all material piles into one uniform pile or as required by the Departmental Representative. Survey results to be submitted to the Departmental Representative for review and payment.
14. Steel Railing - Standard
- 14.1. Payment for this item shall be full compensation for all costs associated with the supply and installation of standard steel railing. This includes but is not limited to the material supply costs for all steel (excluding HSS posts), shop/field coatings, and fastening hardware, as well as the equipment and labour costs associated with completing the removals and installations according to the contract drawings. Also included shop drawings, submittals, clean up, satisfactory disposal of waste materials (including existing timber curbs in Section 2) and any other incidental work for which payment is not specified elsewhere is included. This includes end treatment and tie-in details. This item does not include the repairs to the existing railing on catwalk 6, the removable railing in Section 5 across the bridge, or the replacement of the existing railing in Section 8.
- 14.2. Payment: Unit rate bid per linear metre of standard railing installed.
- 14.3. Measurement: Linear metre as field measured along the inside face at the base of the standard railing.
15. Steel Railing - Section 5 Bridge
- 15.1. Payment for this item shall be full compensation for all costs associated with the supply and installation of removable railing in Section 5 across the bridge. This includes but is not limited to the material supply costs for all steel (excluding HSS posts), shop/field coatings and fastening hardware, as well as the equipment and labour costs associated with completing the installations according to the contract drawings. Also included is shop drawings, submittals, clean up; and any other incidental work for which payment is not specified elsewhere is included.
- 15.2. Payment: Unit rate bid per linear metre of removable railing installed.
- 15.3. Measurement: Linear Metre as field measured along the inside face at the base of the removable railing.
16. Steel Railing - Section 8 Replacement
- 16.1. Payment for this item shall be full compensation for all costs associated with the removal and disposal of existing railing as well as supply and installation of new railing in Section 8. This includes but is not limited to the material supply costs for all steel (including HSS posts, end treatments and tie-ins), shop/field coatings and fastening hardware, as well as the equipment and labour costs associated with completing the removals and installations according to the contract drawings. Also included is shop drawings, submittals, clean up; and any other incidental work for which payment is not specified elsewhere is included.
- 16.2. Payment: Unit rate bid per linear metre of railing removed and installed.
- 16.3. Measurement: 25% of unit rate payable per linear metre upon removal and satisfactory disposal of existing railing. 75% of unit rate payable per linear metre upon installation of new railing. Field measured along the inside face at the base of the railing.
17. Cold Patch Asphalt

- 17.1. Payment for this item shall be full compensation for labour, equipment, and materials to remove, repair and install cold patch asphalt material as per Section 32 12 16.01. Also included is submittals, all cleanup, and any other incidental work for which payment is not specified elsewhere is included. This does not include the payment for repair of damaged asphalt that was intended to remain. The Contractor shall cover the repair cost of any damages to the walking surface of the Johnston Canyon Trail resulting from their equipment operation or material placement.
- 17.2. Payment: Unit rate bid per square metre of cold patch asphalt placed.
- 17.3. Measurement: Square metre area placed as field measured with 50 mm nominal thickness.

End of Section

## **SECTION 01 31 19**

### **Project meetings**

#### **Part 1 General**

##### **1.1 Administrative**

1. Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.
2. Prepare agenda for meetings.
3. Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative.
4. Provide physical space and make arrangements for meetings.
5. The Departmental Representative will preside at meetings.
6. The Departmental Representative will record the meeting minutes, include significant proceedings and decisions, and identify actions by parties.
7. The Departmental Representative will reproduce and distribute copies of minutes after meetings and transmit to meeting participants and, affected parties not in attendance.
8. Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

##### **1.2 Preconstruction meeting**

1. Within ten (10) days after award of Contract, the Departmental Representative will request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
2. Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
3. Departmental Representative will establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
4. Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
5. Agenda to include:
  - 5.1. Appointment of official representative of participants in the Work.
  - 5.2. Schedule of Work: in accordance with Section 01 32 16.19 - Construction Progress Schedule.
  - 5.3. Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - 5.4. Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
  - 5.5. Site security in accordance with Section 01 14 00 – Work Restrictions and Section 01 52 00 – Construction Facilities.
  - 5.6. Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - 5.7. Owner provided products.
  - 5.8. Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - 5.9. Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
  - 5.10. Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.



- 5.11. Monthly progress claims, administrative procedures, photographs, hold backs.
- 5.12. Close out procedures and submittals in accordance with Sections 01 77 00 – Closeout Procedures and 01 78 00 – Closeout Submittals.
- 5.13. Appointment of inspection and testing agencies or firms.
- 5.14. Insurances, transcript of policies.

### **1.3 Progress meetings**

- 1. During course of Work and until project completion, schedule progress meetings weekly.
- 2. Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
- 3. The Departmental Representatives will notify parties of confirmed attendance minimum three (3) days prior to meetings.
- 4. The Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance within three (3) days after meeting.
- 5. Agenda to include the following:
  - 5.1. Review, approval of minutes of previous meeting.
  - 5.2. Review of Work progress since previous meeting.
  - 5.3. Review Environmental issues.
  - 5.4. Review site access and emergency response protocol issues.
  - 5.5. Review site safety and security issues.
  - 5.6. Field observations, problems, conflicts.
  - 5.7. Problems which impede construction schedule.
  - 5.8. Review of off-site fabrication delivery schedules.
  - 5.9. Corrective measures and procedures to regain projected schedule.
  - 5.10. Revision to construction schedule.
  - 5.11. Progress schedule, during succeeding work period.
  - 5.12. Review submittal schedules: expedite as required.
  - 5.13. Maintenance of quality standards.
  - 5.14. Review proposed changes for effect on construction schedule and on completion date.
  - 5.15. Other business.

## **Part 2 Products**

### **2.1 Not used**

- 1. Not Used.

## **Part 3 Execution**

### **3.1 Not used**

- 1. Not Used.

End of Section

## **SECTION 01 32 16.19**

### **Construction progress schedule - bar (ganttt) chart**

#### **Part 1 General**

##### **1.1 Definitions**

1. Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
2. Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
3. Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
4. Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
5. Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
6. Master Plan: summary-level schedule that identifies major activities and key milestones.
7. Milestone: significant event in project, usually completion of major deliverable.
8. Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
9. Project Planning, Monitoring and Control System: overall system operated by Contractor to enable monitoring of project work in relation to established milestones.

##### **1.2 Requirements**

1. Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
2. Ensure all of the Work required for the Contract is identified in the Project Schedule. Refer to Section 01 11 00 – Summary of Work for a potential list of activities.
3. Plan to complete Work in accordance with prescribed milestones and time frame.
4. Limit activity durations to maximum of approximately 5 working days, to allow for progress reporting.
5. 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.
6. The Bar Chart shall identify the activities on the Critical Path.

##### **1.3 Action and informational submittals**

1. Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Submit to Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
3. Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

## **1.4 Project milestones**

1. Project milestones form interim targets for Project Schedule.
  - 1.1. Mobilization,
  - 1.2. Completion of concrete footings
  - 1.3. Completion of railing installation
  - 1.4. Substantial Completion
  - 1.5. Site Restoration, re-seeding and non-native vegetation control complete
  - 1.6. Final Completion

## **1.5 Master plan**

1. Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
2. Departmental Representative will review and return revised schedules within 10 working days.
3. Revise impractical schedule and resubmit within 5 working days.
4. Accepted revised schedule will become Master Plan and be used as baseline for updates.

## **1.6 Project schedule**

1. Develop detailed Project Schedule derived from Master Plan.
2. Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
  - 2.1. Award.
  - 2.2. Permits.
  - 2.3. Pre-mobilization site visit.
  - 2.4. Pre-mobilization submittals.
  - 2.5. Samples.
  - 2.6. Mobilization.
  - 2.7. Construction phase submittals.
  - 2.8. Tree removal.
  - 2.9. Excavation for railing footings.
  - 2.10. Construction of cast-in-place concrete footings.
  - 2.11. Supply, fabrication, and installation of new steel railing.
  - 2.12. Supply, fabrication, and installation of railing repair of existing railing on Catwalk 6.
  - 2.13. Supply and installation of cold mix asphalt.
  - 2.14. Substantial completion.
  - 2.15. Demobilization.
  - 2.16. Site restoration, re-seeding and non-native vegetation control.
  - 2.17. Final completion.
  - 2.18. Project completion submittals.

## **1.7 Project schedule reporting**

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

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

### **1.8 Project meetings**

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

## **Part 2 Products**

### **2.1 Not used**

1. Not used.

## **Part 3 Execution**

### **3.1 Not used**

1. Not used.

End of Section

## **SECTION 01 33 00**

### **Submittal procedures**

#### **Part 1 General**

##### **1.1 Administrative**

1. Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
2. Do not proceed with Work affected by submittal until review is complete.
3. Present shop drawings, product data, samples, and mock-ups in SI Metric units.
4. Where items or information is not produced in SI Metric units converted values are acceptable.
5. Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
6. Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
7. Verify field measurements and affected adjacent Work are coordinated.
8. Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
9. Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
10. Keep one reviewed copy of each submission on site.

##### **1.2 Shop drawings and product data**

1. The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
2. Submit drawings stamped and signed by professional engineer registered or licensed in Alberta, Canada.
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 14 days for Departmental Representative's review of each submission.
5. Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
6. Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
7. Submit letter of certification with all mix designs.

8. Accompany submissions with transmittal letter, containing:
  - 8.1. Date.
  - 8.2. Project title and number.
  - 8.3. Contractor's name and address.
  - 8.4. Identification and quantity of each shop drawing, product data and sample.
  - 8.5. Other pertinent data.
9. Submissions include:
  - 9.1. Date and revision dates.
  - 9.2. Project title and number.
  - 9.3. Name and address of:
    - 9.3.1. Subcontractor.
    - 9.3.2. Supplier.
    - 9.3.3. Manufacturer.
  - 9.4. Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
  - 9.5. Details of appropriate portions of Work as applicable:
    - 9.5.1. Fabrication.
    - 9.5.2. Layout, showing dimensions, including identified field dimensions, and clearances.
    - 9.5.3. Setting or erection details.
    - 9.5.4. Capacities.
    - 9.5.5. Performance characteristics.
    - 9.5.6. Standards.
    - 9.5.7. Relationship to adjacent work.
10. After Departmental Representative's review, distribute copies.
11. Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
12. Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
13. Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
  - 13.1. Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
  - 13.2. Testing must have been within 3 years of date of contract award for project.
14. Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
  - 14.1. Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
  - 14.2. Certificates must be dated after award of project contract complete with project name.
15. Submit electronic copies of Manufacturer's instructions for requirements requested in specification Sections and as requested by Departmental Representative.

- 15.1. Pre-printed material describing installation of product, system, or material, including special notices and Material Safety Data Sheets concerning impedances, hazards, and safety precautions.
16. Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
17. Documentation of the testing and verification actions taken by Manufacturer's representative to confirm compliance with Manufacturer's standards or instructions.
18. Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
19. Delete information not applicable to project.
20. Supplement standard information to provide details applicable to project.
21. If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

### **1.3 Samples**

1. Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
2. Deliver samples prepaid to Departmental Representative's office.
3. Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
4. Where colour, pattern or texture is criterion, submit full range of samples.
5. Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
6. Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
7. Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

### **1.4 Certificates and transcripts**

1. Immediately after award of Contract, submit Workers' Compensation Board status.
2. Submit transcription of insurance immediately after award of Contract.

### **1.5 Required contractor submittals**

1. General
  - 1.1. This Clause identifies the plans, programs, and documentation required prior to mobilization on site and during the construction phase.
2. Pre-Mobilization Submittals
  - 2.1. Submit the following plans and programs to the Departmental Representative for review a minimum of twenty one (21) days prior to mobilization to the project site. The Contractor shall not begin any site Work until the Departmental Representative has authorized acceptance of the submittals in writing. The Contractor shall not construe the Departmental Representative's authorization of the submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. Authorizations of the programs shall not relieve the contractor for 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.

- 2.1.1. Project Schedule, detailing the schedule of the workdays and manpower required to complete each phase of the project in accordance with Section 01 32 16.19 Construction Progress Schedule – Bar (GANTT) Chart.
  - 2.1.2. Contractor Chain of Command, listing key Contractor personnel, including names and positions, addresses, telephone, cellular telephone and/or pager numbers. The list shall include the names and telephone/cellular telephone/pager numbers for contact persons who are available on a 24-hour basis in the event of emergencies.
  - 2.1.3. List of Sub-Contractors and Suppliers.
  - 2.1.4. Work Plan, describing the Contractor's intended methods of construction, including but not limited to the environmental mitigation strategies, materials, equipment, and projected number of personnel on site.
    - 2.1.4.1. Include plan for footing excavations.
    - 2.1.4.2. Include plan for pouring concrete footings.
    - 2.1.4.3. Include plan for railing installation.
    - 2.1.4.4. Include plan for project staging and method for trail closures.
  - 2.1.5. Helicopter Execution Plan in accordance with Section 01 25 20.10 – Use of Helicopter.
  - 2.1.6. Environmental Protection Plan (EPP) in accordance with Section 01 35 43 – Environmental Procedures.
  - 2.1.7. Traffic Management Plan (TMP), in accordance with the requirements of Section 01 55 26 – Traffic Control.
  - 2.1.8. Site Use Plan including; a site plan identifying proposed laydown areas, construction fencing, office trailer, porta potties, material and equipment storage, closure signage locations, muster point(s).
  - 2.1.9. Quality Management Plan in accordance with Section 01 45 00 – Quality Control.
  - 2.1.10. Health and Safety Plan in accordance with Section 01 35 29.06 – Health and Safety Requirements.
  - 2.2. Submit a copy of the filed Notice of Project with Provincial authorities.
  - 2.3. The Contractor shall not construe the Departmental Representative's authorization of the submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. Authorization of the programs shall not relieve the Contractor from the responsibility to conduct the Work in strict accordance with the requirements of Federal 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. Construction Phase Submittals
    - 3.1. Pre-condition survey including but not limited to the laydown areas, Johnston Canyon Fire Road, connecting trails and area of new railing extension.
    - 3.2. Weekly Progress Reports that outline the Work completed to date as well as the anticipated Work to be performed for the following week on a day-to-day basis.
    - 3.3. Weekly updates to helicopter execution plan.
    - 3.4. Quality Control Inspection Reports – The Contractor shall maintain daily inspection reports that itemize the results of all Quality Control inspections conducted by the Contractor. The reports



shall be made available for review by the Departmental Representative upon request. A summary of all Quality Control inspections conducted to date shall be submitted by the Contractor with each payment request.

- 3.5. Foundation excavation records indicating termination depth and depth of competent bedrock embedment, if applicable.
- 3.6. Shop drawings – The Contractor shall submit all shop drawings required to fabricate and conduct the work a minimum twenty-one days (three weeks) prior to fabrication.
- 3.7. Concrete Mix Designs and supporting data.
- 3.8. Asphalt Mix Designs and supporting data.
- 3.9. Clearing and Grubbing plans in accordance with Section 31 11 00 - Clearing and Grubbing.
- 3.10. Mill certificates.
- 3.11. Product data sheets.
- 3.12. Progress Photographs:
  - 3.12.1. Take photographs of site conditions before, during, and after construction. Take photographs of any unique or unusual items.
  - 3.12.2. Formats:
    - 3.12.2.1. Electronic: .jpg files
    - 3.12.2.2. Quality: minimum five (5) mega pixels, full-colour, and not scanned.
  - 3.12.3. Identification: spreadsheet listing name and number of project, description of each photograph with the corresponding file name and date taken.
  - 3.12.4. Viewpoints: viewpoints determined by the Departmental Representative.
  - 3.12.5. Detail Documentation: photographs documenting key details of the construction and as requested by the Departmental Representative.
  - 3.12.6. Submission Frequency: prior to commencement of work and weekly thereafter with progress reports, or as directed by the Departmental Representative.
  - 3.12.7. Submit all electronic pictures and the associated identification as part of the closeout package.
- 3.13. Submit copies of Contractor's authorized representative's work site health and safety inspection reports to the Departmental Representative and authority having jurisdiction weekly.
- 3.14. Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- 3.15. Submit copies of incident and accident reports.
4. Project Completion Submittals in accordance with Section 01 78 00 Closeout Submittals.
  - 4.1. Record Drawings – The Contractor shall submit copies of all Contractor's Drawings revised as necessary to record all as-built changes to the Work and the Contractor shall submit a set of Contract Drawings clearly marked to record as-built changes to the Work
  - 4.2. Quality Control/Quality Assurance Records – The Contractor shall submit an electronic and itemized set of project quality control and quality assurance records

## Part 2 Products

### 2.1 Not used

1. Not Used.

## Part 3 Execution

### 3.1 Not used

1. Not Used.

End of Section

## **SECTION 01 35 29.06**

### **Health and safety requirements**

#### **Part 1 General**

##### **1.1 Reference standards**

1. Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
2. Health Canada/Workplace Hazardous Materials Information System (WHMIS).
  - 2.1. Safety Data Sheets (SDS).
3. Province of Alberta
  - 3.1. Occupational Health and Safety Act, R.S.A. - Updated 2013.

##### **1.2 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
  - 2.1. Contractor's safety policy.
  - 2.2. Identification of applicable compliance obligations.
  - 2.3. Definition of responsibilities for project safety/organization chart for project.
  - 2.4. General safety rules for project.
  - 2.5. Job specific safe work procedures.
  - 2.6. Inspection policy and procedures
  - 2.7. Incident reporting and investigation policy and procedures.
  - 2.8. Occupational Health and Safety meetings.
  - 2.9. Occupational Health and Safety communications and record keeping procedures.
  - 2.10. Results of site specific safety hazard assessment.
  - 2.11. Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
3. Submit copies of Contractor's authorized representative's work site health and safety inspection reports 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 WHMIS Safety Data Sheets (SDS).
7. Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 14 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 7 days after receipt of comments from Departmental Representative.
8. Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

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

### **1.3 Filing of notice**

1. File Notice of Project with Provincial authorities prior to beginning of Work.

### **1.4 Safety assessment**

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

### **1.5 Meetings**

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

### **1.6 Regulatory requirements**

1. Do Work in accordance with National Parks Act.

### **1.7 General requirements**

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

### **1.8 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.

### **1.9 Compliance requirements**

1. Comply with Occupational Health and Safety Act, General Safety Regulation, Alberta Reg.
2. Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

### **1.10 Unforeseen hazards**

1. When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

### **1.11 Health and safety coordinator**

1. Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
  - 1.1. Have site-related working experience specific to activities associated with backcountry construction and helicopter work.

- 1.2. Have working knowledge of occupational safety and health regulations.
- 1.3. Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
- 1.4. Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- 1.5. Be on site during execution of Work and report directly to and be under direction of site supervisor.

### **1.12 Posting of documents**

1. Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.

### **1.13 Correction of non-compliance**

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

### **1.14 Blasting**

1. Blasting or other use of explosives is not permitted.

### **1.15 Work stoppage**

1. Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.
2. In the event that work is temporarily stopped either by the Departmental Represented, or by a body having jurisdiction, it will not relieve the Contractor of their responsibilities under this Contract. Standby time and all costs associated with a stop work order due to safety considerations, is considered incidental to the contract.

## **Part 2 Products**

### **2.1 Not used**

1. Not used.

## **Part 3 Execution**

### **3.1 Not used**

1. Not used.

End of Section

## **SECTION 01 35 43**

### **Environmental procedures**

#### **Part 1 General**

##### **1.1 Measurement procedures**

1. The cost to the Contractor to meet the environmental and aesthetic protection requirements described in this section unless specifically stated otherwise shall be considered incidental to the Work and no additional payment will be made.

##### **1.2 General**

1. All Contractor operations shall be performed in such a manner that no detritus from their operations shall enter any waterway, ditches, or wetlands within Banff National Park.
2. If, in the opinion of the Departmental Representative, full containment of Contractor's detritus is not being achieved, operations may be ordered halted until the situation is rectified.
3. In addition to the requirements outlined in the project specifications, the Contractor shall adhere to the Impact Assessment Act 2019, Department of Fisheries and Oceans: Interim Code of Practice: End-of-pipe fish protection screens for small water intakes in fresh water, Parks Canada Banff Field Unit Pre-Construction Bat Roost Survey Guidelines for Projects Requiring Tree Removal (if removing trees during the bat window April 15<sup>th</sup> to September 1<sup>st</sup>), Direction for Permitted Users Conducting Water-related activities in Banff (Banff Decontamination Procedure), refer to Appendix E – Environmental Reference Documents.
4. All mitigations noted in the 2015 Basic Impact Assessments Mitigations, refer to Appendix E1, and, the 2022 Environmental Assessment Amendment Mitigations, refer to Appendix C, shall be considered Contractor requirements. Where there are differences the most stringent mitigations will apply.
5. The following key mitigations are highlighted. This list does not replace the comprehensive mitigation requirements and details provided elsewhere in these project specifications, or the decontamination procedure:
  - 5.1. The Environmental Protection Plan (EPP) certified by a Qualified Environmental Professional (QEP) is to be submitted at least twenty-one (21) days prior to mobilization. EPP to be approved by the Environmental Surveillance Officer (ESO) prior to start of construction.
  - 5.2. All contractor personnel working on site are required to attend an on-site environmental briefing conducted by the ESO prior to commencement of works.
  - 5.3. Work will be conducted outside areas of known historical or cultural significance. There will be no trespassing over areas of known historical or cultural significance. The *Accidental Finds Protocol* shall be followed in the event that items are found when archaeologists or cultural resource managers are not present on site during construction activities.
    - 5.3.1. Accidental Finds Protocol: There may be cultural resources present in the project area that have not yet been discovered (even after an archaeological assessment has been carried out or no assessment was deemed necessary for the project). If staff observe any significant cultural resources while working, they should stop work in the immediate area, and contact the Departmental Representative, or a Parks Canada archaeologist or cultural resource advisor, to discuss any protective measures that might be needed.
    - 5.3.2. No smoking is allowed on the construction site to ensure that accidental ignition of any flammable material is prevented.
  - 5.4. No vehicle fueling or servicing permitted within 100 m of waterway.

- 5.5. Equipment, propane storage, and fuel lines to be inspected daily for leaks. All equipment stored overnight in staging areas with appropriate containment and with drip trays and/or pans under fuel tanks.
- 5.6. Prior to coming on site, all equipment that came into contact with soil at previous site (i.e. clearing, grading, etc.) must be cleaned (blow down/scrape down) and approved by the ESO.
- 5.7. To prevent spread of whirling disease, all gear and equipment arriving on site which may be used instream/touching water must be cleaned and decontaminated in accordance with the protocol outlined in the Banff Decontamination Procedure for whirling disease prevention. Proof of decontamination to be provided to Departmental Representative and ESO prior to commencement of works.
- 5.8. Restricted Activity Permits (RAP) are required for some portions of the work, including but not limited to, tree removal; use of on-site water as a water source for construction purposes, access using the Johnston Canyon Fire Road and the use of a helicopter.
- 5.9. To minimize disruption to the Johnston Canyon day use area parking lot (P1), the materials laydown and staging will be split between the East half of the parking lot (P1) and the area at the junction of the Johnston Canyon Fire Road and connecting trail.
- 5.10. Non-native vegetation control will be required during and post construction.
6. Banff Field Unit (FU) to be kept apprised of timelines, work periods, and construction activities so that their staff can provide information to the public to prevent additional safety risks for recreational users in the vicinity of the Project site during construction. Communication to the FU shall be through the Departmental Representative.

### **1.3 National Park Regulation**

1. The Contractor shall ensure that all work is performed in accordance with the ordinances, laws, rules, and regulations set out in the Canada National Parks Act and Regulations.
2. The Contractor and any sub-Contractors shall obtain a business license from Parks Canada Administration Office in Banff, prior to commencement of the contract.
3. All Contractor's business and private vehicles are required to obtain a vehicle work pass from Parks Canada. These permits may be obtained free of charge at Parks Administration Office in Banff.

### **1.4 Impact assessment act (IAA) 2019**

1. Execution of the work is subject to the provisions within the Impact Assessment Act (IAA) 2019 and subsequent amendments.
2. Failure to comply with or observe environmental protection measures as identified in these specifications may result in the Work being suspended pending rectification of the problems and operators of equipment being charged under the National Park Act.
3. The Contractor shall notify the ESO (Environmental Surveillance Officer) and the Departmental Representative in a reasonable timely manner of any actual or potential environmental incidents or failure of protection measures, and immediately of any violations of environmental approvals, permits, authorizations, or EPP measures.

### **1.5 Relics and antiquities**

1. Give immediate notice to Parks Canada if evidence of archaeological finds are encountered during construction, and wait for written instructions before proceeding with Work in this area.
2. Relics and antiquities and items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tables, and similar objects found on the site shall remain the property of Parks Canada. Protect such articles and request directives from Parks Canada.

3. Provide 48 hours' notice to Parks Canada prior to commencing any work that may interfere with or affect any identified historical or archaeological site. Commence work only upon written instruction from Parks Canada.

## **1.6 Wildlife**

1. Avoid or terminate activities on site that attract or disturb wildlife. Feeding, harassment, or destruction of wildlife is strictly prohibited.
2. Allow any wildlife encountered within or near the Project area to passively disperse. Construction vehicles to yield to wildlife.
3. Pets are not allowed on the work site, or in any administrative or laydown areas.
4. The EPP will be developed to include protocols for addressing wildlife encounters. Contractor is required to carry satellite phones or cell phones for use in reporting large carnivore sightings or incidents and other emergencies to Parks Dispatch.
5. The EPP will include a plan to minimize wildlife disturbance, including the time of work, and potentially stopping activities while potentially dangerous and/or sensitive wildlife is in the immediate vicinity.
6. All personnel will be instructed by Parks Canada's ESO in procedures to follow in the event of wildlife appearance near or intrusion onto the construction site. Personnel are not to attract or approach any wildlife seen near the site and are to vacate their location in the event of aggressive behaviour or persistent intrusion by bears, cougars, wolves, elk, or moose. All carnivore sightings and aggressive ungulate behavior shall be reported Banff Dispatch (403-762-1470) immediately. The ESO and the Departmental Representative are to be notified about the circumstance immediately. The general presence of wildlife observed near the construction site, any carcasses, or unusual wildlife observations shall be reported in writing to the ESO and the Departmental Representative within 24 hours of the sighting.
7. If active nests, roosts, or dens of species protected by SARA or the Migratory Birds Convention Act are identified, immediately notify the Departmental Representative to determine appropriate mitigation measures. Active nests cannot be relocated and species-specific setback distances will be required until nestlings have fledged.
8. See BIA and associated amendments for species specific mitigations.

## **1.7 Drainage**

1. Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
2. If pumping/dewatering, water shall be dispersed onto vegetated areas only, as directed by the ESO. Water is not permitted to be dispersed into or near waterways.
3. Do not pump water containing suspended materials into waterways, sewer, or drainage systems.
4. Control dispersal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.
5. The Contractor's EPP will detail how the dewatering will be undertaken, with special attention to the environmental sensitivity of the discharge area, freezing conditions operation, overflow avoidance, decanting, and settlement pond reclamation.

## **1.8 Fire prevention and control**

1. A fire extinguisher will be carried and available for use on each machine in the event of fire (e.g. ignited by a spark) to prevent the fire from burning the unit or spreading to other fuels in the work area. Basic fire-fighting equipment – e.g. three shovels, two pulaskis, and two 20 litre backpack pumps shall be maintained at the construction site at a location known and easily accessible to all the Contractor's staff.



2. Machinery and equipment shall be operated in a manner and with all original Manufacturer's safety devices to prevent ignition of flammable materials in the area.
3. No smoking is allowed on the construction site to ensure that accidental ignition of any flammable material is prevented.
4. The Contractor shall maintain an awareness of the fire danger rating (Index) in the work area by contacting the Parks Fire Duty Officer. Fire prevention care is to be commensurate with the fire Index. Fire Duty Officer 403-763-8025 or banff-firedutyofficer@pc.gc.ca.
  - 4.1. Each day before welding, the Fire Duty Officer is required to be called. Work will be permitted depending on Fire Danger Rating.
  - 4.2. During times of welding and grinding, wet the area with a Wajax bag (20L backpack pump). In the event of a fire, use the wajax bag to extinguish the fire.
5. In case of fire, the Contractor or worker shall take immediate action to extinguish the fire provided it is safe to do so. The ESO and the Departmental Representative shall be notified of any fire immediately.
6. Fires or burning of waste materials is not permitted.

### **1.9 Site access and parking**

1. A plan detailing access to the construction site shall be prepared by the Contractor and included in the EPP. This includes access using the Johnston Canyon Fire Road (access through the Johnston Canyon Lodge and Bungalow commercial operation), and the connecting trail; access within the work limits, including day-to-day entry/egress, and plans for delivery and supply of material and equipment will be anticipated and described. The access plan shall describe worker transportation to and from the construction site, and parking of worker's private vehicles.
2. The Johnston Canyon Trail will remain open to the public from the day use parking lot (P1) to the Lower Falls. The Contractor will not use this portion of the trail.
3. Restrict vehicle movements to work limits.
4. Do not park vehicles in areas beyond work limits, unless specifically authorized by the ESO and the Departmental Representative.
5. The construction office shall be located in the laydown area, actual location subject to the approval of the Departmental Representative and ESO. It is anticipated the construction office may comprise the Contractor's main office. Special measures are required to ensure that conflict with bears that are known to frequent the whole construction area does not arise. These include, but may not be limited to:
  - 5.1. Construction waste shall be stored separately from food waste, in a waste receptacle with a bear proof cover. Food waste shall be removed from site daily. Wildlife attractants (fuel, food, garbage etc.) must be secure at all times.
6. As an alternative to the above mentioned locations, a Contractor's office and work headquarters may be established at another location at the discretion of Parks Canada. The Contractor shall prepare a plan regarding structures, equipment, waste materials management, water, power and sewage services, materials laydown area, fuel storage, operations, etc. required at this location. The plan will be subject to review and approval by the Departmental Representative. This site may be shared with other Contractors.
7. A workers accommodation camp will not be permitted.
8. Materials laydown shall be in the defined areas.
  - 8.1. Staging areas shall be secured at all times. Contractor shall fence staging areas to secure it from wildlife and humans.
9. Contractor responsible for plowing the Johnston Canyon Fire Road for access if required. Plowing can cause damage and should be done on frozen ground only.

10. Contractor to minimize use of the Johnston Canyon Fire Road if saturated.

### **1.10 Contractor's operations**

1. Confine all operations to the work limits as staked or designated by the Departmental Representative. No activities of any kind may be carried out beyond those work limits without the written permission of the Departmental Representative.
2. Do not store or stockpile construction materials in the trees bordering or being preserved on site. Do not unreasonably encumber the site with products.
3. Provide sufficient sanitary facilities and maintain in a clean condition.
4. Conduct operations at all times in such a manner as to preserve the natural features and vegetation in the area. Cut and fill slopes shall be blended with adjoining topography. Material from fill slopes shall not be permitted to slough or roll into surrounding tree cover or to bury any plant material designated to be retained.
5. When in the opinion of Department Representative, negligence on the part of the Contractor results in damage or destruction of vegetation, or other environmental or aesthetic facilities beyond the staked or designated work area, the Contractor shall be responsible at their expense, for complete restoration including the replacement of trees, shrubs, topsoil, grass, etc. to the satisfaction of Parks Canada.
6. Machinery and vehicles must keep to roads, trails, or designated temporary workspaces and turnaround points.
7. Rutting and/or compaction of ground surfaces should be avoided as much as possible by keeping to designated work areas and away from wet locations. Soil compaction or vegetative damage as a result of access shall be reclaimed by contractor, at the request of ESO.
8. All areas with rutting damage or noticeable compaction from heavy equipment must be re-graded and backfilled if necessary.

### **1.11 Water (surface and ground)**

1. Erosion and Sediment Control (ESC) Management plan (included with the EPP) to be implemented and all components to be regularly maintained to guarantee effectiveness. The condition of all active components must be provided in an inspection report for review to the ESO on a bi-weekly basis.
2. Plan project activities for dry weather to allow easier containment of contaminated runoff and sediment.
  - 2.1. If scheduled activity requires working in wet conditions, isolate the area of work and use/install appropriate sediment controls to prevent the release of sediment-laden water or other deleterious substances into surface waters.
3. If on-site water will be used as a water source for construction purposes, obtain a Restricted Activity Permit (RAP) for water withdrawal and put in place proper screening procedures as per DFO Interim guidelines to prevent fish impingement and entrainment.
4. If accidental spills or leaks occur from equipment, follow procedure in the SRP (submitted as part of the EPP) and notify the ESO immediately.
5. Fuel management and Spill Containment requirements are explained in the Equipment Fueling, and Spill Containment sub sections respectively.
6. Locate concrete wash stations away from water sources and identify their locations in the EPP in consultation with the ESO.

### **1.12 Work around and over water**

1. The construction project shall take place outside of the wetted perimeter of any waterways. Some of the construction may require working over waterways. In these instances, the Contractor is to

describe the measures in the EPP, to be employed to ensure fugitive materials, and especially deleterious substances do not enter any waterway – e.g. material produced by concrete curing.

2. The construction project shall take place above the high water mark of Johnston Creek.
3. Avoid or mitigate impacts to fisheries resources through application of BMPs for working in close proximity to water. Work within 30 m from a water body will adhere to avoidance and mitigation measures as identified by the Department of Fisheries and Oceans and specific Fishers Act criteria so that activities near water do not interfere with fish habitat.
  - 3.1. The only interaction the contractor should have is when extracting water. For water extraction the contractor shall follow DFO Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater.
4. To prevent the spread of whirling disease, all gear and equipment arriving on site which may be used instream/touching water must be cleaned and decontaminated according to the protocol outlined in the Banff Decontamination Procedure. Proof of decontamination will be required prior to commencement of works. Decontamination will include all Personal Protective Equipment (boots, gloves, etc.), nets, and heavy equipment. Proof may be supplied in the form of photos or other means which provide documentation.
5. Sediment control measures shall be to the satisfaction of the ESO.
6. Store hazardous or toxic products (i.e. fuels, lubricants, etc.) secured within secondary containment, and no closer than 100 m from drainage, wetland, watercourse, and water bodies.
7. Fuel management requirements are explained in the Equipment Fueling and Maintenance, and Spill Containment Plan sub sections.
8. Do not operate construction equipment in waterways.
9. Waterways to be kept free of excavated fill, waste material and debris.
10. Do not skid logs or construction materials across waterways. Skid paths shall be limited and restored as per direction from the ESO.
11. Install debris netting system as required to prevent debris from falling into the waterway during demolition and construction. Waterways to be kept free of waste material and debris at all times.
12. Install containment system as required to prevent spoil from falling into the waterway. Waste spoil from drilling to be collected and disposed of outside of Park at an appropriate facility.

### **1.13 Pollution control**

1. Maintain all temporary erosion and pollution control features for this project.
2. Control emissions from equipment and plant in accordance with local authorities' emission requirements.
3. Only use stationary emission sources such as portable diesel generators, compressors, etc. when necessary. All sources shall have a secondary containment system.
4. No equipment (motor vehicle or construction equipment) motor to run idle when not in used, unless required under extenuating circumstances, and carpooling is encouraged to reduce air emissions and noise pollution.
5. Maintain all equipment, vehicles, and stationary emission sources and use at optimal loads for minimal noise and air emissions.

### **1.14 Start-up and environmental briefing**

1. The ESO (Environmental Surveillance Officer) shall be notified one week prior to mobilization to establish a time for the environmental briefing.
2. All staff employed at the construction site shall attend a briefing regarding their individual and collective responsibilities lasting approximately 1 hour, to ensure avoidable adverse environmental impact does not arise from their activities and personal choices. Employees must attend this briefing

before beginning their work at the site. Employees of other service and materials providers who attend the site – e.g. concrete truck operators, helicopter operators, and truck drivers must be apprised of their duty not to cause adverse environmental impact.

3. Parks Canada will have an ESO attending the site to monitor the construction activity for conformance with these specifications and the EPP. The ESO or alternate designated Parks Canada staff member will present the "environmental briefing". The ESO's main duties are to monitor the progress of the construction on an on-going basis to ensure compliance with environmental protection measures, and to provide guidance through the Departmental Representative, in the event of unanticipated environmental problems. Although the ESO has authority to enforce National Parks Act violations, direction to the Contractor will be the duty of the Departmental Representative.

### **1.15 Hazardous products and materials**

1. A list of products and materials to be used or brought to the construction site that are considered or defined as hazardous to the environment shall be presented in the EPP. Such products include, but are not limited to fuels, lubricants, waterproofing agents, grout, concrete finishing agents, hot poured rubber membrane materials, blasting agents, etc. A plan in accordance with all applicable federal and provincial legislation detailing the containment and storage, security, handling, use, unique spill response requirements, and disposal of empty containers, surplus product or waste generated in the application of these products shall be presented in the EPP. Have the Safety Data Sheets (SDS) for all chemicals used available on site. Hazardous products shall be stored no closer than 100 m from any drainage, wetland, watercourse, and water body or stored offsite.
2. Fuels, gases, or other deleterious substances to be contained within appropriate containers.
3. Equipment stored overnight in staging areas to be stored with appropriate containment and with drip trays and/or pans under fuel tanks.
4. Transport fuels, gases, or other deleterious substances according to the federal Transportation of Dangerous Goods Regulations.
5. Special care to be taken in storage and application of hazardous products and materials. Dispose of these items outside of the Park.

### **1.16 Spill containment plan**

1. A spill response plan (SRP) shall be presented in the EPP. Elements to be addressed shall include, but not necessarily limited to:
  - 1.1. Detail containment and storage, handling, use and disposal of empty containers, surplus fuels, or other hydrocarbon products in accordance with applicable federal and provincial legislation.
  - 1.2. Include a list of products and materials to be used or brought on site that are considered or defined as hazardous or toxic to the environment (i.e. fuels and lubricants).
  - 1.3. Safety Data Sheets (SDS) to be made available on site.
  - 1.4. Spill response kit capable of dealing with the 110 % of the largest potential spill shall be maintained in good working order on the construction site. Staff shall be informed of the location of the response kit and be trained in its use.
  - 1.5. Hazardous materials are to be stored and used in minimal required quantities in accordance with all applicable federal and provincial legislation.
  - 1.6. The SRP will identify and implement special care procedures for the storage and application of patching and sealing compounds, tar, asphalt, and chemical surface sealants.
  - 1.7. All spills are to be immediately contained with the source of spill arrested, reported to the Departmental Representative and ESO and cleanup initiated. In the event of a major spill, all other work shall be stopped, and all personnel devoted to spill containment.

- 1.7.1. In the event of fluid spills or leaks exceeding 5 L or any spill quantity in or near water, the SRP will be followed, including immediate containment, cleanup/mitigation, and immediate reporting to the Departmental Representative and the ESO.
2. Dispose of any absorbent materials used in the clean-up or soils contaminated by the spill in appropriate facilities and transport in accordance with the federal Transportation of Dangerous Goods Regulations.

### **1.17 Equipment fueling and maintenance**

1. All equipment must be properly maintained, in sound mechanical condition and free of any fuel, oil, and hydraulic fluid or coolant leaks.
2. Equipment used on the project shall be fueled with E10 gasoline and low sulphur diesel fuels.
3. A fuel delivery, storage, and distribution plan shall be submitted. Topics to be addressed in the EPP will include, but not necessarily be limited to:
  - 3.1. Diesel and gasoline supply vehicles, including bulk tankers shall be parked more than 100 metres from any watercourse, waterbody, wetland, or drainage ditch which connects to fish habitat.
  - 3.2. Fuel tanks with manual or electric pump delivery systems shall be used, gravity feed is not allowed.
  - 3.3. Fueling personnel shall maintain immediate attention to and presence at the fueling operation.
  - 3.4. Fueling sites will be identified by the Departmental Representative and the ESO. Any fueling closer than 100 m to any watercourse will require the authorization and oversight of the ESO or the Departmental Representative.
  - 3.5. Equipment fueling to take place at impermeable roadside areas or at staging areas with spill catchment counter measures in place.
  - 3.6. Lubricant changes and minor repairs shall be conducted at a location identified by the Departmental Representative in consultation with the ESO. Waste lubricants, used filters and other waste maintenance products shall be removed from Banff National Park to recycling or certified disposal sites.
  - 3.7. Equipment, propane storage, and fuel lines shall be inspected daily for fluid/fuel leaks and maintained in good working order.
    - 3.7.1. Record Inspections.
    - 3.7.2. Immediately address detected leaks.
    - 3.7.3. Inspect tanks, hoses, and connections prior to use.
    - 3.7.4. Wrap hose connections and secure with absorbent pads during fuel/oil transfers.
    - 3.7.5. Keep hose, valves, and equipment in a containment area whenever possible.
    - 3.7.6. Hose length and this number of connections shall be minimized and use dripless connections if possible.
    - 3.7.7. Drain hoses when finished.
  - 3.8. Fuels, gases, or other deleterious substances to be contained within the appropriate and approved containers and are not to be stored at the Project area where leaks and spills have the potential to seep into groundwater or enter surface watercourses or waterbodies. Secondary containment large enough to hold 110% of the volume of the containers will be used and will not be stored on-site. Fuels, gases, or other deleterious substances will be transported according to the federal Transportation of Dangerous Goods Regulations. Obtain a Restricted Activity Permit (RAP) for the possession and transport of fuel volumes over 250 litres.
  - 3.9. The operators of the equipment must be familiar with how to properly use the spill kits in the event of an emergency.

- 3.10. All equipment stored overnight in staging areas to be stored with appropriate containment and with drip trays and/or pans under fuel tanks.
- 3.11. Equipment to be used on the project site shall be thoroughly cleaned of soil, seeds, and any debris or external contaminants outside the national park before delivery to the work site.

### **1.18 Waste material storage and removal**

- 1. The Contractor shall prepare a Waste Management plan as part of the EPP. The Plan shall include the following basic principle:
  - 1.1. Waste reduction which follows the 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
- 2. Wastes generated at the construction site are to be contained and removed in a timely and approved manner. The EPP shall detail the waste management procedures, including the following:
  - 2.1. Describe the management of waste.
  - 2.2. Construction wastes shall be stored in containers at an approved location and removed promptly when the containers are 90% full.
  - 2.3. A concerted effort to reduce, reuse and recycle materials is expected.
  - 2.4. Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
  - 2.5. Provide containers to deposit recyclable materials.
  - 2.6. Transport all recyclable materials to an approved recycling facility off site.
  - 2.7. Waste materials are to be disposed of at a certified construction waste landfill outside Banff National Park. No burying, burning, or discarding of waste materials will be permitted at the construction site, or elsewhere in Banff National Park.
  - 2.8. No materials attractive to wildlife are to be stored at the site overnight – daily removal is mandatory. Human food products are to be contained in a manner so as not to attract animals and waste food stuffs are to be removed from the construction site every day.
  - 2.9. Portable container toilets are to be provided in sufficient numbers and locations to ensure convenient usage including frequency of pump out.
- 3. All garbage must be stored and handled in conformance with the National Parks' Garbage Regulations.
- 4. No food, domestic garbage or hazardous wastes may be deposited in the trade waste site.
- 5. Dispose of all hazardous wastes in conformance with the Environmental Contaminates Act and applicable provincial regulations while observing the Code of Good Practice for Management of Hazardous and Toxic Wastes at Federal Establishments.
- 6. Provide bear proof garbage containers on-site for domestic garbage and/or food attractants generated on-site by Contractor's personnel and make arrangement for collection of food waste daily.
- 7. Maintain the site in a tidy condition, free from the accumulation of waste products, debris, and litter.
- 8. Do not dispose of or allow to disperse waste or volatile materials such as mineral spirits, oil and paint thinners or other hazardous wastes into waterways. Provide clean-up equipment and adequate supply of absorbent material on-site.
- 9. Demolished asphalt shall be disposed of immediately following removal. Stockpiling of demolished asphalt is not permitted on site.

### **1.19 Vegetation**

- 1. The EPP shall detail how the work limits will be marked and what procedures will be employed to ensure trespass outside these limits does not occur.

2. Store all equipment either on the laydown areas or on previously disturbed or hardened surfaces to minimize vegetation disturbance.
3. Equipment to be used on the project site shall be thoroughly cleaned of soil, seeds, and any debris or external contaminants outside the national park before delivery to the work site.
4. Minimize migration of invasive species from the Project site:
  - 4.1. Prior to entry onto new segments of the Project area, clean (blow down/scrape down) all equipment that came into contact with soil at previous segments (i.e. clearing, grading, decompaction, or restoration equipment) to approval of the ESO.
  - 4.2. Construction staff and others to scrape mud off their boots and brush seeds and dirt from their clothing before leaving the Project site.

## **1.20 Site Clearing and Plant Protection**

1. Protect trees and plants on site access, adjacent properties and on site.
2. Protect roots, where possible foundations not to be placed directly adjacent to tree trunks and are to be off-set 1m either side where possible. Should 50% of the roots incur damage as a result of the works, the tree shall be removed by contractor.
3. Minimize stripping of topsoil and vegetation.
4. Restrict tree removal to area indicated in Contract Documents.
5. Tree and vegetation removal must occur outside of restricted timing window for migratory breeding birds, April 1st to August 30th for birds, April 15th to September 1st for bats. Should tree removal occur during that period, surveys for birds and bats must be completed within 5 days prior to tree removal by a Qualified Environmental Professional.
6. If any nest or dens are discovered during work, the area must be flagged and work temporarily ceased until Departmental Representative has taken appropriate action.

## **1.21 Sensitive and no-go zones**

1. The ESO may identify sensitive areas and no-go zones in proximity to the work site. Even though these areas may lie outside the construction limit they must not be intruded into by personnel. The Contractor shall describe measures to be employed to achieve that goal.
2. There are sensitive zones near the areas of known Black Swift nests. Helicopter work near the sensitive zones shall be completed in accordance with Section 01 25 20.10 Use of Helicopter.

## **1.22 Site Restoration, re-seeding and non-native vegetation control**

1. Pre-construction Phase Non-Native Vegetation Control requirements will be completed by Parks Canada (No action by Contractor) prior to Contractor mobilization. The non-native vegetation control will be completed at the following locations:
  - 1.1. Perimeter of Johnston Canyon Day Use Area Parking Lot P1 (to forest edge).
  - 1.2. Johnston Canyon Fire Road and connecting trails (to forest edge on either side).
  - 1.3. Along railing extension (+ 1 m either side of Johnston Canyon Trail).
2. Construction Phase Non-Native Vegetation Control requirements:
  - 2.1. Equipment to arrive clean on site (as per standard Banff Field Unit mitigations).
  - 2.2. Contractor should minimize number of trips on the Johnston Canyon Fire Road. In adverse conditions, consider alternative access methods (quad, helicopter, side by side or equipment with rubber tracks).
  - 2.3. Any snow plowing must be done over frozen grounds.
  - 2.4. It is expected non-native vegetation along the railing installation will be minimal. However, if priority non-native vegetation are identified during the pre-construction survey, the Vegetation

Specialist may request additional mitigations by the Contractor (equipment cleaning when finished in that area, or adjusting order of operations).

3. Post-Construction Phase Non-Native Vegetation Control requirements:
  - 3.1. A post-construction survey will be conducted by the Parks Canada Fire/Veg specialist and ESO (spring 2023).
  - 3.2. Contractor to complete up to two rounds of non-native vegetation control with the control timing schedule, (as appropriate for the species present), as follows:
    - 3.2.1.1. Oxeye Daisy, Tall buttercup (and others if observed) June 15 to July 15, 2023.
    - 3.2.1.2. Canada thistle (and others if observed) August 15 to Sept 15, 2023.
  - 3.3. It is likely that control will have to occur in both windows (i.e. two times in 2023).
  - 3.4. Post-control is required at disturbed areas only - at access Johnston Canyon Fire Road and connecting trails (to forest edge on either side), and along new rail installation work area (1 m either side of Johnston Canyon Trail).
4. Re-seeding
  - 4.1. In areas of additional ground disturbance or vegetative damage at the Johnston Canyon Fire Road, potential laydown area 2 or connecting trails (areas outside of the rail installation alignment), the Contractor is required to revegetate with a Departmental Representative approved seed mix prior to June 15, 2023 or post September 15, 2023.
  - 4.2. Seed mix shall be reviewed and approved by Departmental Representative prior to purchase.
  - 4.3. Seeding is to be applied at a rate of 25kg/ha

### **1.23 Decompaction of Soil**

1. In addition to the foundation excavation areas, the Contractor will be required to complete decompaction of soil in select areas to promote better vegetation recovery (e.g. sections of the unvegetated strip adjacent to the trail, or view points/ pull outs created by trail users), up to a maximum of 100 m<sup>2</sup>. Areas will be targeted as per direction from the Departmental Representative.
2. Decompaction of soil to a depth of 10cm.
3. The contractor will not be responsible for revegetation of the decompacted areas, which have been identified by the Departmental Representative.
4. The contractor will not be responsible for non-native vegetation control within the decompacted areas requested by Departmental Representative.

### **1.24 Notification**

1. Departmental Representative or ESO 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 ESO and Departmental Representative of proposed corrective action and take such action for approval by ESO.
3. Take action only after receipt of written approval by ESO.
4. Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
5. No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

### **1.25 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. The Contractor is required to prepare an Environmental Protection Plan (EPP), which will include the topics in the previous sub sections. The EPP shall be prepared and certified by a Qualified



Environmental Professional (QEP) (such as Professional Biologist or Professional Agrologist) and in accordance with Parks Canada Environmental Procedures. The EPP shall be submitted at least 21 days prior to start of construction. The EPP to include, but not be limited to:

- 2.1. Erosion and Sediment Control Plan: Outline the procedures to control erosions and contain sediments due to construction activities.
- 2.2. Helicopter Plan: Outline procedures for the use of a helicopter to supply or remove materials or equipment to/from site. The plan should identify the type of helicopter to be use, proposed pickup and drop locations, proposed frequency of use, and emergency response plan with a contact list.
- 2.3. Access & Staging Plan: Outline procedures to access the worksite and stage the Work including laydown area(s), access routes, list of equipment on site.
- 2.4. Traffic Accommodation Plan: Outline procedures to manage traffic surrounding the laydown areas during work, including any additional closures required during helicopter pick or drops.
- 2.5. Wildlife and Human Conflict Management Plan: Detail strategies to be implemented to prevent unnecessary interactions with wildlife. Parks Dispatch and the Departmental Representative to be notified immediately at non-emergency numbers 1-403-762-1470 or 1-403-762-4506 if a human-wildlife encounter occurs with a bear, wolf, cougar, or wolverine. All SARA-listed species and species of management concern notify the ESO immediately.
- 2.6. Removal of vegetation within the Migratory Bird Nesting Period (April 1-August 31), a migratory bird nest survey must be completed within 5 days prior to tree removal by a Qualified Environmental Professional (QEP).
- 2.7. Waste and Material Management Plan: Outline the procedures for handling and disposing of waste materials generated as a result of construction or uncovered by chance.
- 2.8. Air Quality and Dust Control Plan: Provide technical guidance to reduce the emission of fine particulate matter and green house gases into the surrounding environment.
- 2.9. Debris/spoil Containment Plan: Include plan for debris/spoil control during work to prevent deleterious substances from entering the creek.
- 2.10. Noise and Vibration Management Plan: Indicate practices to minimize noise and vibration generated by construction activities.
- 2.11. Spill Response Plan (SRP): In accordance with details provided in this specification.
- 2.12. Fire Prevention Plan: Describe the fire prevention equipment (e.g. fire extinguishers) and procedures on-site in the event of a fire. Should a fire occur, the Departmental Representative, Parks Dispatch and the Banff Fire Duty Officer to be notified immediately.
- 2.13. Visitor Experience Mitigation Plan: Provide measures to manage and restrict visitor foot traffic at all access points during construction.
- 2.14. Develop and submit in the EPP a Standard Operation Procedure for surface repair works requiring the application of coating products, which includes procedures for storage, application, and disposal.

## **Part 2 Products**

### **2.1 Not used**

1. Not Used.

## **Part 3 Execution**

### **3.1 Not used**

1. Not used

End of Section

## **SECTION 01 45 00**

### **Quality control**

#### **Part 1 General**

##### **1.1 Definitions**

1. Quality Control (QC): The process of checking specific products or services to determine if they comply with relevant quality standards and identify ways to eliminate causes of unsatisfactory product or service performed.
2. Quality Assurance (QA): The process of ensuring that the Contractor's Quality Management Plan (QMP) (QC, non-conformances, etc.) is being followed. The results of the QA are provided as feedback to both the Contractor and the Departmental Representative. Where required, the Contractor shall implement changes to the project based on the feedback received from the QA process.

##### **1.2 Quality management program**

1. The Contractor shall prepare a Quality Management Program. The purpose of the program shall be to ensure the performance of the Work in accordance with Contract requirements.
2. The Quality Management Program shall be described in a Quality Management Plan. The Contractor shall submit the Quality Management Plan to the Departmental Representative for acceptance 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 as well as the Contractor's internal Quality Assurance procedures to verify the compliance of the Quality Control process. 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 Management Plan shall at a minimum include the following information:
  - 3.1. Distribution list, providing a list of names to whom the Manual shall be distributed;
  - 3.2. Title page, identifying the Contract, Contractor and copy number;
  - 3.3. Revision page, identifying the revision number and date of the Manual;
  - 3.4. Table of contents;
  - 3.5. Revision control, tabulating the revision number, date of revision, description of revisions and authorized signature;
  - 3.6. Details of measuring and test equipment including methods and frequency of calibration;
  - 3.7. Purchasing details of all materials and equipment including procurement documents and vendor's Quality Control Program standards;
  - 3.8. Procedures for inspection of incoming items, in-process inspection and final inspection and tagging of all supply items;
  - 3.9. Details of special processes as identified by the Departmental Representative, including qualifications of personnel and certification;
  - 3.10. Procedures for shipping, packaging and storage of materials;
  - 3.11. Procedures for maintaining quality records and Statements of Compliance, including filing and storage of documents for a period of one year after Completion of the Works;
  - 3.12. 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;

- 3.13. 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 the Quality Assurance Manager, if the Quality Assurance Manager witnesses the test;
- 3.14. Forms used to ensure the application of the inspection and test checklist requirements. These forms shall be identified in the checklists and describe all testing requirements for Specification compliance; and
- 3.15. Details of the Quality Assurance Program including the Contractor's procedures to verify the compliance to the Quality Control process of on-site work and off-site work by fabricators.
4. The Contractor shall appoint qualified and experienced Quality Control and Quality Assurance Personnel, who are dedicated to quality matters and who will report regularly to the Quality Control Manager and Quality Assurance Manager as well as Contractor's management at a level which shall ensure that Quality Control and Quality Assurance requirements are not being subordinated to manufacturing, construction or delivery. The Quality Control and Quality Assurance Personnel shall be empowered by the Contractor to resolve quality matters. Personnel involved in Quality Assurance shall be independent of the Quality Control Process.
5. The Quality Management Plan shall include samples of all forms to be filled in by the Quality Control and Assurance Personnel. All forms shall be signed by the Quality Control Manager and Quality Assurance Manager and submitted promptly to the Departmental Representative.
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. Quality Assurance Inspectors, will periodically (shall be a minimum of 10% of the Quality Control checks) perform a second independent check to assess if the Quality Control process is being followed. The same personnel may not be used to perform a given task and to check the quality and accuracy of the task.
  - 6.1. A testing agency independent from the Contractor must be engaged by the Contractor to perform either Quality Control or Quality Assurance for a given task as part of the Quality Program.
7. At completion of the Work a bound and itemized copy of all Quality Control and Quality Assurance documents and reports shall be prepared by the Contractor's Quality Control Manager and Quality Assurance Manager and submitted to the Departmental Representative.

### **1.3 Testing**

1. All Quality Control technicians are to be certified by Canadian Council of Independent Laboratories (CCIL) for testing asphalt, aggregates and concrete, as applicable to the testing requirements for that item of Work.
2. Testing required to provide Quality Control and Quality Assurance to assure that the Work strictly complies with the Contract requirements shall include, but not be limited to:
  - 2.1. Testing of all structural concrete, reinforcing steel, granular material, aggregates, asphalt, welds, miscellaneous structural elements and metals, utilities installed, and all source acceptance testing;
  - 2.2. All testing specified in the Contract Documents; and
  - 2.3. Any other testing required as a condition for deviation from the specified Contract procedures.
3. The quality control testing proposed and testing frequency shall at a minimum, achieve the requirements of the following:
  - 3.1. Wherever these standards refer to standards (e.g. CSA, ASTM, and others) the minimum testing frequencies in these standards shall be utilized.

- 3.2. The Contractor and its independent Quality Assurance testing agency that will carry out the testing must satisfy themselves that the test frequencies being completed are sufficient to ensure the quality requirements of the QMP.
4. These are the minimum frequencies and the Contractor is responsible to assess the need to increase testing frequency. QC frequencies may be reduced below this level, subject to the Departmental Representative's authorization, should the Contractor's QC plan be proven very effective.
5. Passing the minimum quantity of QC tests does not relieve the Contractor from the obligation of meeting the Contract requirements and any identified non-compliant works or products shall be rectified by the Contractor at their cost.
6. The Contractor shall be fully responsible and bear all costs for all quality control testing and shall conduct such testing in the following manner:
  - 6.1. 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;
  - 6.2. Notify the Departmental Representative when sampling will be conducted;
  - 6.3. Within one day after completion of testing, submit test results to the Departmental Representative; and
  - 6.4. Identify test reports with the name and address of the organization performing all tests, and the date of the tests.
7. Approval of tested samples will be for characteristics or use named in such approval and shall not change or modify any Contract requirements.
8. 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.
9. Quality Assurance testing will be undertaken by the Contractor through an independent CSA certified testing firm. The independent testing firm will complete random sampling, inspection, and testing for the purposes of determining the compliance with specifications and other contract documents. The frequency, location of the inspection, sampling, and tests shall be a minimum of 10% of the Quality Control testing frequency.
10. The Contractor shall be responsible for third party testing of materials incorporated into the works.
11. The Departmental Representative may perform quality audits as desired. Such audits will not relax the responsibility of the contractor to perform work in accordance with Specifications. To facilitate this work the contractor shall:
  - 11.1. Notify appropriate agency and Departmental Representative in advance of work which the Departmental Representative may want to test.
  - 11.2. Submit samples and/or materials required for testing, as specifically requested in the Specifications or as requested by the Departmental Representative. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in the work.
  - 11.3. Provide labour and facilities to obtain and handle samples and materials on site.

## **1.4 Inspection**

1. Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
2. Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
3. If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

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

### **1.5 Independent inspection agencies**

1. Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative
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 Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

### **1.6 Access to work**

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

### **1.7 Rejected work**

1. Any instances of unacceptable work discovered by either the Quality Control or Quality Assurance personnel will require the preparation of a non-conformance report (NCR).
2. If instances of unacceptable work are discovered by the Departmental Representative, the Departmental Representative may issue a non-conformance report (NCR).
3. The Contractor shall expediently correct any non-conformances, whether the result of poor workmanship, use of defective products or damage; and whether incorporated in the Work or not, the Contractor shall replace or re-execute in accordance with the Contract Documents.
4. Payment for the work itself may be withheld until the NCR issue has been resolved to the satisfaction of the Departmental Representative.
5. If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

### **1.8 Reports**

1. Submit one (1) electronic copy of all inspection and test reports to Departmental Representative in accordance with Section 01 33 00 Submittals Procedures.
2. Submit to the Departmental Representative one paper copy and one electronic copy of all Non-Conformance Reports.

### **1.9 Tests and mix designs**

1. Furnish test results and mix designs as requested.

### **1.10 Mill tests**

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

## **Part 2 Products**

### **2.1 Not used**

1. Not Used.

## **Part 3 Execution**

### **3.1 Not used**

1. Not Used.

End of Section

## **SECTION 01 52 00**

### **Construction facilities**

#### **Part 1 General**

##### **1.1 Reference standards**

1. CSA Group (CSA)
  - 1.1. CAN/CSA-S269.2-M1987 (R2003), Access Scaffolding for Construction Purposes.
  - 1.2. CAN/CSA-Z321-96 (R2001), Signs and Symbols for the Occupational Environment.

##### **1.2 Action and informational submittals**

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

##### **1.3 Installation and removal**

1. Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, location of helicopter pick-up and drops, avenues of ingress/egress to fenced area and details of fence installation.
2. Identify areas which have to be graveled to prevent tracking of mud.
3. Indicate use of supplemental or other staging area.
4. Provide construction facilities in order to execute work expeditiously.
5. Remove from site all such work after use.

##### **1.4 Site storage/loading**

1. Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
2. Do not load or permit to load any part of Work with weight or force that will endanger Work.

##### **1.5 Construction parking**

1. Parking will be permitted on site provided it does not disrupt performance of Work.
2. Provide and maintain adequate access to project site.
3. If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good any damage that occurred from the Contractors' use of roads.

##### **1.6 Security**

1. The Contractor shall be entirely responsible for the security of the Work site and of the Work at all times while the Work Sites are under the Contractor's control (including after working hours and during holidays). Provision of security personnel, as determined necessary by the Contractor to maintain a secure site, will not be measured but considered incidental to the work.

##### **1.7 Offices**

1. Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
2. Provide marked and fully stocked first-aid case in a readily available location.
3. Subcontractors to provide their own offices as necessary. Direct location of these offices.



### **1.8 Equipment, tool, and materials storage**

1. Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
2. Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

### **1.9 Sanitary facilities**

1. Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
2. Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

### **1.10 Construction signage**

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

### **1.11 Clean-up**

1. Remove construction debris, waste materials, packaging material from work site daily.
2. Clean dirt or mud tracked onto paved or surfaced roadways.
3. Store materials resulting from demolition activities that are salvageable.
4. Stack stored new or salvaged material not in construction facilities.

## **Part 2 Products**

### **2.1 Not used**

1. Not Used.

## **Part 3 Execution**

### **3.1 Not used**

1. Not used

End of Section

## **SECTION 01 55 26**

### **Traffic control**

#### **Part 1 General**

##### **1.1 Reference standards**

1. Alberta Infrastructure and Transportation
  - 1.1. Traffic Accommodation in Work Zones -08.
2. U.S. Department of Transportation
  - 2.1. Manual of Uniform Traffic Control Devices for Streets and Highways (UTCD) - 2009.

##### **1.2 Measurement and payment**

1. The cost to the Contractor to meet the traffic control requirements described in this section unless specifically stated otherwise shall be considered incidental to the Work and no additional payment will be made.

##### **1.3 General**

1. The Contractor shall design, supply, erect, move and maintain all traffic control devices, signs, temporary pavement marking, other safety measures, and provide staff to ensure safe passage of all traffic from commencement of site work to date of acceptance by the Departmental Representative.
2. All traffic and warning signs shall be either bilingual or of a symbolic or pictorial type. If bilingual signs are used, the English and French message shall be of equal letter size and at same elevation, with English on left and French on right. Assistance in translation of construction and warning signs to French may be obtained from Parks Canada.
3. The Contractor shall develop and implement a Traffic Management Plan (TMP). The TMP shall take into account all hazards associated with construction operations in the Johnston Canyon Day Use Area Parking Lot 1. The TMP shall be updated regularly in response to any incidents or changes in conditions, be they weather, work, traffic, or otherwise.
4. The Contractor shall coordinate traffic management procedures with other Contractors working in the area.

##### **1.4 Protection of public traffic**

1. Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
2. When working on travelled way:
  - 2.1. Place equipment in position to minimize interference and hazard to travelling public.
  - 2.2. Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
  - 2.3. Do not leave equipment on travelled way overnight.
3. Close lanes of road only after receipt of written approval from Departmental Representative.
  - 3.1. Before re-routing traffic erect suitable signs and devices to Traffic Accommodation in Work Zones.
4. Keep travelled way graded, free from pot holes and of sufficient width for required number of lanes of traffic.

5. Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, except where other means of road access exist that meet approval of Departmental Representative.
6. Clear snow and ice from the roadway within the work zone.

### **1.5 Informational and warning devices**

1. Provide and maintain signs, and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
2. Supply and erect signs, delineators, barricades and miscellaneous warning devices to Traffic Accommodation in Work Zones.
3. Place signs and other devices in locations recommended in Traffic Accommodation in Work Zones.
4. Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of Departmental Representative.
5. Continually maintain traffic control devices in use:
  - 5.1. Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
  - 5.2. Remove or cover signs which do not apply to conditions existing from day to day.

### **1.6 Control of public traffic**

1. Provide competent flag personnel, trained in accordance with, and properly equipped to Traffic Accommodation in Work Zones for situations as follows:
  - 1.1. When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.
  - 1.2. When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.
  - 1.3. When workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
  - 1.4. Where temporary protection is required while other traffic control devices are being erected or taken down.
  - 1.5. For emergency protection when other traffic control devices are not readily available.
  - 1.6. In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
  - 1.7. When the use of a helicopter will affect the travelled roadway.

### **1.7 Operational requirements**

1. Maintain existing conditions for traffic throughout period of contract except that, when required for construction under contract and when measures have been taken as specified and approved by Departmental Representative to protect and control public traffic.
2. The portion of the Johnston Canyon Day Use Area Parking Lot 1 not used as a laydown area shall be kept in operation for the duration the Work.
3. The Contractor shall notify the Departmental Representative 48 hours in advance of the use of a helicopter as described in Section 01 25 20.10 Use of Helicopter.
4. The Contractor shall be responsible for erecting the necessary signage and barricades to temporarily close the Johnston Canyon Day Use Area Parking Lot 1 the night prior to the use of the helicopter,

when required to safely lift loads from the laydown area. Public cars parked in the parking lot may restrict the use of the helicopter and it is the Contractor's responsibility to close the parking lot.

## **Part 2 Products**

### **2.1 Not used**

1. Not Used.

## **Part 3 Execution**

### **3.1 Not used**

1. Not Used.

End of Section

## **SECTION 01 56 00**

### **Temporary barriers and enclosures**

#### **Part 1 General**

##### **1.1 Reference standards**

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

##### **1.2 Installation and removal**

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

##### **1.3 Hoarding**

1. Erect temporary site enclosure surround designated laydown area in the Johnston Canyon Day Use Area Parking Lot 1.
2. Erect temporary hoarding to safely restrict public access to the work site from the Johnston Canyon Trail, the Johnston Canyon Fire Road, the Moose Meadows Trail and the Inkpots Trail. This includes erecting signage indicating the trail closure.
3. Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

##### **1.4 Guard rails and barricades**

1. Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs, and
2. Provide as required by governing authorities.

##### **1.5 Access to site**

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

##### **1.6 Public traffic flow**

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

##### **1.7 Fire routes**

1. Maintain access to property including overhead clearances for use by emergency response vehicles.
2. Keep the Johnston Canyon Fire Road clear for construction equipment and materials at all times.

##### **1.8 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.

## **Part 2 Products**

### **2.1 Not used**

1. Not Used.

## **Part 3 Execution**

### **3.1 Not used**

1. Not Used.

End of Section

## **SECTION 01 61 00**

### **Common product requirements**

#### **Part 1 General**

##### **1.1 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 products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
4. Cost for such testing will be borne by Departmental Representative 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.

##### **1.2 Quality**

1. Products, materials, equipment, and articles incorporated in Work shall be new, not damaged, or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
2. Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
3. Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
4. Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
5. Unless otherwise indicated in specifications, maintain uniformity of Manufacture for any particular or like item throughout building.
6. Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

##### **1.3 Availability**

1. Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
2. In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

#### **1.4 Storage, handling, and protection**

1. Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with Manufacturer's instructions when applicable.
2. Store packaged or bundled products in original and undamaged condition with Manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
3. Store products subject to damage from weather in weatherproof enclosures.
4. Store cementitious products clear of earth or concrete floors, and away from walls.
5. Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
6. Store sheet materials, lumber and fabricated metals on flat, solid supports and keep clear
7. Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
8. Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
9. Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

#### **1.5 Transportation**

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

#### **1.6 Manufacturer's instructions**

1. Unless otherwise indicated in specifications, install or erect products in accordance with Manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from Manufacturers.
2. Notify Departmental Representative in writing, of conflicts between specifications and Manufacturer's instructions, so that Departmental Representative will establish course of action.
3. Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

#### **1.7 Quality of work**

1. Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
2. Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
3. Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

#### **1.8 Co-ordination**

1. Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
2. Be responsible for coordination and placement of openings, sleeves, and accessories.

#### **1.9 Remedial work**

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



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

### **1.10 Fastenings**

1. Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
2. Prevent electrolytic action between dissimilar metals and materials.
3. Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
4. Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
5. Keep exposed fastenings to a minimum, space evenly and install neatly.
6. Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

### **1.11 Protection of work in progress**

1. Work in progress at the end of each workday shall be protected from the public and wildlife. Footing excavations shall be filled or covered and unfinished ends of the railing shall be protected from sharp edges.

### **1.12 Existing utilities**

1. When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and pedestrian and vehicular traffic.
2. Protect, relocate, or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

## **Part 2 Products**

### **2.1 Not used**

1. Not Used.

## **Part 3 Execution**

### **3.1 Not used**

1. Not Used.

End of Section

## **SECTION 01 71 00**

### **Examination and preparation**

#### **Part 1 General**

##### **1.1 Summary**

1. This section includes the process to examine the existing conditions on site and prepare the railing alignment for approval.

##### **1.2 Related requirements**

1. Section 02 41 16.09 Structure demolition - short form
2. Section 03 30 00.09 Cast-in-place concrete - short form
3. Section 05 50 00 Metal fabrications
4. Section 31 11 00 Clearing and grubbing
5. Section 31 23 33.01 Excavating, trenching, and backfilling
6. Section 32 12 16.01 Asphalt paving - short form

##### **1.3 Pre-mobilization site visit objectives**

1. A pre-mobilization site visit shall be completed by the Contractor to:
  - 1.1. Establish the proposed railing alignment for review.
  - 1.2. Identify and flag trees to be removed. Tree removal in accordance with Section 31 11 00 Clearing and grubbing.
  - 1.3. Identify locations for excess materials placement.
  - 1.4. Identify locations for "cold patch" repair in accordance with Section 32 12 16.01 Asphalt paving - short form
  - 1.5. Confirm how the new railing will interface with the existing railing.
  - 1.6. Confirm which materials will be removed and replaced for the Catwalk 6 repair.

##### **1.4 Records**

1. Maintain a record of proposed and approved alignment.
2. The Johnston Canyon Trail will be open to the public until August 15<sup>th</sup>. The Contractor is responsible for maintaining a record of the approved alignment and understand that any stakes installed may be removed or adjusted by the general public.

##### **1.5 Action and informational submittals**

1. Contractor to submit a written description of any proposed deviations to the Contract drawings and specifications.

#### **Part 2 Products**

##### **2.1 Not used**

1. Not Used.

## **Part 3 Execution**

### **3.1 Preparation**

1. Contractor to coordinate a pre-mobilization site visit with the Departmental Representative a minimum of 14 days prior to mobilization.
5. Prior to the site visit the Contractor shall stake out the proposed railing aligned in accordance with the requirements in Section 01 11 00 Summary of Work.

### **3.2 Premobilization Site Visit**

1. A premobilization site visit will be held with the Contractor and Departmental Representative to discuss the proposed railing alignment and address any Contractor questions.
2. The Contractor shall then inform Departmental Representative that the proposed alignment is staked out and available for review. This work must be completed while the trail is open to the public and with no effect on public access. Any deviations from the requirements in the Contract drawings and specification should be flagged on site and communicated in writing by the Contractor.

### **3.3 Established Alignment**

1. The Departmental Representative will then have 14 days to review and provide written comment on the proposed alignment to the Contractor.
6. The Contractor shall address any comments and stake out the final railing alignment prior to commencing and tree removals or excavations on site.
2. A restricted activity permit (RAP) shall be obtained prior to removal of the trees impacting the final railing alignment.

End of Section

## **SECTION 01 73 00**

### **Execution**

#### **Part 1 General**

##### **1.1 Action and informational submittals**

2. Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
3. Submit written request in advance of cutting or alteration which affects:
  - 3.1. Structural integrity of elements of project.
  - 3.2. Efficiency, maintenance, or safety of operational elements.
  - 3.3. Work of Owner or separate contractor.
4. Include in request:
  - 4.1. Identification of project.
  - 4.2. Location and description of affected Work.
  - 4.3. Statement on necessity for cutting or alteration.
  - 4.4. Description of proposed Work, and products to be used.
  - 4.5. Alternatives to cutting and patching.
  - 4.6. Effect on Work of Owner or separate contractor.
  - 4.7. Written permission of affected separate contractor.
  - 4.8. Date and time work will be executed.

##### **1.2 Materials**

7. Required for original installation.
8. Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

##### **1.3 Preparation**

1. Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
2. After uncovering, inspect conditions affecting performance of Work.
3. Beginning of cutting or patching means acceptance of existing conditions.
4. Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
5. Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

##### **1.4 Execution**

2. Execute cutting, fitting, and patching including excavation and fill, to complete Work.
3. Fit several parts together, to integrate with other Work.
4. Uncover Work to install ill-timed Work.
5. Remove and replace defective and non-conforming Work.
6. Restore work with new products in accordance with requirements of Contract Documents.

## **1.5 Waste management and disposal**

3. Separate waste materials for recycling.

## **Part 2 Products**

### **2.1 Not used**

2. Not Used.

## **Part 3 Execution**

### **3.1 Not used**

2. Not Used.

End of Section

## **SECTION 01 74 00**

### **Cleaning**

#### **Part 1 General**

##### **1.1 Project cleanliness**

1. Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
2. Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
3. Clear snow and ice from work areas.
4. Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
5. Provide on-site bear-proof containers for collection of waste materials and debris.
6. Provide and use marked separate bins for recycling.
7. Dispose of waste materials and debris outside the National Park.
8. Store volatile waste in covered metal containers and remove from premises at end of each working day.
9. Provide adequate ventilation during use of volatile or noxious substances.
10. Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

##### **1.2 Final cleaning**

3. When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
4. Remove waste products and debris other than that caused by others and leave Work clean and suitable for occupancy.
5. Prior to final review remove surplus products, tools, construction machinery and equipment.
6. Remove waste products and debris including that caused by Owner or other Contractors.
7. Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
8. Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
9. Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
10. Broom clean and wash exterior walks, steps, and surfaces; rake clean other surfaces of grounds.
11. Remove dirt and other disfiguration from exterior surfaces.
12. Clean drainage systems.
13. Remove snow and ice.

##### **1.3 Waste management and disposal**

3. Separate waste materials for recycling.

## **Part 2 Products**

### **2.1 Not used**

1. Not Used.

## **Part 3 Execution**

### **3.1 Not used**

1. Not Used.

End of Section

## **SECTION 01 77 00**

### **Closeout procedures**

#### **Part 1 General**

##### **1.1 Administrative requirements**

1. Acceptance of Work Procedures:
  - 1.1. Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
    - 1.1.1. Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
    - 1.1.2. Request Departmental Representative inspection.
  - 1.2. Departmental Representative Inspection:
    - 1.2.1. Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
    - 1.2.2. Contractor to correct Work as directed.
  - 1.3. Completion Tasks: submit written certificates in English that tasks have been performed as follows:
    - 1.3.1. Work: completed and inspected for compliance with Contract Documents.
    - 1.3.2. Defects: corrected and deficiencies completed.
    - 1.3.3. Work: complete and ready for final inspection.
  - 1.4. Final Inspection:
    - 1.4.1. When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.
    - 1.4.2. When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.

##### **1.2 Final cleaning**

1. Clean in accordance with Section 01 74 00 - Cleaning.
  - 1.1. Remove surplus materials, excess materials, rubbish, tools, and equipment.
2. Waste Management: separate waste materials for recycling.

#### **Part 2 Products**

##### **2.1 Not used**

1. Not Used.

#### **Part 3 Execution**

##### **3.1 Not used**

1. Not Used.

End of Section



## **SECTION 01 78 00**

### **Closeout submittals**

#### **Part 1 General**

##### **1.1 Record documents and samples**

1. Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:
  - 1.1. Contract Drawings.
  - 1.2. Specifications.
  - 1.3. Addenda.
  - 1.4. Change Orders and other modifications to Contract.
  - 1.5. Reviewed shop drawings, product data, and samples.
  - 1.6. Field test records.
  - 1.7. Inspection certificates.
  - 1.8. Manufacturer's certificates.
2. Store record documents and samples in field office apart from documents used for construction.
  - 2.1. 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.
  - 3.1. Label each document "PROJECT RECORD" in neat, large, printed letters.
4. Maintain record documents in clean, dry, and legible condition.
  - 4.1. Do not use record documents for construction purposes.
5. Keep record documents and samples available for inspection by Departmental Representative.

##### **1.2 Recording information on project record documents**

1. Record information in red on set of black line drawings, and in copy of Specifications.
2. Record information concurrently with construction progress.
  - 2.1. Do not conceal Work until required information is recorded.
3. Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - 3.1. Field changes of dimension and detail.
  - 3.2. Changes made by change orders.
  - 3.3. Details not on original Contract Drawings.
  - 3.4. Referenced Standards to related shop drawings and modifications.
4. Specifications: mark each item to record actual construction, including:
  - 4.1. Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - 4.2. Changes made by Addenda and change orders.
5. Other Documents: maintain manufacturer's certifications, required by individual specifications sections.
6. Provide digital photos, if requested, for site records.
7. Submit close-out submittal documents in accordance with Section 01 33 00 Submittal Procedures.

### **1.3 Delivery, storage, and handling**

1. Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
2. Store in original and undamaged condition with manufacturer's seal and labels intact.
3. Store components subject to damage from weather in weatherproof enclosures.
4. Store paints and freezable materials in a heated and ventilated room.
5. Remove and replace damaged products at own expense and for review by Departmental Representative.

### **1.4 Warranties and bonds**

1. Develop warranty management plan to contain information relevant to Warranties.
2. Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
3. Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
4. Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
5. Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
  - 5.1. Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
  - 5.2. List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
  - 5.3. Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
  - 5.4. Verify that documents are in proper form, contain full information, and are notarized.
  - 5.5. Co-execute submittals when required.
  - 5.6. Retain warranties and bonds until time specified for submittal.
6. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
7. Respond in timely manner to oral or written notification of required construction warranty repair work.

## **Part 2 Products**

### **2.1 Not used**

1. Not Used.

## **Part 3 Execution**

### **3.1 Not used**

1. Not Used.

End of Section

## **SECTION 02 41 16.09**

### **Structure demolition - short form**

#### **Part 1 General**

##### **1.1 Summary**

1. This Section includes the following:
  - 1.1. Demolition and removal of end treatments on existing steel railings.
  - 1.2. Demolition and removal of existing railing in Section 8.
  - 1.3. Demolition and removal of repair section on Catwalk 6.
  - 1.4. Remove existing timber curb sections on the canyon side in Section 2.

##### **1.2 Reference standards**

1. CSA Group (CSA)
  - 1.1. CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.

##### **1.3 Action and informational submittals**

1. Action Submittals: Provide the following submittals before starting any work of this Section:
  - 1.1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
  - 1.2. Schedule of Demolition Activities: Coordinate with Section 01 32 16.16- Construction Progress Schedule.
  - 1.3. Work Plans: submit plan(s) indicating the locations where the existing railing will be cut and removed.

##### **1.4 Delivery, storage, and handling**

1. Waste Management and Disposal: Separate waste materials for recycling.

##### **1.5 Quality assurance**

1. Regulatory Requirements: Ensure Work is performed in compliance with the regulatory requirements of the Department of Fisheries and Oceans (DFO), Transport Canada, and Parks Canada Agency Basic Impact Analysis appended to these specifications, as well as any applicable Provincial regulations

#### **Part 2 Products**

##### **2.1 Equipment**

1. Leave equipment and machinery running only while in use, except where extreme temperatures prohibit shutting down.
2. Demonstrate that tools and machinery are being used in manner which allows for salvage of materials in best condition possible.

## **Part 3 Execution**

### **3.1 Examination**

1. Survey existing conditions and correlate with requirements indicated to determine extent of structure demolition required.

### **3.2 Preparation**

1. Do Work in accordance with Section 01 35 29.06 - Health and Safety Requirements.
2. Protection:
  - 2.1. Work in accordance with Section 01 35 43 - Environmental Procedures.
  - 2.2. Prevent movement, settlement, or damage to adjacent structures and utilities. Provide bracing and shoring required.
  - 2.3. Keep noise, dust, and inconvenience to occupants to minimum.
  - 2.4. Protect building systems, services, and equipment.
  - 2.5. Provide temporary dust screens, covers, railings, supports and other protection as required.

### **3.3 Demolition salvage and disposal**

1. Remove parts of existing railing to permit new construction. Sort materials into appropriate piles for recycling.
2. Remove items to be reused, store as directed by Departmental Representative.
3. Dispose of removed materials, to appropriate recycling facilities except where specified otherwise, in accordance with authority having jurisdiction.

### **3.4 Removal from site**

1. Remove and dispose of demolished materials, except where noted otherwise, and in accordance with authorities having jurisdiction.
  - 1.1. All demolished materials are considered waste and to be disposed of outside Banff National Park at a certified construction waste landfill.
2. Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.

### **3.5 Site grading**

1. Provide a smooth transition between adjacent existing grades and new grades.

### **3.6 Repairs**

1. General: Promptly repair damage to adjacent construction caused by structure demolition operations.
2. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
3. Restore exposed finishes of patched areas and extend grading into adjoining construction in a manner that eliminates evidence of patching and refinishing.

### **3.7 Cleaning**

1. Clean in accordance with Section 01 74 00 - Cleaning.
2. Keep site clean and organized throughout demolition procedure.
3. Designate appropriate security resources / measures to prevent vandalism, damage, and theft.

4. Remove stockpiled material as directed by Departmental Representative, when it interferes with operations of project construction.

End of Section

## **SECTION 03 30 00.09**

### **Cast-in-place concrete - short form**

#### **Part 1 General**

##### **1.1 Summary**

1. This section includes the cast-in-place concrete requirements for the new posting footings.

##### **1.2 Related requirements**

1. Section 31 23 33.01 - Excavating, trenching, and backfilling

##### **1.3 Reference standards**

1. ASTM International (ASTM)
2. CSA Group (CSA)
  - 2.1. CSA A23.1/A23.2- 19, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - 2.2. CAN/CSA A3000- 18, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

##### **1.4 Administrative requirements**

1. Pre-installation Meetings: in accordance with Section 01 31 19, convene pre-installation meeting one week prior to beginning concrete works.
  - 1.1. Ensure key personnel, site supervisor, Departmental Representative attend.
    - 1.1.1. Verify project requirements.

##### **1.5 Action and informational submittals**

1. Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Work Plan: submit plan indicating the concrete bag mix to be used, list of equipment, procedures to meet manufacturer's instruction in the remote location, procedure to meet manufacturer's temperature requirements for storing, mixing, placing, and curing, procedure to supply or test water to meet potable requirements, procedure for testing and procedures for excess concrete disposal and cleaning.
3. Product Data:
  - 3.1. Submit manufacturer's instructions, printed product literature and data sheets for proprietary materials used in Cast-In-Place Concrete and additives and include product characteristics, performance criteria, physical size, finish, and limitations.
  - 3.2. Submit WHMIS Safety Data Sheet (SDS)
4. Quality Assurance Submittals:
  - 4.1. Submit in accordance with Section 01 45 00 - Quality Control

##### **1.6 Quality assurance**

1. Provide to Departmental Representative, four (4) weeks minimum prior to starting concrete work, proposed concrete bag mix.
2. Quality Control Plan: provide written report to Departmental Representative verifying placed concrete is in compliance and meets performance requirements.

## **1.7 Delivery, storage, and handling**

1. Concrete bag mix to be delivered, stored, and handled as per the manufacturer's instructions.

## **1.8 Ambient conditions**

1. Placing concrete during rain or weather events damaging to concrete is prohibited.
2. Protect newly placed concrete from rain or weather events in accordance with CSA A23.1/A23.2.
3. Cold weather protection:
  - 3.1. Maintain protection equipment, in readiness on Site.
  - 3.2. Use such equipment when ambient temperature below 5°C, or when temperature may fall below 5°C before concrete cured or as per manufacturer's instructions.
  - 3.3. Placing concrete upon or against surface at temperature below 5°C is prohibited.
4. Hot weather protection:
  - 4.1. Protect concrete from direct sunlight when ambient temperature above 27°C.
  - 4.2. Prevent forms of getting too hot before concrete placed. Apply accepted methods of cooling not to affect concrete adversely.
5. Protect from drying.

## **Part 2 Products**

### **2.1 Design criteria**

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

### **2.2 Performance criteria**

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

### **2.3 Materials**

1. Portland Cement: GU to CAS A3001.
2. Blended hydraulic cement: Type GUB to CAN/CSA A3001.
3. Water: to CSA A23.1/A23.2.

### **2.4 Mixes**

1. Alternative 1 - Performance Method for specifying concrete: to meet Departmental Representative performance criteria to CSA A23.1/A23.2.
  - 1.1. Ensure concrete supplier meets performance criteria as established below and provide verification of compliance as in Quality Control Plan.
  - 1.2. Provide concrete mix to meet following plastic state requirements:
    - 1.2.1. Workability: free of surface blemishes, loss of mortar, colour variations and segregation.
  - 1.3. Provide concrete mix to meet following hard state requirements:
    - 1.3.1. Durability and class of exposure: F-2 or approved freeze thaw resistant alternative.
    - 1.3.2. Compressive strength at 28 days age: 25 MPa minimum.
    - 1.3.3. Intended application:

- 1.3.3.1. Post Footings
- 1.3.4. Aggregate size
  - 1.3.4.1. 14 mm
- 1.4. Concrete supplier's certification.
- 1.5. Provide quality management plan to ensure verification of concrete quality to specified performance.

## **Part 3 Execution**

### **3.1 Preparation**

1. Provide Departmental Representative 24 hours notice before each concrete pour.
2. During concreting operations:
  - 2.1. Development of cold joints not allowed.
  - 2.2. Concrete delivery and handling to facilitate placing with minimum of rehandling, and without damage to existing structure or Work.
3. Protect previous Work from staining.
4. Clean and remove stains prior to application of concrete finishes.

### **3.2 Installation/application**

1. Do cast-in-place concrete work in accordance with CSA A23.1/A23.2.
2. Cast in steel railing posts as shown on the Contract Drawings.
  - 2.1. Posts to be centered in footings.
3. Concrete footings and steel railing posts to be installed vertically.

### **3.3 Finishes**

1. The exposed top surface of footings to be troweled finished and sloped all around to allow drainage away from the post.

### **3.4 Site quality control**

1. Concrete testing: to CSA A23.1/A23.2 by testing laboratory designated and paid for by the Contractor.
2. Contractor to complete daily testing to confirm that the concrete is batched as per the manufacturer's instructions recording the mix proportions, slump (as necessary), air content (as necessary) and temperatures (air, concrete and ground).
3. Frequency of testing compressive strength:
  - 3.1. Testing to be completed on the first batch of concrete
  - 3.2. Not less than two (2) tests for every 50 footings or every third day of concrete pours.
  - 3.3. If tests indicate targets lower than required compressive strength, than the frequency of tests may be increased by the Departmental Representative.
  - 3.4. A compressive strength test shall consist of a minimum of four standard test specimens, sampled, made, cured, and tested in accordance with CSA Standards.
    - 3.4.1. One cylinder shall be tested at 7 days.
    - 3.4.2. The 28 day test result shall be the average of the strengths of the remaining three specimens, except that if any specimen in a test showing distinct evidence of improper sampling, moulding or testing, shall be discarded and the remaining strengths averaged.



### **3.5 Cleaning**

1. Clean in accordance with Section 01 74 00 - Cleaning.
2. Designate cleaning area for tools to limit water use and runoff.
3. Cleaning of concrete equipment in accordance with Section 01 35 43 Environmental Procedures.

End of Section

## **SECTION 05 50 00**

### **Metal fabrications**

#### **Part 1 General**

##### **1.1 Summary**

1. This section includes:
  - 1.1. New railing components for the repair of the existing railing on Catwalk 6.
  - 1.2. New standard steel railing in Sections 1-8.
  - 1.3. New removable steel railing for the Section 5 bridge.
  - 1.4. New steel railing for the Section 8 replacement.
2. New railing to have an overall minimum height of 1070 mm, facilitate the installation of mesh panels and have a maximum bottom opening of 100 mm between bottom rail and walking surface.

##### **1.2 Related requirements**

1. Section 03 30 00.09 - Cast-in-place concrete - short form

##### **1.3 Reference standards**

1. ASTM International (ASTM)
  - 1.1. ASTM A307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  - 1.2. ASTM A1064/A1064M-18a, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
2. CSA Group (CSA)
  - 2.1. CSA G40.20-13 /G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - 2.2. CSA S16-14, Design of Steel Structures.
  - 2.3. CSA W59-13, Welded Steel Construction (Metal Arc Welding) Metric
3. British Columbia Ministry of Transportation Standard Specifications for Highway Construction (latest edition), referred to herein as BC MoTI Standard Specifications.
4. The Society for Protective Coatings (SSPC).
  - 4.1. SSPC/NACE Joint Surface Preparation Standard-2012, Waterjet Cleaning of Metals SSPC-SP WJ-4/NACE WJ-4 Light Cleaning.
5. Society for Protective Coatings Commentary on Qualification Procedures (SSPC-QP COM).

##### **1.4 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
  - 2.1. Submit manufacturer's instructions, printed product literature and data sheets for HSS, angles, plates, bolts, and mesh panel and include product characteristics, performance criteria, physical size, finish, and limitations.
  - 2.2. Submit two copies of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

- 2.2.1. For finishes, coatings, primers, and paints applied on site: indicate VOC concentration in g/L.
- 3. Shop Drawings:
  - 3.1. Submit drawings stamped and signed by professional engineer registered or licensed in Alberta, Canada.
  - 3.2. Indicate shop and field erection details. Include material sizes, shop splices, shop weld details, max spacing for field erection, max spacing for field splices, and typical erection details including field splices, cuts, copes, connections, holes, threaded fasteners, and welds. Indicate welds by CSA W59, welding symbols.
  - 3.3. Proposed welding procedures to be stamped and approved by Canadian Welding Bureau.
  - 3.4. Indicate components to be shop coated and components requiring field touch-ups.
- 4. Samples:
  - 4.1. Submit for review and acceptance each of the following:
    - 4.1.1. Two (2) samples of proposed shop painting powder coating applied to steel 51x51 HSS to verify colour matching of railing on site.
    - 4.1.2. Two (2) samples of proposed field painting product applied to a welded connection of two powder coated sections.

## **1.5 Quality assurance**

- 1. Preconstruction Testing: Provide suitable facilities and cooperate with Departmental Representative in carrying out inspection and tests required.
- 2. Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- 3. Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

## **1.6 Delivery, storage, and handling**

- 1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- 2. Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 3. Storage and Handling Requirements:
  - 3.1. Store materials off ground and in accordance with manufacturer's recommendations.
  - 3.2. Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 Materials**

- 1. Steel sections: to CSA G40.21M, Grade 350W Class C.
- 2. Steel plates and angles: to CSA G40.21M, Grade 350W.
- 3. Steel Mesh Panel: to ASTM A1064/A1064M-18a, plain wire, Grade 65.
  - 3.1. To match existing railing mesh panels.
- 4. Welding materials: to CSA W59.
- 5. Welding electrodes: to CSA W48Series
- 6. Bolts and anchor bolts: to ASTM A307

7. Powder Coating (Railing):
  - 7.1. Powder coating materials in accordance with BC MoTI Standard Specifications Section 308 Coating Systems.
  - 7.2. All new railing components shall be the same shade of green of the existing railing.
8. Field Touch up (Railing)
  - 8.1. Field touch up materials in accordance with BC MoTI Standard Specifications Section 308 Coating Systems.
  - 8.2. All new railing components shall be the same shade of green of the existing railing.

## **2.2 Fabrication**

1. Fabricate work square, true, straight, and accurate to required size, with joints closely fitted and properly secured.
2. Where possible, fit and shop assemble work, ready for erection.
3. Exposed welds continuous for length of each joint. File or grind exposed welds smooth and flush.

## **2.3 Shop painting**

1. Powder coat in accordance with BC MoTI Standard Specifications Section 216.
2. Powder coating to be shop applied.
3. Powder coat performance to meet AAMA 2605 Standard or equivalent approved by the Departmental Representative.
4. Metal surfaces which are to be embedded in concrete do not need to be coated.
5. Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease.
6. Paint when temperature minimum 7 degrees C.
7. Clean surfaces to be field welded; do not paint.

## **2.4 Field Painting**

1. Field Painting in accordance with BC MoTI Standard Specifications Section 422.39 Field Painting.
2. Touch up metal which has been shop coated with same type of paint and to same thickness as shop coat. This touch-up to include cleaning and painting of field connections, welds, nuts, washers, bolts, screws, and damaged or defective paint and rusted areas.
3. Where painting does not meet with requirements of specifications, and when so directed by Departmental Representative remove defective paint, thoroughly clean affected surfaces and repaint in accordance with these specifications.

## **Part 3 Execution**

### **3.1 Examination**

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

### **3.2 Erection - general**

1. Do welding work in accordance with CSA W59 unless specified otherwise.
2. Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
  - 2.1. Posts to have a vertical tolerance of +/- 5 mm from vertical as well as on a post-to-post basis.
3. Exposed fastening devices to match finish and be compatible with material through which they pass.
4. Supply components for work by other trades in accordance with shop drawings and schedule.
5. Weld field connection.
6. Touch-up field welds, bolts and burnt or scratched surfaces.

### **3.3 Catwalk 6 Repairs**

1. Review existing condition and confirm components to be replaced during pre-mobilization site visit, all damaged components within the 6 m defined length of Catwalk 6 to be made as new.
2. Close work area to the public prior to commencing work.
3. Remove temporary timbers, duct tape and bracing to confirm full extent of damage.
4. Remove damaged sections of splice plates, clamping plates, and mesh panel.
5. Confirm condition of post and post cap with Departmental Representative, repair as needed.
6. Cut top railing and angles flush and prep to install new sections.
7. Install new sections of top rail and angles.
8. Confirm condition of welds between the bottom railing and posts with Departmental Representative, repair as needed.
9. Install new mesh panel, clamping plates and splice plates.
10. Field touch up paint coating.
11. Work to be completed as per typical details shown on the Contract drawings.

### **3.4 Site quality control**

1. Weld testing: to CSA W59 and paid for by the Contractor.
2. Frequency of testing CJP welding testing:
  - 2.1. 100% visual testing to be completed.

### **3.5 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - 1.1. Leave Work area clean at end of each day.
2. Final Cleaning: upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.

### **3.6 Protection**

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

End of Section

## **SECTION 31 11 00**

### **Clearing and grubbing**

#### **Part 1 General**

##### **1.1 Summary**

1. This section includes tree removal to install the new steel railing and concrete footings.

##### **1.2 Related requirements**

1. Section 05 50 00 - Metal fabrications
2. Section 31 23 33.01 - Excavating, trenching and backfill
3. Section 32 12 16.01 - Asphalt paving - short form

##### **1.3 Definitions**

1. Tree Removal: consists of cutting off trees and brush vegetative growth to not more than specified height above ground and disposing of felled trees, and surface debris.
2. Erosion: deterioration, displacement, or transportation of land surface by wind or water, intensified by land clearing practices related to construction work.
3. Sediment: particulate matter transported and deposited as a layer of solid particles within a body of water.

##### **1.4 Reference standards**

1. Canada Labour Code, Part 2, Canada Occupational Health and Safety Regulations.
2. Canadian Environmental Protection Act, 1999 (CEPA 1999).

##### **1.5 Administrative requirements**

1. Arrange for a Pre-mobilization site visit in accordance with Section 01 71 00 Examination and preparation, which includes identifying trees for removal. Contractor to identify trees for removal that include but are not limited to trees that interfere with the final railing alignment.
2. Contractor is responsible for obtaining or coordinating the restricted activity permits required for tree removal.

##### **1.6 Action and informational submittals**

1. Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Submit Site-specific Health and Safety Plan (HSP) a minimum fourteen days prior to mobilization to Site, in accordance with Section 01 35 29.06– Health and Safety Requirements. Submit HSP for review and approval by Departmental Representative.
3. Submit Site-specific Environmental Protection Plan (EPP) a minimum fourteen days prior to mobilization to Site, in accordance with Section 01 35 43– Environmental Procedures. Submit EPP for review and approval by Departmental Representative.

##### **1.7 Health and safety**

1. Perform tree removal work in accordance with the Site-specific HSP recommendations as directed by Departmental Representative.
2. Safety Requirements: worker protection.

- 2.1. Ensure workers are wearing gloves, protective clothing, long sleeved clothing, safety boots, eye protection, and safety vests while performing tree removal.

## **1.8 Quality control**

1. Regulatory Requirements
  - 1.1. Ensure Work is performed in compliance with CEPA, CEAA, TDGA, applicable Provincial/Territorial and Municipal regulations.
  - 1.2. Comply with hauling and disposal regulations of authority having jurisdiction.
2. Qualifications
  - 2.1. Provide proof of qualifications when requested by Departmental Representative.
  - 2.2. Qualification Statement: Contractor have documented proof that they have completed work of similar scope.

## **1.9 Delivery, storage, and handling**

1. Prevent damage to existing pavement, existing railing, existing signs, existing structures which are to remain.
  - 1.1. Repair damaged items to approval of Departmental Representative.
  - 1.2. Replace any damaged trees designated to remain, as directed by Departmental Representative.

## **1.10 Environmental requirements**

1. Perform tree removal work in accordance with the Site-specific EPP requirements as described in Section 01 35 43 - Environmental Procedures.
2. Clean up spills of preservative materials immediately with absorbent material and safely discard to landfill.
3. Do not dispose of unused preservative materials into sewer system, into streams, lakes, onto ground or in other location where they will pose health or environmental hazard.

## **Part 2 Products**

### **2.1 Not used**

1. Not used

## **Part 3 Execution**

### **3.1 Preparation**

1. Inspect site and verify with Departmental Representative, any items designated to keep or remain.
2. Contractor to flag the trees required for removal to meet the railing alignment requirements provided in Section 01 11 00 - Summary of Work.
3. Prior to commencing any activity, the Contractor will be required to first obtain a Restricted Activity Permit (RAP) in consultation with Parks Canada and the Departmental Representative as per Section 01 35 43 – Environmental Procedures. The Contractor shall not commence work on this activity until approval to proceed has been granted.
4. Pre-clearance bird and bat surveys to be conducted in accordance with Section 01 35 43– Environmental Procedures. Pre-clearance nest surveys shall be completed by the Contractor's QEP.

### **3.2 Tree removal**

1. Tree removal includes felling, cutting, and trimming of trees into sections and satisfactory disposal of trees and other vegetation designated for removal, including rubbish, brush and snags occurring within cleared areas.

### **3.3 Removal and disposal**

1. Trees set for removal with the Work, may be permitted to remain in-situ and placed flush to ground. Should the total number of trees exceed 5, then excess trees shall be removed and disposed of as per direction from ESO
2. Wood suitable for firewood, can be brought to Johnston Canyon Campground. Wood must be cut into 14" lengths and stacked accordingly. Please contact ESO for access to wood lot.
3. All other waste shall be removed from the National Parks at an appropriate facility. Loading, hauling and all tipping fees shall be considered incidental and shall not be considered for payment.

### **3.4 Finished surface**

1. Leave stumps cut flush with ground elevation and root structure undisturbed.

### **3.5 Cleaning**

1. Perform cleaning in accordance with Section 01 74 00 - Cleaning.
2. Maintain Work in tidy condition, free from accumulation of waste products and debris.
3. Do not clean equipment in the waterbody or where the wash-water can enter the waterbody.
4. Maintain tidy Work area, free from accumulation of waste products and debris.

End of Section



## **SECTION 31 23 33.01**

### **Excavating, trenching, and backfilling**

#### **Part 1 General**

##### **1.1 Summary**

1. This section includes the excavations for the concrete footings.

##### **1.2 Related requirements**

1. Section 03 30 00.09 - Cast-in-place concrete - short form
2. Section 31 11 00 - Clearing and grubbing

##### **1.3 Definitions**

1. Excavation classes: two classes of excavation will be recognized; competent bedrock excavation and common excavation.
  - 1.1. Competent bedrock: solid material in excess of 1.0 m<sup>3</sup> and which cannot be removed by means of heavy duty mechanical excavating equipment. Frozen material is not classified as bedrock and is not considered as competent bedrock drilling for payment purposes. The top 200 mm of bedrock profile is considered part of the weathering profile and is not considered as competent bedrock drilling for payment purposes.
  - 1.2. Common excavation: excavation of materials of whatever nature, which are not included under definitions of competent bedrock excavation.
2. Topsoil:
  - 2.1. Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
  - 2.2. 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.
3. Surplus excavation material: excavated material that exceeds limits of the identified placement areas on site. This includes both competent bedrock and common excavation material.

##### **1.4 Action and informational 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:
  - 2.1. Submit condition survey of existing conditions as described in EXISTING CONDITIONS article of this Section.
  - 2.2. Notify Departmental Representative when competent bedrock is encountered and when bottom of excavation is reached.
3. Preconstruction Submittals:
  - 3.1. Submit construction equipment list for major equipment to be used in this section prior to start of Work.

##### **1.5 Quality assurance**

1. Submit design and supporting data at least 2 weeks prior to beginning Work.

2. Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Alberta, Canada.
3. Keep design and supporting data on site.
4. Health and Safety Requirements:
  - 4.1. Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

## **1.6 Waste management and disposal**

1. Separate waste materials for reuse.
2. Divert excess waste materials from landfill to local facility for reuse as directed by Departmental Representative.

## **1.7 Existing conditions**

1. Examine subsurface exploration and geotechnical recommendations in memo prepared by Tetra Tech, refer to Appendix B – Tetra Tech Geotechnical Report.
2. Existing buildings and surface features:
  - 2.1. Conduct, with Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.
  - 2.2. Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Departmental Representative
  - 2.3. Where required for excavation, cut roots or branches as directed by Departmental Representative.

## **Part 2 Products**

### **2.1 Not used**

1. Not used

## **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 and walkways, according to Section 01 35 43 - Environmental Procedures.
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.
2. Cut pavement of walking surface neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

### **3.3 Preparation/protection**

1. Protect existing features in accordance with Section 01 56 00 - Temporary Barriers and Enclosures and applicable local regulations.
2. Keep excavations clean, free of standing water, and loose soil.
3. 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 from damage.

### **3.4 Excavation**

1. Advise Departmental Representative at least 7 days in advance of excavation operations.
2. Excavate to lines, grades, elevations, and dimensions as indicated.
3. Remove paving and other obstructions encountered during excavation.
4. Excavation must not interfere with bearing capacity of adjacent foundations.
5. Restrict vehicle operations directly adjacent to open trenches.
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 approval of completed excavation.
10. Hand trim, make firm and remove loose material and debris from excavations.

### **3.5 Excavated material placed on site**

1. Place excavated material in approved location:
  - 1.1. Excavated material is permitted to be spread between posts up to 20cm wide (width of the footing).
  - 1.2. Additional pre-identified sites will be determined by Parks Canada Vegetation Specialist and ESO in the spring 2022.
  - 1.3. All excavated subsoil material must be placed on non-vegetated areas and tamped down after placement.
  - 1.4. Topsoil material shall not be tamped. Erosion and sediment controls may be installed, at the request of the ESO.
2. Replace topsoil as directed by Departmental Representative

### **3.6 Disposal of surplus excavated material**

1. When no more excavated material can be placed in the approved locations on site. Surplus excavated material shall be removed and transported by the Contractor to Peyto Pit on Tunnel Mountain Road in Banff, AB, approximately 35km from Johnston Canyon Trailhead.

### **3.7 Site restoration**

1. Non-native vegetation control and re-seeding to be completed in accordance with Section 01 35 43 Environmental procedures.

### **3.8 Decompaction of soil**

1. Decompaction to be completed in accordance with Section 01 35 43 Environmental procedures.

### **3.9 Clean-up**

1. Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects as directed by Departmental Representative.
2. Reinstall pavements for walking surface disturbed by excavation to thickness, structure and elevation which existed before excavation in accordance with Section 32 12 16.01 - Asphalt Paving - Short Form.
3. Clean and reinstall areas affected by Work as directed by Departmental Representative.

End of Section

## **SECTION 32 12 16.01**

### **Asphalt paving - short form**

#### **Part 1 General**

##### **1.1 Summary**

1. This section includes "cold patch" asphalt used to repair areas of the walking surface removed to install the concrete footings, repair tripping hazards along the edge of the walking surface (at the rail side of the trail), and where required to widen the existing walking surface to mitigate any trip hazard between the existing walking surface and the new railing.
2. The Contractor to identify potential locations for "cold patch" asphalt in the pre-mobilization site visit.
3. The areas for "cold patch" asphalt will be as directed by the Departmental Representative.
4. The nominal thickness of the existing asphalt is expected to be 50 mm.

##### **1.2 Related requirements**

1. Section 31 23 33.01 - Excavation, trenching and backfilling

##### **1.3 Reference standards**

1. American Association of State Highway and Transportation Officials (AASHTO)
  - 1.1. AASHTO M320-10, Standard Specification for Performance Graded Asphalt Binder.
  - 1.2. AASHTO R29-08, Standard Specification for Grading or Verifying the Performance Graded of an Asphalt Binder.
  - 1.3. AASHTO T245-97 (2008), Standard Method of Test for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus.
2. Asphalt Institute (AI)
  - 2.1. AI MS-2-1994, Mix Design Methods for Asphalt Concrete and Other Hot-Mixes.
3. ASTM International
  - 3.1. ASTM C88-05, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
  - 3.2. ASTM D698-12, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m)).
4. Alberta Transportation Standard Specifications for Highway Construction

##### **1.4 Action and informational submittals**

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Work Plan: submit plan indicating the mix to be used, list of equipment, procedures to meet Manufacturer's instruction in the remote location, procedures for meeting environment requirements to prepare the surface, procedure to meet Manufacturer's temperature requirements for storing, mixing, and placing, and procedures for excess disposal and cleaning.
3. Product Data:
  - 3.1. A copy of the Manufacturer's product specification shall be submitted to the Department Representative at least 7 days prior to delivery of the mix.

## **1.5 Delivery, storage, and handling**

1. Deliver, store and handle materials in accordance with Section with Manufacturer's written instructions.

## **Part 2 Products**

### **2.1 Materials**

1. The cold patch asphalt mix should consist of a high quality, pre-mixed, asphalt "cold patch" compound purchased from a local retailer.
2. A tack coat shall be used for all patching work along the trail. The tack coat shall be any product that meets the requirements of Alberta Transportation Standard Specifications for Highway Construction or Departmental Representative approved equivalent.

## **Part 3 Execution**

### **3.1 Examination**

1. Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for asphalt paving in accordance with Manufacturer's written instructions.
  - 1.1. Visually inspect substrate in presence of Departmental Representative.
  - 1.2. Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - 1.3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

### **3.2 Preparation**

1. Suitable method, equipment, and hand tools shall be used to place and compact the cold patch asphalt mix.
2. Mark areas with flagging or caution tape so the cold patch asphalt mix repair locations are not disturbed until it has cured.
3. The surface on which the patching material is placed shall be free of dirt, sand, foreign matter, and loose material where identified by the Departmental Representative.
  - 3.1. Clean existing pavement thoroughly using brooms, pressure washer or compressed air hose.
    - 3.1.1. Work to be completed as per Section 01 35 43 – Environmental Procedures

### **3.3 Installation**

1. At the time of use, stockpiled patching material shall exhibit uniform coating, good cohesion and workability, and be in accordance with the material specification requirements.
2. SS-1 tack coat shall be applied to the area to be patched as per Manufacturer's instructions.
3. Place and compact the cold patch asphalt accordingly, ensuring the temperature is in accordance with the Manufacturer's instructions.
4. The Contractor shall ensure proper adhesion of the mixture placed during the patching operation to the adjacent surfaces
5. For repairs exceeding 50 mm in depth, the patching material shall be placed in lift thicknesses of maximum 50 mm in depth and each lift shall be compacted prior to the addition of the next lift.
6. After placement and final compaction of the patching material, patches shall be free of defective areas, including, but not limited to wheel track marking, raveling, uneven surface, and fat spots.
7. Allow cold patch asphalt mix to set prior to removing preventative measures.

8. Dispose of any spilt or remaining cold patching asphalt mix materials outside the National Park.
9. Acceptance of all patching work shall be based on visual observation of the patching material, surface appearance of the patch at the time of patching, continuity with adjacent surfaces, and conformance of the patching materials to the requirements of this specification.

### **3.4 Cleaning**

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - 1.1. Leave Work area clean at end of each day.
2. Final Cleaning: upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.

End of Section



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