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DRAWINGS:

2290-02-100	COVER SHEET, DRAWING LIST, LOCATION MAP AND SITE PLAN
2290-02-101	TUPPER No.2 SNOWSHED - COLUMN REHAB LOCATION PLAN
2290-02-102	LEN'S SNOWSHED - COLUMN REHAB LOCATION PLAN
2290-02-103	SINGLE BENCH - WALL PANEL REHAB LOCATION PLAN
2290-02-104	CONSTRUCTION SITE SETUP – LEN'S AND TUPPER No.2.
2290-02-105	COLUMN REHAB DETAILS - LEN'S (COLUMN LINE B)
2290-02-106	COLUMN REHAB DETAILS - TUPPER No.2 (COLUMN LINE C)
2290-02-107	WALL PANEL REHAB DETAILS - SINGLE BENCH (LINE A)

REFERENCE MATERIAL:

Existing Len's Snowshed drawings, including Len's Extension (62 drawings)

Existing Tupper No.2 Snowshed drawings, including Tupper No.3 and Connection (61 drawings)

Existing Single Bench Snowshed drawings, including Contract 1 and Contract 2 (70 drawings)

Parks Canada – Preapproved Routine Impact Assessment (PRIA) – Roads and Related Infrastructure

Parks Canada – Évaluation d'impact courante préapprouvée – Routes et infrastructures connexes

Parks Canada – Standard Operating Procedure (SOP) – Direction for Permitted Users conducting water related activities in MRGNP

Construction Signage Translation Rev 5 (November 2019)

Standard CMS Translations Rev 2 (July 2018)

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 All sections.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises:
 - .1 Rehabilitation of concrete columns in the Tupper No.2 Snowshed and the Len's Snowshed (consists of Len's and Len's Extension), located at km 17.3 and km 18.8 of the TransCanada Highway in Glacier National Park; and,
 - .2 Rehabilitation of precast wall panels in the Single Bench Snowshed, located at km 19.7 of the TransCanada Highway in Glacier National Park.
 - .3 Additional scope includes installation of replacement snowfence timbers or steel channels to replace damaged snowfence timbers.
- .2 Preparation of an Environmental Protection Plan for the Work
 - .1 In preparation for and during rehabilitation of the Snowsheds, an "Environmental Protection Plan" (EPP) is to be prepared and followed by the successful Contractor to meet the requirements of Section 01 35 43 – Environmental Procedures to ensure that minimal adverse effects are achieved. The Contractor's EPP must comply with the PRIA(s) and SOP(s) and must be approved by the Departmental Representative on behalf of Parks Canada Agency (PCA) prior to the commencement of construction. The Departmental Representative and Parks Canada's Environmental Surveillance Officer (ESO) will refer to the approved EPP in determining compliance with the plan and contract specifications. The EPP will form part of this contract.
- .3 Without limiting the scope of work, the work of this Contract generally comprises the following:
 - .1 Mobilization and site preparation
 - .2 Project management and coordination
 - .3 Traffic management during construction
 - .4 Quality control and quality assurance of all construction activities
 - .5 Removal, storage and reinstallation of snow fence timbers and steel supports
 - .6 Removal, storage and reinstallation of steel guardrail, curbs, and precast barriers.
 - .7 Design, supply and installation of temporary supports (complete with jacks) for snowshed roof beams for rehabilitation of snowshed columns
 - .8 Removal, demolition and excavation of materials at column bases to expose tops of column footings
 - .9 Removal and disposal of concrete from existing columns
 - .10 Supply and installation of concrete encasements of columns
 - .11 Supply and installation of GFRP wrapping of columns
 - .12 Partial depth repairs of area above column rehabilitation.

- .13 Removal and disposal of deteriorated precast barriers, including removal and disposal of existing anchor bolts.
- .14 Removal and disposal of concrete from existing wall panels
- .15 Supply and installation of new concrete to rehabilitate wall panels
- .16 Supply and installation of new precast concrete barriers
- .17 Supply and installation of new epoxied threaded anchor rods.
- .18 Reinstatement and replacement of materials at column bases
- .19 Installation of replacement snowfence timbers or steel channels to replace damaged snowfence timbers.
- .20 Demobilization

1.3 CONTRACT METHOD

- .1 Construct Work under combined price contract.

1.4 WORK BY OTHERS

- .1 The Contractor is advised that the following Work in the vicinity has been or will be contracted by Parks Canada:
 - .1 Snowshed Lighting Repairs, Km 16.8 – 19.8.
 - .2 Eastgate landslide Repairs, (off-road) km 3.5
 - .3 Trans-Canada Highway Pavement Rehabilitation, Km 0 – 43.8
 - .4 Line painting, various locations
 - .5 Other projects and maintenance work may occur along the TCH in 2023
- .2 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 and the Departmental Representative in reviewing their construction schedules and sharing their work space, and shall coordinate their operations with the other Contractors, including traffic management and construction staging.

1.5 WORK SEQUENCE

- .1 Construct Work in stages to provide for continuous public usage. Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.
- .2 Required stages:
 - .1 Two way traffic shall be maintained throughout construction with minimum lane widths of 4.5 m eastbound (downhill) and 4.3 m westbound (uphill), except as specifically noted in Section 01 55 26 Traffic Control.
 - .2 Work (including traffic restrictions) at two (2) of the three (3) sites may occur concurrently. Work (including traffic restrictions) at all three sites simultaneously not permitted.
 - .3 Substantial Completion of Snowshed Column Rehabilitation – 2023 September 30
 - .4 Final Completion - 2023 October 15.
- .3 Access to the sites will be restricted late October to mid June due to Avalanche danger. Prior to mobilizing to site, the Contractor will require confirmation from Avalanche

Operations in Mount Revelstoke & Glacier National Park that the site and surrounding area is safe.

- .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.

1.6 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises for Work, for storage, and for access, to allow:
 - .1 Owner occupancy.
 - .2 Public usage.
- .2 Co-ordinate use of premises with the acceptance of the 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 Revelstoke, 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 Office in Revelstoke.
- .6 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.
- .7 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.7 OWNER FURNISHED ITEMS

- .1 The following materials are available to the Contractor subject to the approval of the Departmental Representative:
 - .1 Timbers and steel channels for replacement of snowshed damaged timbers.
 - .2 Precast concrete barriers (approximately 200 m combined length) for temporary use during construction are available at the Eastgate Landslide laydown area (km 3.5 of the TransCanada Highway in Glacier National Park). Barriers to be returned to original location upon completion of work.
- .2 Unless specified as an Owner Furnished Item, all materials required to complete the Work are to be supplied by the Contractor. Unless specifically noted otherwise in the specifications, supply of materials required to complete the Work will not be measured but considered incidental to the Work.

1.8 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.

1.9 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. Graphic symbols shall be diamond grade and shall conform to CAN3-Z321.
- .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 All temporary traffic control signs that are used for longer than one day shall be mounted on wood posts.
- .5 Signage shall be coordinated with other Contractors.

1.10 DOCUMENTS REQUIRED

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

Part 2 Products**2.1 NOT USED**

- .1 Not used.

Part 3 Execution**3.1 NOT USED**

- .1 Not used.

END OF SECTION

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.

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 purposes 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.
- .2 While the Work Sites are under the Contractor's control, the Contractor shall be entirely responsible for the security of the Work Sites and of the Work, and for the security of the work of Other Contractors located on the Work Sites.
- .3 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.
- .4 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .5 Provide for all traffic. Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .6 The Contractor will not be permitted to establish a construction camp inside Glacier National Park.
- .7 Office/tool trailer may be set up near the snowshed sites 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 Sites caused by the Contractor shall be repaired by the Contractor at its expense.
 - .1 Existing lighting and conduits within the snowsheds to be protected from damage during the Work.
- .10 The work must be performed during daylight hours, from 7:00 to 22:00 hours, seven days per week, unless authorized in writing by the Departmental Representative.
- .11 Use natural lighting to do Work where possible.
 - .1 Shut off construction lighting except those required for security purposes or safe travel at end of each day.
 - .2 Existing lighting in snowshed not guaranteed to be functional. Contractor to be prepared to provide alternate source of lighting if required.

- .12 The Contractor will not be permitted to work on the following Statutory and Civic Holidays or long weekends unless prior written approval is granted by the Departmental Representative:

Statutory and Civic Holidays:

- .1 Victoria Day long weekend: From 07:00 AM. Friday, May 19, 2023 to 07:00 AM Tuesday, May 23, 2023.
 - .2 Canada Day long weekend: From 07:00 AM. Friday, June 30, 2023 to 07:00 AM Tuesday, July 4, 2023.
 - .3 Civic Holiday long weekend: From 07:00 AM. Friday, August 4, 2023 to 07:00 AM Tuesday, August 8, 2023.
 - .4 Labour Day long weekend: From 07:00 AM. Friday, September 01, 2023 to 07:00 AM Tuesday, September 5, 2023.
 - .5 Thanksgiving Day weekend: From 07:00 AM Friday, October 06, 2023 to 07:00 Tuesday, October 10, 2023.
- .13 The Departmental Representative may restrict access to areas of the Work during special events due to high traffic volumes or conflicts with event routes.
- .14 Submit schedule in accordance with Section 01 32 16.19 - Construction Progress Schedule - Bar (GANTT) Chart.
- .15 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .16 Keep within limits of work and avenues of ingress and egress.

1.3 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.

1.4 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 and the Environmental Protection Plan prepared for the project.
- .2 All components of the Work shall be conducted without equipment entering into wetlands, water bodies, or streams.
- .3 Refer to Section 01 35 43 – Environmental Procedures for details.
- .4 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.
- .5 The Contractor is responsible for the development and supply of construction access to the Work as approved by the Departmental Representative.

1.5 UTILITIES

- .1 Notify the Departmental Representative and utility companies of intended interruption of services and obtain required permissions.
- .2 Utilities are present, the location of utilities shown or not shown on the Drawings, are subject to verification by the Contractor.
- .3 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.
- .4 The Contractor shall establish and maintain direct and continuous contact with the owners or operators of any Utilities which may interfere with the Work. The Contractor shall advise and obtain written approval for the intended methods of preserving the Utilities during Construction from all affected Utility Owners a minimum three (3) weeks prior to affecting any Utility. The Contractor shall keep the Departmental Representative informed of all communications with the Utility companies and authorities at the Construction Progress meetings.
- .5 The Contractor shall immediately report any damage to Utilities to the Departmental Representative and to the Utility company or authority affected, and shall promptly undertake such remedial measures as are necessary at no additional cost to the Owner.

1.6 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.

1.7 PROTECTION OF PERSONS AND PROPERTY

- .1 The Contractor shall comply with all applicable safety regulations of the WorkSafeBC, the Provincial OH&S Act and Regulations, Industrial First Aid Regulations, and Workplace Hazardous Materials Information System Regulations.
- .2 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.
- .3 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.

1.8 USE OF PUBLIC AREAS

- .1 The Contractor shall ensure that its vehicles and equipment do not cause nuisance in public areas.

- .2 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.
- .3 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. Spills of materials in public areas shall be removed or cleaned immediately by the Contractor at its own expense.
- .4 All activities shall be in accordance with Section 01 35 43 - Environmental Procedures and the Environmental Protection Plan prepared for the project.
- .5 Hauling units are not to exceed legal highway load limits.

1.9 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:
 - .1 Project Superintendent;
 - .2 Deputy Project Superintendent;
 - .3 Health and Safety Coordinator.
- .3 The Project Superintendent shall be employed full time and 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.
- .4 The Project Superintendent shall nominate a Deputy Project Superintendent who shall have the authority of the Project Superintendent during the latter's absence.
- .5 Health and Safety Co-ordinator must:
 - .1 Have substantial site-related working experience specific to activities associated with roadway and snowshed/bridge construction.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work and report directly to and be under direction of the site supervisor.

1.10 MEETINGS

- .1 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.
- .2 The Departmental Representative will schedule an initial meeting to be held on site after award notification. Senior representatives of the Owner, the Departmental

Representative, Contractor, major subcontractors and field inspectors, shall attend this meeting.

- .3 Progress and status meetings will be held on a weekly basis.
- .4 Cost of attending the above meetings shall be considered incidental to the Contract items and no additional payment will be made.

1.11 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 Glacier 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.

1.12 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

Part 1 General**1.1 PRIME COST SUM**

- .1 Include in Contract Price a Prime Cost Sum of \$300,000 (**Lump Sum Price Item No. 3 – Prime Cost Sum**).
- .2 The Contract Price, and not Prime Cost Sum, includes Contractor's head office overhead and profit in connection with such prime cost sum.
- .3 Prime Cost Sum provided for in the lump sum arrangement table is not a sum due to the Contractor. Rather, payment will be made against it for miscellaneous work not included in the unit price table under the General Conditions of the Contract.
- .4 Any and all additional work must be approved in writing by the Departmental Representative prior to commencement.
- .5 Expenditures must be substantiated with verified invoices and/or approved daily extra work reports, if requested by the Departmental Representative.
- .6 Prime Cost sum items may include but are not limited to:
 - .1 Additional rehabilitation to snowshed columns not described on drawings.
 - .2 Replacement of existing barriers and traffic railings as directed by the Departmental Representative.
 - .3 Additional installation of owner supplied snow fencing as directed by Departmental Representative.
 - .4 Additional repairs, additional environmental controls and additional traffic control measures as directed by the Departmental Representative.
- .7 Once a Prime Cost Sum item has been agreed upon with Parks Canada, it shall be included as an item on the Project Schedule. This shall occur on the next update of the Project Schedule.

1.2 MEASUREMENT PROCEDURES

- .1 Payment for Work under the "**Lump Sum Price Item 3 - Prime Cost Sum**" will be made using negotiated rates or by material, labour and equipment rates as per the following:
 - .1 Rental rates will be in accordance with current BC Roadbuilders rate schedule, and will be all inclusive and fully operated. Hourly rental of equipment will be measured in actual working time and necessary travel time within project limits.
- .2 Transportation time to and from site to be reimbursed only if equipment is used exclusively for additional work.
- .3 Labour rates and material costs shall be paid in accordance with the General Conditions.
- .4 Unless otherwise provided for in the Contract, payment on a time and materials basis represents complete payment (exclusive of GST) and reimbursements for all impacts, related costs and expenses, including, without limitation: time; labour; materials; equipment; mobilization; subcontracting; overhead; profit; general supervision; occupational tax and any other Federal or Provincial revenue legislation exclusive of

GST; premiums for public liability and property damage insurance policies; bonding; for the use of all tools and equipment for which no specific rental payment provision exists; and for all costs incurred by the Contractor in supplying materials.

Part 2 Products**2.1 NOT USED**

.1 Not Used.

Part 3 Execution**3.1 NOT USED**

.1 Not Used.

END OF SECTION

Part 1 General**1.1 DESCRIPTION**

- .1 Mobilization and Demobilization consists of preparatory work and operations including but not limited to, those necessary for the movement of personnel, equipment, buildings, shops, offices, supplies and incidentals to and from the project sites.
- .2 Any protective measures or movement of Contractor trailers necessitated by animal interactions and required by Parks Canada will be paid by the Departmental Representative, and are not to be anticipated in the Lump Sum Contract Price for Mobilization and Demobilization.

1.2 MEASUREMENT PROCESS

- .1 Mobilization and Demobilization:
 - .1 Payment will be made under “**(Lump Sum Price Item 1 – Mobilization / Demobilization)**”.
 - .2 50% of Lump Sum Contract Price for Mobilization and Demobilization to be paid when the initial mobilization to site is complete. No additional payments will be made for subsequent mobilizations to site.
- .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.
- .3 Payment of only 10% of the total price tendered will be scheduled as outlined above. If the amount bid for mobilization and demobilization is greater than 10% of the total price tendered, payment of the remainder of the amount will be authorized when the contract has been completed.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

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 Preside at meetings.
- .6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants, affected parties not in attendance and Departmental Representative.
- .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 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with Section 01 32 16.19 - Construction Progress Schedules - Bar (GANTT) Chart.
 - .3 Schedule of submission of shop drawings. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
 - .5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
 - .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .7 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

- .8 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .9 Monthly progress claims, administrative procedures, photographs, hold backs.
- .10 Appointment of inspection and testing agencies or firms.
- .11 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 Notify parties minimum 5 days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.
- .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Review Environmental issues.
 - .4 Review Traffic Control and emergency Response Protocol issues.
 - .5 Review site safety and security issues.
 - .6 Field observations, problems, conflicts.
 - .7 Problems which impede construction schedule.
 - .8 Review of off-site fabrication delivery schedules.
 - .9 Corrective measures and procedures to regain projected schedule.
 - .10 Revision to construction schedule.
 - .11 Progress schedule, during succeeding work period.
 - .12 Review submittal schedules: expedite as required.
 - .13 Maintenance of quality standards.
 - .14 Review proposed changes for affect on construction schedule and on completion date.
 - .15 Other business.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

Project: 2290-02

Parks Canada

Snowshed Rehabilitation
Tupper No.2, Len's and Single Bench
Glacier National Park

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PROJECT MEETINGS
Page 3

END OF SECTION

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 Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately 5 working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

Parks Canada

Glacier National Park

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 Completion of each Stage of construction.
 - .2 Substantial Completion for each structure.
 - .3 Final Completion for each structure.

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:
 - .1 Award
 - .2 Shop Drawings, Samples.
 - .3 Permits.
 - .4 Coordination with other contractors
 - .5 Submittals.
 - .6 Mobilization.
 - .7 Environmental Protection Plan, review and implementation.
 - .8 Traffic Management Plan, review and implementation.
 - .9 Health and Safety Plan, review and implementation.
 - .10 Quality Management Plan, review and implementation.
 - .11 Design and fabrication of temporary column supports.
 - .12 Construction staging, including timelines for both Line B and Line C columns.
 - .13 Column Concrete Removals

Parks Canada

Glacier National Park

- .14 Column Concrete Placements
- .15 GFRP Wrapping of Columns
- .16 Reinstatement of Pavement, Curbs, Barriers, Railings and Snowfences.
- .17 Precast Barrier Removals (including removal of anchor bolts)
- .18 Wall Panel Concrete Removals
- .19 Wall Panel Concrete Placements
- .20 Supply and Installation of new Precast Barriers (including supply and installation of new epoxied threaded anchor rods)
- .21 Installation of replacement snowfence timbers or steel channels to replace damaged timbers.
- .22 Timber work
- .23 Demobilization.

1.7 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.8 PROJECT MEETINGS

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

Part 2 Products**2.1 NOT USED**

- .1 Not used.

Part 3 Execution**3.1 NOT USED**

- .1 Not used.

END OF SECTION

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 co-ordinated 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 co-ordinated.
- .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 British Columbia, 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 co-ordinated, 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 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 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.

- .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .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.
 - .2 Testing must have been within 3 years of date of contract award for project, unless otherwise specified.
- .13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .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.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit electronic copies of manufacturer's instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .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.
- .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 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 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.

1.4 REQUIRED CONTRACTOR SUBMITTALS

- .1 General
 - .1 This Clause identifies the plans, programs, and documentation required prior to mobilization on site and during the construction phase.
- .2 Pre-Mobilization Submittals

- .1 Submit the following plans and programs to the Departmental Representative for review a minimum of fourteen (14) 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. 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.
 - .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 16.07 Construction Progress Schedules – Bar (GANTT) Chart.
 - .2 Contractor Chain of Command, listing key Contractor personnel, including names and positions, addresses, telephone, cellular telephone and/or pager numbers. The list shall include the names and telephone/cellular telephone/pager numbers for contact persons who are available on a 24-hour basis in the event of emergencies.
 - .3 List of Sub-Contractors and Suppliers.
 - .4 Work Plan, describing the Contractor's intended methods of construction including but not limited to the environmental mitigation strategies and projected number of personnel on site.
 - .5 Quality Control Plan in accordance with Section 01 45 00 – Quality Control.
 - .6 Traffic Accommodation Strategy, in accordance with the requirements of Section 01 55 26 Traffic Control.
 - .7 Environmental Protection Plans (EPP) and Environmental Construction Operations Plans (ECO Plans) which shall meet the requirements of Section 01 35 43 - Environmental Procedures.
 - .8 Site Access Plan which shall include but not be limited to, engineering Drawings and procedures for accessing all areas of the Work. This shall include access scaffolding, fixed and suspended work platforms, temporary railings, etc.
 - .9 Contractor shall develop an "Emergency Procedures Protocol" in consultation with Parks Canada. Parks Canada will supply the Contractor with a template with contact names and numbers to be used for this purpose.
 - .10 Health And Safety Plan - The Contractor shall have a Certificate of Recognition (COR) or Registered Safety Plan (RSP) including a site specific Health and Safety Plan acceptable to the Departmental

Representative. The Contractor shall implement and maintain the Health and Safety Plan during the Work.

- .11 Health and Safety Plan must include:
 - .1 Contractor's safety policy.
 - .2 Identification of applicable compliance obligations.
 - .3 Definition of responsibilities for project safety/organization chart for project.
 - .4 Site specific hazard assessment.
 - .5 General safety rules for project.
 - .6 Job specific safe work procedures.
 - .7 Inspection policy and procedures.
 - .8 Incident reporting and investigation policy and procedures.
 - .9 Occupational Health and Safety meetings.
 - .10 Occupational Health and Safety communications and record keeping procedures.
 - .11 Results of safety and health risk or hazard analysis for site tasks and operation.
- .12 Submit copies of Material Safety Data Sheets (MSDS).
- .13 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 the Departmental Representative.
- .14 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.
- .2 The Contractor shall not begin any site Work until the Departmental Representative has authorized acceptance of the submittals in writing.
- .3 Construction Phase Submittals
 - .1 Weekly Progress Reports that outline the Work completed to date as well as the anticipated Work to be performed for the following week on a day-by-day basis.
 - .2 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 Traffic Accommodation logs.
 - .4 Shop Drawings – The Contractor shall submit all shop drawings required to fabricate and conduct the work a minimum 14 days prior to fabrication.
 - .5 Concrete Mix Designs and supporting data
 - .6 Progress Photographs:
 - .1 Formats:

- .1 Electronic: .jpg files, minimum five mega pixels.
- .2 Identification: typewritten name and number of project, description of photograph, jpg file name, and date of exposure on 25 x 50 mm white patch in upper right hand corner.
- .3 Viewpoints: 4 viewpoints determined by the Departmental Representative.
- .4 Submission Frequency: prior to commencement of work and weekly thereafter with progress statement, or as directed by the Departmental Representative.
- .5 Submit 2 copies of CD with all electronic pictures as part of closeout package.
- .7 Submit copies of Contractor's authorized representative's work site health and safety inspection reports to the Departmental Representative and authority having jurisdiction weekly.
- .8 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .9 Submit copies of incident and accident reports.
- .4 Project Completion Submittals
 - .1 Record Drawings -The Contractor shall submit an electronic copy of all Contractor's Drawings revised as necessary to record all as-built changes to the Work and the Contractor shall submit an electronic set of Contract Drawings clearly marked to record as-built changes to the Work.
 - .2 Quality Control/Quality Assurance Records – The Contractor shall submit an electronic set of project quality control and quality assurance records in an itemized and organized format.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

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)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Province of British Columbia
 - .1 Workers Compensation Act, RSBC 1996 – including updates.

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:
 - .1 Results of site specific safety hazard assessment.
 - .2 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 to Departmental Representative and authority having jurisdiction, weekly.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets.
- .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.

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 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.

1.7 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.

1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with Workers Compensation Act, B.C.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.9 UNFORSEEN 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.

1.10 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.

1.11 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.

1.12 BLASTING

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

1.13 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

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

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 All Sections.

1.2 MEASUREMENT PROCEDURES

- .1 The cost to the Contractor to meet the environmental and aesthetic protection requirements described below shall be considered incidental to the Work and no additional payment will be made.

1.3 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 Glacier National Park.
- .2 If, in the opinion of the Departmental Representative or Parks Canada, full containment of Contractor's detritus is not being achieved, operations may be ordered halted until the situation is rectified at the Contractor's expense.

1.4 NATIONAL PARK REGULATIONS

- .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 the Parks Canada Administration Office in Revelstoke, 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 Revelstoke.

1.5 CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)

- .1 Execution of the work is subject to the provisions within the Canadian Environmental Assessment Act (CEAA) 2012 and subsequent amendments.
- .2 The Contractor is required to prepare an Environmental Protection Plan (EPP) in accordance with the Preapproved Routine Impact Assessment(s) (PRIA) and Standing Operating Procedure(s) (SOP), which will include the topics in the following sub sections.
- .3 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.
- .4 The Contractor shall notify the ESO (Environmental Surveillance Officer) and the Departmental Representative in a reasonably 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.

Parks Canada

1.6 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 tablets, 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.

1.7 WILDLIFE

- .1 Avoid or terminate activities on site that attract or disturb wildlife.
- .2 Pets are not allowed on the work site, or in any administrative or laydown areas.
- .3 All personnel will be instructed by Parks Canada's ESO in procedures to follow in the event of wildlife appearance near or intrusion into 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. The ESO and the Departmental Representative are to be notified about the circumstance immediately. The Glacier Wildlife Conflict Service will be called to determine the course of action. The general presence of wildlife observed near the construction site, any carcasses or unusual wildlife observations shall be reported to the ESO and the Departmental Representative.
- .4 Contractor to ensure all workers receive a wildlife awareness briefing, including the use of bear spray. Bear spray will be mandatory on site.
- .5 No feeding, baiting or luring of any wildlife (including bears, small mammals, birds); do not approach or harass wildlife in any way.
- .6 Secure all materials that might attract wildlife (e.g. petroleum products, human food, recyclable food and drink containers and garbage). Notify Parks Canada's ESO immediately if wildlife obtain garbage or human food. If wildlife get into attractants that have been intentionally or accidentally left out, individuals or the contractor could be charged under the *Canada National Parks Act* Regulations.
- .7 Species-specific mitigation requirements:
 - .1 Birds (migratory or non-migratory):
 - .2 Contract Qualified Environmental Professional (QEP) to conduct pre-construction nest survey.
 - .1 QEP to have appropriate level of experience in identifying birds and conducting bird sweeps.
 - .2 If active nests are detected during survey, a species appropriate buffer will be established around the nest in consultation with the MRG FU.

Parks Canada

1.8 DRAINAGE

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control dispersal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.
- .4 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

1.9 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. Contractor's staff shall receive basic training in early response to wildfire events during the "environmental briefing".
- .2 Machinery and equipment shall be operated in a manner and with all original manufacturers' safety devices to prevent ignition of flammable materials in the area.
- .3 Care shall be taken while smoking on the construction site to ensure that accidental ignition of any flammable material is prevented. Fires or burning of waste materials are not permitted.
 - .1 Designate a single location on site for smoking and develop a plan for proper disposal of cigarette butts.
- .4 The Contractor shall maintain an awareness of the fire danger rating (Index) in the work area by contacting the Glacier Fire Duty Officer. Fire prevention care is to be commensurate with the fire Index.
- .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

1.10 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 off/on the TransCanada Highway in the vicinity of the project – see specifications and the drawings; access within the work limits, including day-to-day entry/egress and plans for delivery and approach for large dimension materials will be anticipated and described. The access plan shall describe worker transportation to and from the construction site, and parking of workers' private vehicles
- .2 Restrict vehicle movements to work limits.

- .3 Do not park vehicles in areas beyond work limits, unless specifically authorized by the ESO and the Departmental Representative.
- .4 A construction office is anticipated for the snowshed contract (one construction office anticipated to serve all three work sites). The construction office may be located on the construction right-of-way, 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, a materials testing trailer, the Departmental Representative and ESO trailer and toilets. Special measures are required to ensure that conflict with bears (or other wildlife) that are known to frequent the whole construction area does not arise. These include, but may not be limited to:
 - .1 Hydrocarbons, food products, lunches, waste food products, or any other materials attractive to bears brought to this office location or to the snowshed sites shall be secured within the trailers or by other specified means. Waste shall be secured in the trailers and removed daily from the office location.
 - .2 In the event of quick or persistent attraction of bears to the office location, the site may require electric fencing, or removal to an alternate location, at the direction of the Departmental Representative.
- .5 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 lay-down 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.
- .6 A workers' accommodation camp will not be permitted.
- .7 Materials lay-down shall be on the construction right-of-way, or in unusual circumstances – e.g. over-size components, at an alternate location to be determined by the Departmental Representative in consultation with ESO.
 - .1 There is an existing pull-out approximately 150 m west of Len's Snowshed that may be used by the contractor during construction for both a materials lay-down and construction office location.

1.11 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 Parks Canada, negligence on the part of the Contractor results in damage or destruction of vegetation, or other environmental or aesthetic features beyond

the staked or designated work area, the Contractor shall be responsible, at his expense, for complete restoration including the replacement of trees, shrubs, topsoil, grass, etc. to the satisfaction of the Parks Canada.

- .6 Failure to comply with or observe environmental protection requirements as identified in these specifications may result in work being suspended pending rectification of the problems and operators of equipment being charged under the National Park Act.

1.12 WORK AROUND AND OVER WATER

- .1 The construction project shall take place outside of the wetted perimeter of any waterways.
- .2 Sediment control measures shall be to the satisfaction of the ESO.
- .3 Fuel management requirements are explained in the Equipment Fuelling, and Spill Containment sub section.
- .4 Do not operate construction equipment in waterways.

1.13 POLLUTION CONTROL

- .1 Maintain all temporary erosion and pollution control features for this project.
- .2 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Prevent blasting and other extraneous materials from contaminating air and waterways beyond application area by providing suitable, temporary enclosures or mats to the satisfaction of the Departmental Representative and the ESO.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads and on-site work.

1.14 START-UP AND ENVIRONMENTAL BRIEFING

- .1 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 at the site – e.g. concrete truck operators, crane operators, and truck drivers must be apprised of their duty not to cause adverse environmental impact.
- .2 Parks Canada will have an ESO attending the site to monitor the construction activity for conformance with 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 waterproofing agents, grout, concrete finishing agents, hot poured rubber membrane materials, blasting agents, etc. A plan 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. Hazardous products shall be stored no closer than 100 m from any waterway.

1.16 SPILL CONTAINMENT PLAN

- .1 A spill response plan shall be presented in the EPP. Elements to be addressed shall include, but not necessarily limited to:
 - .1 Spill response kit capable of dealing with the largest possible spill shall be maintained in good working order on the construction site.
 - .2 Staff shall be informed of the location of the response kit, and be trained in its use.
 - .3 Hazardous materials are to be stored and used in minimal required quantities in accordance with all applicable federal and provincial legislation.
 - .4 All spills are to be immediately contained with the source of spill arrested, reported to the Departmental Representative and cleanup initiated. In the event of a major spill, all other work shall be stopped and all personnel devoted to spill containment.

1.17 EQUIPMENT FUELLING AND MAINTENANCE

- .1 Equipment used on the project shall be fuelled with E10 gasoline and low sulphur diesel fuels.
- .2 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:
 - .1 Diesel and gasoline supply vehicles, including bulk tankers shall be parked more than 100 meters from any watercourse.
 - .2 Fuel tanks with manual or electric pump delivery systems shall be used, gravity feed is not allowed.
 - .3 Fuelling personnel shall maintain immediate attention to and presence at the fuelling operation.
 - .4 Fuelling sites will be identified by the Departmental Representative and the ESO. Any fuelling closer than 100 m to a waterway will require the authorization and oversight of the ESO or the Departmental Representative.
 - .5 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 Glacier National Park to recycling or certified disposal sites.
 - .6 Equipment shall be inspected daily for fluid/fuel leaks and maintained in good working order.
 - .7 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.

- .3 All equipment stored overnight in staging areas to be stored on tarps with appropriate containment with drip trays and/or pans under fuel tanks.

1.18 WASTE MATERIAL STORAGE AND REMOVAL

- .1 The Contractor shall prepare a Construction and Waste management plan as a part of the EPP. The Plan shall include the following basic principle:
 - .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:
 - .1 Describe the management of waste.
 - .2 Construction wastes shall be stored in containers at an approved location and removed promptly when the containers are 90% full.
 - .3 A concerted effort to reduce, reuse and recycle materials is expected.
 - .4 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
 - .5 Provide containers to deposit recyclable materials.
 - .6 Transport all recyclable materials to an approved recycling facility off site.
 - .7 Waste materials are to be disposed at a certified construction waste landfill outside Glacier National Park. No burying, burning or discarding of waste materials will be permitted at the construction site, or elsewhere in Glacier National Park.
 - .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.
 - .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 generated on-site by Contractor's personnel and make arrangement for collection and disposal on a daily basis or when directed by the Departmental Representative.
- .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 or paint thinners or other hazardous wastes into waterways. Provide clean-up equipment and adequate supply of absorbent material on-site.

Parks Canada

1.19 VEGETATION REMOVAL AND PROTECTION OF THE WORK LIMITS

- .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. No vegetation or living tree removal is expected in the snowshed contract. Any vegetation wilfully or negligently removed shall be replaced in size and kind two fold.

1.20 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.

Part 2 Products

- .1 Not Used.

Part 3 Execution**3.1 CONCRETE MANAGEMENT**

- .1 Wet and uncured concrete is an acutely toxic substance for an aquatic environment. Extra care not to introduce these materials into the environment is required. The Contractor is to prepare an EPP which addresses concrete plant location, operation, and reclamation where required, to the satisfaction of the Departmental Representative. This plan shall include the following concrete management elements:
 - .1 During saw-cutting, cooling fluids shall be contained, collected and disposed of at an approved disposal facility.
 - .2 Concrete mixer truck washout shall be contained in a buried or above ground tank, with wash products moved back to the concrete batching yard or an approved facility for disposal.
 - .3 Water contaminated in the placing of cement and curing of concrete shall be contained and removed from the site to an approved disposal facility.
- .2 If a concrete batching plant is used it shall be operated pursuant to applicable dust, air emission, and water quality control regulations.

3.2 STORAGE AND CONTAINMENT OF EXCAVATED MATERIAL

- .1 The EPP shall detail the plan for both temporary storage and permanent disposal of surplus excavated material.

3.3 MISCELLANEOUS SITE MANAGEMENT CONTINGENCIES

- .1 Removal and storage of snow shall be described, and a plan approved by the ESO and the Departmental Representative.
- .2 Within the EPP a contingency plan for control of dust generated from the construction site shall be prepared, with materials availability arranged in the event of their need.

- .3 It may be desirable or necessary to maintain security services at the construction site during quiet times. Fuel tanks or other potentially deleterious substance containers shall be secured to ensure they are tamperproof and cannot be drained by vandals.
- .4 Develop a response plan for, and be suitably equipped for, fires on and immediately adjacent to the work area.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

- .1 This Work shall be incidental to contract and will not be measured for payment.

1.2 DEFINITIONS

- .1 Quality Control (QC): The process of checking specific product 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.

1.3 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:
 - .1 Distribution list, providing a list of names to whom the Manual shall be distributed;
 - .2 Title page, identifying the Contract, Contractor and copy number;
 - .3 Revision page, identifying the revision number and date of the Manual;
 - .4 Table of contents;
 - .5 Revision control, tabulating the revision number, date of revision, description of revisions and authorized signature;
 - .6 Details of measuring and test equipment including methods and frequency of calibration;
 - .7 Purchasing details of all materials and equipment including procurement documents and vendor's Quality Control Program standards;
 - .8 Procedures for inspection of incoming items, in-process inspection and final inspection and tagging of all supply items;
 - .9 Details of special processes as identified by the Departmental Representative, including qualifications of personnel and certification;

- .10 Procedures for shipping, packaging and storage of materials;
 - .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;
 - .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;
 - .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 tests;
 - .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
 - .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 to be 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.
- .1 A testing agency independent from the Contractor must be engaged by the Contractor to perform Quality Assurance for a given task as part of the Quality Program.
- .7 At completion of the Work an electronic set 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 in an itemized and organized format.

1.4 TESTING

- .1 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:
 - .1 Testing of all structural concrete, reinforcing steel, granular material, asphalt, miscellaneous structural elements and metals, utilities installed, and all source acceptance testing;
 - .2 All testing specified in the Contract Documents; and
 - .3 Any other testing required as a condition for deviation from the specified Contract procedures.
- .2 The quality control testing proposed and testing frequency shall at a minimum, achieve the requirements of the following:
 - .1 Testing requirements in BC MoT 2012 Standard Specifications for Highway Construction.
 - .2 Wherever these standard specifications refer to standards (e.g., CSA, ASTM, and others) the minimum testing frequencies in these standards shall be utilized.
 - .3 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.
- .3 The Contractor shall be fully responsible and bear all costs for all quality control testing and shall conduct such testing in the following manner:
 - .1 Provide testing facilities and personnel for the tests and inform the Departmental Representative in advance to enable the Departmental Representative to witness the tests if it so desired;
 - .2 Notify the Departmental Representative when sampling will be conducted;
 - .3 Within one Day after completion of testing, submit test results to the Departmental Representative; and
 - .4 Identify test reports with the name and address of the organization performing all tests, and the date of the tests.
- .4 Approval of tested samples will be for characteristics or use named in such approval and shall not change or modify any Contract requirements.
- .5 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.
- .6 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 inspections, sampling, and tests shall be a minimum of 10% of the Quality Control testing frequency.
- .7 The Contractor shall be responsible for third party testing of materials incorporated into the works.

- .8 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:
- .1 Notify appropriate agency and Departmental Representative in advance of scheduled tests, in order that attendance arrangements can be made.
 - .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.
 - .3 Provide labour and facilities to obtain and handle samples and materials on site.

1.5 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; Contractor shall 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 costs of examination and correction.

1.6 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies may be engaged by the 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 of the Contractor to perform Work in accordance with Contract Documents.
- .3 If defects are revealed during inspection and/or testing, the appointed agency will request additional inspection and/or testing to ascertain full degree of defect. The Contractor shall correct the defect and irregularities as advised by the Departmental Representative at no cost to the Departmental Representative. The Contractor shall pay costs for re-testing and re-inspection.

1.7 ACCESS TO WORK

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

1.8 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, the Departmental Representative may deduct from Total Bid Amount the difference in value between Work performed and that called for by the Contract Documents, amount of which shall be determined by the Departmental Representative.

1.9 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.

1.10 MILL TESTS

- .1 Submit mill test certificates as required in 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

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 01 55 26 – Traffic Control.

1.2 MEASUREMENT AND PAYMENT

- .1 This Work shall be incidental to contract and will not be measured for payment.

1.3 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-S269.2, Access Scaffolding for Construction Purposes.
 - .2 CAN/CSA-Z321, Signs and Symbols for the Occupational Environment.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

1.5 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Indicate use of supplemental or other staging area.
- .3 Provide construction facilities in order to execute work expeditiously.
- .4 Remove from site all such work after use.

1.6 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ramps, ladders, swing staging, and platforms.
- .3 Provide the Departmental Representative access to all parts of the work during construction and as required for inspection of the completed works.

1.7 HOISTING

- .1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment.
- .2 Hoists and cranes to be operated by qualified operator.

1.8 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.

1.9 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.

1.10 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 or other security measures, as determined necessary by the Contractor to maintain a secure site, will not be measured but considered incidental to the work.

1.11 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.
- .4 Departmental Representative's Site office.
 - .1 Provide temporary office for the use of the Departmental Representative with sufficient working space for minimum of two persons and to include:
 - .1 Minimum (2) desks, (2) office chairs, printer
 - .2 Provided office to be at minimum a separate room with a lockable door separate from the Contractor's working area. A separate trailer may be provided.
 - .3 Provide uninterrupted power supply and heat for office.
 - .4 Provide air-conditioning for office.
 - .5 Provide reliable satellite Internet connection with sufficient bandwidth to support phone calls for Departmental Representative usage.
 - .6 Inside dimensions minimum 3.6 m long x 3 m wide x 2.4 m high, with floor 0.3 m above grade, complete with 2 50% opening windows and one lockable door.
 - .7 Insulate building and provide heating system to maintain 22 degrees C inside temperature at -20 degrees C outside temperature.
 - .8 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint in selected colours. Finish floor with 19 mm thick plywood.
 - .9 Install electrical lighting system to provide min 750 lx using surface mounted, shielded commercial fixtures with 10 % upward light component.
 - .10 Provide private washroom facilities adjacent to office complete with flush or chemical type toilet, lavatory and mirror and maintain supply of paper towels and toilet tissue.
 - .11 Equip office with 6 m of shelving 300 mm wide, one 3 drawer filing cabinet, and one coat rack and shelf.

.12 Maintain in clean condition.

1.12 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.

1.13 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.

1.14 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning signs, are permitted on site.
- .2 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.

1.15 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Construct access and haul roads necessary.
- .8 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
- .9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .10 Dust control: adequate to ensure safe operation at all times.
- .11 Location, grade, width, and alignment of construction and hauling roads: subject to approval by Departmental Representative.

- .12 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .13 Provide snow removal during period of Work.
- .14 Remove, upon completion of work, haul roads designated by Departmental Representative.

1.16 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

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 British Columbia Ministry of Transportation
 - .1 British Columbia – Control Manual for Traffic Work on Roadways (2020)
 - .2 BC MoTI – Standard Specifications for Highway Construction – Traffic Management for Work Zones (latest edition).
 - .3 Manual of Uniform Traffic Control Devices for Canada, (MUTCD).
- .2 U.S. Department of Transportation
 - .1 Manual of Uniform Traffic Control Devices for Streets and Highways (MUTCD).

1.2 PRICE AND PAYMENT PROCEDURES

- .1 Measurement and Payment:
 - .1 Payment of 25% of the lump sum bid price for Traffic Management shall be made following initial installation of the approved traffic control measures **(Lump Sum Price Item No. 2 – Traffic Management)**.
 - .2 Payment of up to 65% of the lump sum bid price for Traffic Management shall be made in equal installments for each month of the scheduled construction period that traffic control measures are in place **(Lump Sum Price Item No. 2 – Traffic Management)**.
 - .3 Payment of 10% of the lump sum bid price for Traffic Management shall be made following the completion of the work and the complete removal of the traffic control measures **(Lump Sum Price Item No. 2 – Traffic Management)**.
 - .4 Costs of keeping the existing roadway within the Work limits (Work Zone) clean and free of pot holes shall be considered incidental to lump sum and no additional payment will be made.
 - .5 The cost of snow removal and provision of salt or sand required to maintain safe driving conditions within the Work limits (Work Zone) shall be considered incidental to lump sum and no additional payment will be made.
 - .6 Costs associated with accommodating wide loads up to 4.8 m shall be considered incidental to lump sum and no additional payment will be made.

1.3 GENERAL

- .1 The Contractor shall develop and implement a Traffic Management Plan in accordance with BC MoTI – Traffic Control Manual for Work on Roadways (2020), except where specified otherwise in the Contract Documents. The Traffic Management Plan will include plans specific to each roadway for this project.
- .2 The Traffic Management Plan must (TMP) duly consider the traffic volumes associated with the direction volume increases typically experienced on the lead up to weekends and/or special events. Adjustments to the TMP may be required at the request of the Departmental Representative to mitigate delays in excess of the stipulated maximum 15 minutes.

- .3 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.

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:
 - .1 Place equipment in position to minimize interference and hazard to travelling public.
 - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
 - .3 Do not leave equipment on travelled way overnight.
- .3 Close lanes of road only after receipt of written approval from Departmental Representative.
 - .1 Before re-routing traffic erect suitable signs and devices to Manual of Uniform Traffic Control Devices for Canada before re-routing traffic.
- .4 Except as specifically noted in this specification section, Item 1.3.5 for Tupper No. 2 and Single Bench Snowsheds and Item 1.3.6 for Len's Snowshed, a minimum of one lane in each direction (one eastbound and one westbound) shall be maintained on the Trans-Canada Highway at all times. The minimum Clear Roadway for one lane of normal traffic shall be 4.5 m eastbound (downhill) and 4.3 m westbound (uphill) unless otherwise approved in writing from the Departmental Representative.
 - .1 Clear Roadway shall be measured by extending straight lines parallel to the roadway at the narrowest constriction point in the work zone from inside the faces of construction barriers, or from the faces of other constrictions, on each side of the clear roadway and measuring the perpendicular distance between the lines.
 - .2 Overloads up to width of 4.8 m to be accommodated at all times.
- .5 Exception at Tupper No. 2 Snowshed and Single Bench Snowshed, during concrete pours only:
 - .1 From 05:00 AM to 09:00 AM, Monday through Thursday (typical work weeks) or Wednesday and Thursday (weeks with Long Weekend and/or Statutory Holiday falling on the Monday) only.
 - .1 Full closure of one corridor with provision of two narrowed lanes (one lane in each direction) in the opposite corridor permitted. While this traffic arrangement is in place, traffic control, with minimum of two dedicated traffic control personnel trained in accordance with, and properly equipped to Traffic Control Manual for Work on Roadways, to accommodate overloads and maintain traffic control setup (including signals) required.

- .6 Exception at Len's Snowshed, during set up and/or removal of centre column traffic barriers or during concrete pours only:
 - .1 From 05:00 AM to 09:00 AM, Monday through Thursday (typical work weeks) or Wednesday and Thursday (weeks with Long Weekend and/or Statutory Holiday falling on the Monday) only.
 - .1 A minimum of single lane alternating traffic shall be maintained on the Trans-Canada Highway. The minimum Clear Roadway for one lane of normal traffic shall be 4.8 m unless otherwise approved in writing from the Departmental Representative.
 - .2 Provide competent flag personnel, trained in accordance with, and properly equipped to Traffic Control Manual for Work on Roadways, to manually control portable traffic signal system on the wire (remote control not permitted) or flag to actively manage queues to balance wait times in the two traffic directions while single lane alternating is in effect.
 - .3 Use of automated (timed) portable traffic signal system during these hours is not permitted.
 - .4 Maximum delay to public traffic: 15 minutes.
- .7 Interlocking traffic barriers subject to the approval of the Departmental Representative shall be provided between traffic and the work zone. Traffic barriers facing in a direction other than parallel to traffic shall be absorbing traffic barriers of an approved type that has been crash tested to meet Level 2 under NCHRP Report 350.
- .8 Traffic control measures will be monitored by the Departmental Representative, who may require modifications of these measures from time to time to achieve satisfactory traffic flow, safety of travelling public and coordination with adjacent contracts.
- .9 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 exists that meet approval of the Departmental Representative.
- .10 All signage and traffic control devices to be provided by the Contractor.
- .11 Clear snow and ice from the roadway within the work zone.

1.5 INFORMATIONAL AND WARNING DEVICES

- .1 Provide and maintain signs, flashing warning lights 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 in accordance to Traffic Control Manual for Work on Roadways.
- .3 Place signs and other devices in locations recommended in BC MoTI - Traffic Control Manual for Work on Roadways (2020).
- .4 All construction signs shall be installed to prevent incidental blow down or displacement and must remain in service throughout the construction period. Construction signage heights to be minimum 1.5 m from round to the bottom of the sign, or as per BC MoTI Traffic Control Manual for Work on Roadways (2020), whichever is higher.

- .5 At each of the three (3) snowsheds, supply, install, maintain and remove two (2) flashing arrow boards (FAB), as required for the Works in accordance with the accepted TMP. All FAB shall be as per MUTCD (latest edition).
 - .1 Total of four (4) FAB's to be provided.
 - .2 Location of the FABs will be agreed with the Departmental Representative.
 - .3 Removal of FABs will only be permitted upon completion of work.
 - .4 Payment for FABs will be incidental to the Lump Sum Price for Traffic Control.
- .6 Supply, install, maintain and remove two (2) changeable message signs (CMS) to inform the traffic of construction delays. All CMS shall be as per MUTCD (latest edition).
 - .1 Total of two (2) CMS to be provided.
 - .2 Location of the CMS will be agreed with the Departmental Representative.
 - .3 Text for CMS will be directed by the Departmental Representative.
 - .4 Removal of CMS will only be permitted upon completion of work.
 - .5 Payment for CMS will be incidental to the Lump Sum Price for Traffic Control.
- .7 At each of the three (3) snowsheds, supply, install, maintain and remove two (2) speed reader boards (SRB), as required for the Works in accordance with the accepted TMP.
 - .1 Total of four (4) SRBs to be provided.
 - .2 Location of the SRBs will be agreed with the Departmental Representative.
 - .3 Removal of SRBs will only be permitted upon completion of work.
 - .4 Payment for SRBs will be incidental to the Lump Sum Price for Traffic Control.
- .8 Meet with the 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 the Departmental Representative.
- .9 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. Use the approved translation list for signage supplied by PCA
- .10 All speed limits, traffic control and warning signs shall have an 'NPC' adhesive sticker added to bottom right-hand corner. These stickers will be supplied by Parks Canada following the acceptance by the Departmental Representative of the Contractor's Traffic Accommodation Strategy.
- .11 The Contractor shall coordinate traffic management procedures with any other Contractors working in the area.
- .12 Place signs and other devices in locations recommended in BC MoTI Traffic Control Manual for Work on Roadways (2020).
- .13 Continually maintain traffic control devices in use:
 - .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
 - .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, properly trained and equipped in accordance with Traffic Control Manual for Work on Roadways for situations as follows:
 - .1 When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.
 - .2 When vehicles are entering or existing Worksite access points.
 - .3 When it is necessary, as approved by the Departmental Representative, 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.
 - .4 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.
 - .5 Where temporary protection is required while other traffic control devices are being erected or taken down.
 - .6 For emergency protection when other traffic control devices are not readily available.
 - .7 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
 - .8 At each end of restricted sections where pilot cars are required.
- .2 Delays to public traffic due to contractor's operators: 15 minutes maximum. Emergency vehicles (i.e. ambulance, RCMP, Park Warden) must be granted immediate passage at all times. The Departmental Representative reserves the right to reduce delay time for public traffic at times when specified delay results in excessive backup of public traffic. Delay is defined as the total additional time required to pass through a work zone minus the time that would be required at the posted speed. Delay time shall be the maximum time elapsed as measured from the back of the approach queue to the resume speed sign.
- .3 The Departmental Representative will monitor the traffic control measures, and may require modifications of these measures from time to time to achieve satisfactory traffic flow, safety of the traveling public and coordination with adjacent contracts. The Contractor shall bear the costs of implementing these requirements so as to ensure the traffic control specifications and associated performance standards are met.
- .4 The Contractor shall maintain a dust free construction zone by means of cleaning and watering when required.

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, existing conditions for traffic to be restricted to a reduced speed limit in active work zones of 30km/hr.
- .2 Maintain existing conditions for traffic crossing right-of-way.
- .3 Provide the Departmental Representative with construction advisories for posting to the DriveBC website (<http://www.drivebc.ca>) and to the Official Alberta Traffic Advisor

website (<http://511.alberta.ca/>) and update advisories regularly to reflect the current and planned construction activities and highway closures.

1.8 ACCOMODATION OF WIDE OR OVERSIZED LOADS

- .1 Contractor shall advise the Departmental Representative a minimum of 48 hours prior to changes to traffic restrictions through the work zone. The Departmental Representative will notify the proper road authorities having jurisdiction over the work zones of intentions to restrict traffic through the work zones.
- .2 Trucks carrying loads wider than can be accommodated by the Clear Roadway specified in this Section may require passage through the construction zone. In this event the Contractor shall provide flagging, remove temporary barriers and make additional width available as required to accommodate the wide load.
- .3 Where, in the opinion of the Department Representative, the movement of barriers and/or additional flagging is required to accommodate a wide load wider than 4.8 m it shall be paid for under the Prime Cost Sum Work described in Section 01 21 00 - Allowances.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 35 43 - Environmental Procedures.
- .2 Section 01 52 00 - Construction Facilities.
- .3 Section 01 55 26 - Traffic Control.

1.2 MEASUREMENT AND PAYMENT

- .1 This Work shall be incidental to contract and will not be measured for payment.

1.3 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-O121, Douglas Fir Plywood.

1.4 INSTALLATION AND REMOVAL

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

1.5 HOARDING

- .1 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.
- .2 Provide screening around construction materials and/or equipment as directed by the Departmental Representative for protection of wildlife.

1.6 ACCESS TO SITE

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

1.7 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.

1.8 FIRE ROUTES

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

1.9 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

1.10 WASTE MANAGEMENT AND DISPOSAL

- .1 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

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 All Technical Sections.

1.2 REFERENCE STANDARDS

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether 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 reference standards in effect on date of submission of Tenders, except where specific date or issue is specifically noted.

1.3 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.

1.4 AVAILABILITY

- .1 Immediately upon signing Contract, review produce delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify

the 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 the 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.

1.5 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 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 prefabricated components on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 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.

1.6 TRANSPORTATION

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

MANUFACTURER'S INSTRUCTIONS

- .2 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.
- .3 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.
- .4 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 stainless steel fasteners and anchors for securing exterior work, unless non-corrosive hot dip galvanized 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 Prevent overloading of parts of structure. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

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

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 All Technical Sections.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.3 MATERIALS

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

1.4 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.

1.5 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT AND PAYMENT**

- .1 This Work shall be incidental to contract and will not be measured for payment.

1.2 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 containers for collection of waste materials and debris.
- .6 Provide and use marked separate bins for recycling.
- .7 Dispose of waste materials and debris off site and outside of Glacier 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.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris including that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

- .8 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .9 Remove dirt and other disfiguration from exterior surfaces including signs and lighting.
- .10 Sweep and wash clean paved areas.
- .11 Clean drainage systems.
- .12 Remove snow and ice from access to site.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

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

1.2 MEASUREMENT AND PAYMENT

- .1 This Work shall be incidental to contract and will not be measured for payment.

1.3 REFERENCE STANDARDS

- .1 American Society for Testing and Materials (ASTM):
 - .1 ASTM E1609 01, Standard Guide for Development and Implementation of a Pollution Prevention Program
- .2 Recycling Certification Institute (RCI):
 - .1 RCI Certification Construction and Demolition Materials Recycling

1.4 DEFINITIONS

- .1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.
- .2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction.
- .3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.
- .4 Non hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.
- .5 Non toxic: Not poisonous to humans either immediately or after a long period of exposure.
- .6 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.
- .7 Toxic: Poisonous to humans either immediately or after a long period of exposure.
- .8 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- .9 Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing:
 - .1 Solvents in paints and other coatings;
 - .2 Wood preservatives; strippers and household cleaners;
 - .3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.

- .4 When released, VOC's can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.
- .10 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.
- .11 Construction Waste Management Plan: A project related plan for the collection, transportation, and disposal of the waste generated at the construction site; the purpose of the plan is to ultimately reduce the amount of material being landfilled.

1.5 SUBMITTALS

- .1 Provide required information in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Action Submittals: Provide the following submittals before starting any work of this Section:
 - .1 Draft Construction Waste Management Plan (Draft CWM Plan): Submit to Departmental Representative a preliminary analysis of anticipated site generated waste by listing construction or demolition waste streams that have potential to generate the most volume of material indicating methods that will be used to divert construction waste from landfill and source reduction strategies; Departmental Representative will provide commentary before development of Contractor's Construction Waste Management Plan.
 - .2 Construction Waste Management Plan (CWM Plan): Submit a CWM Plan for this project prior to any waste removal from site and that includes the following information:
 - .1 Material Streams: Analysis of the proposed jobsite waste being generated, including material types and quantities forming a part of identified material streams in the Draft CWM Plan.
 - .2 Landfill Materials: Identify materials that cannot be recycled, reused or composted and provide explanation or justification; energy will be considered as a viable alternative diversion strategy for these materials where facilities exist.
 - .3 Landfill Options: The name of the landfill where trash will be disposed of; landfill materials will form a part of the total waste generated by the project.
 - .4 Materials Handling Procedures: A description of the means by which any recycled waste materials will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.
 - .5 Transportation: A description of the means of transportation of the recyclable materials, whether materials will be site separated and self hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site, and destination of materials.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Coordinate storage of hazardous materials with the Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.
- .2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
- .3 Store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.
- .4 Observe smoking regulations at all times. Smoking is prohibited in any area where hazardous materials are stored, used, or handled.
- .5 Abide by the following storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
 - .1 Store hazardous materials and wastes in closed and sealed containers which are in good condition.
 - .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
 - .3 Store hazardous materials and wastes in containers compatible with that material or waste.
 - .4 Segregate incompatible materials and wastes.
 - .5 Ensure that different hazardous materials or hazardous wastes are not mixed.
 - .6 Store hazardous materials and wastes in a secure storage area with controlled access.
 - .7 Maintain a clear egress from storage area.
 - .8 Store hazardous materials and wastes in a manner and location which will prevent them from spilling into the environment.
 - .9 Have appropriate emergency spill response equipment available near the storage area, including personal protective equipment.
 - .10 Maintain an inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
- .6 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
- .7 Report spills or accidents immediately to the Departmental Representative and the ESO. Submit a written spill report to the Departmental Representative within 24 hours of incident.

1.7 TRANSPORTATION

- .1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
- .2 If exporting hazardous waste to another country, ensure compliance with federal Export and Import of Hazardous Waste Regulations.
- .3 If hazardous waste is generated on site:
 - .1 Coordinate transportation and disposal with the Departmental Representative.

- .2 Ensure compliance with applicable provincial laws and regulations for generators of hazardous waste.
- .3 Use only a licensed carrier authorized by provincial authorities to accept subject material.
- .4 Prior to shipping material, obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept this material.
- .5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.
- .6 Ensure that only trained personnel handle, offer for transport, or transport dangerous goods.
- .7 Provide a photocopy of all shipping documents and waste manifests to the Departmental Representative.
- .8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to the Departmental Representative.
- .9 Report any discharge, emission, or escape of hazardous materials immediately to the Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 DISPOSAL**

- .1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
- .2 Recycle hazardous wastes for which there is an approved, cost effective recycling process available.
- .3 Send hazardous wastes only to authorized hazardous waste disposal or treatment facilities.
- .4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
- .5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.
- .6 Dispose of hazardous wastes in a timely fashion in accordance with applicable provincial regulations.

END OF SECTION

Part 1 General**1.1 ADMINISTRATIVE REQUIREMENTS**

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection:
 - .1 Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .2 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .3 Request Departmental Representative inspection.
 - .2 Departmental Representative's Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.
 - .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 Remove surplus materials, excess materials, rubbish, tools and equipment.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Project: 2290-02

Snowshed Rehabilitation
Tupper No.2, Len's and Single Bench

Section 01 77 00

CLOSEOUT

PROCEDURES

Page 2

Parks Canada

Glacier National Park

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 77 00 - Closeout Procedures.

1.2 AS -BUILT DOCUMENTS AND SAMPLES

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

1.3 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual.
- .2 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .3 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .2 Field changes of dimension and detail.

- .3 Changes made by change orders.
- .4 Details not on original Contract Drawings.
- .5 References to related shop drawings and modifications.
- .4 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .5 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records required by individual specifications sections.
- .6 Provide digital photos, if requested, for site records.

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:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .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.

Project: 2290-02

Snowshed Rehabilitation
Tupper No.2, Len's and Single Bench

Section 01 78 00

CLOSEOUT

SUBMITTALS

Page 3

Parks Canada

Glacier National Park

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT AND PAYMENT**

- .1 Measurement Procedures.
 - .1 Measure removal of snow fencing, curbs, traffic barriers, traffic railings, asphaltic concrete pavement, and fill per column being rehabilitated (**Unit Price Item No. 1 – Removal of Snowfencing, Curbs, Barriers, Pavement and Fill to Expose Tops of Column Footings**).
 - .2 Measure design, supply and installation of temporary supports, complete with jacks, per column being rehabilitated (**Unit Price Item No. 2 – Design, Supply and Installation of Temporary Column Supports**).
 - .1 Jacking of supports to reduce loads on columns as indicated shall not be measured and is considered incidental to the unit price.
 - .2 Excavation of fill materials to expose top of footing shall be incidental to the work.
 - .3 Any additional work required to provide suitable bearing for temporary supports shall be incidental to the work.
 - .3 Measure removal of column concrete in square metres based on the original column exterior dimensions (**Unit Price Item No. 3 – Column Concrete Removals**).
 - .4 Measure removal of wall panel concrete as directed by Departmental Representative per wall panel being rehabilitated (**Unit Price Item No. 4 – Wall Panel Concrete Removals**).
 - .5 Removal of concrete for partial depth repairs shall not be measured and is considered incidental to **Unit Price Item No. 7 – Column Partial Depth Repairs**.
 - .6 Payment for stockpiling and disposal will be included in above removal items.

1.2 REFERENCE STANDARDS

- .1 CSA International
 - .1 CSA S350, Code of Practice for Safety in Demolition of Structures.
- .2 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Assessment Act (CEAA), 1995, c. 37.
 - .2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
 - .1 SOR/2003-2, On-Road Vehicle and Engine Emission Regulations.
 - .2 SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations.
 - .3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
- .3 U.S. Environmental Protection Agency (EPA)

- .1 EPA CFR 86.098-10, Emission standards for 1998 and later model year Otto-cycle heavy-duty engines and vehicles.
- .2 EPA CFR 86.098-11, Emission standards for 1998 and later model year diesel heavy-duty engines and vehicles.
- .3 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.3 DEFINITIONS

- .1 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or materials that endanger human health or environment if handled improperly.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Demolition Meetings:
 - .1 Convene pre-demolition meeting 1 week prior to beginning work of this Section, with Departmental Representative in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify project requirements.
 - .2 Verify existing site conditions adjacent to demolition work.
 - .3 Co-ordination with other construction subtrades.
 - .2 Hold project meetings weekly.
 - .3 Ensure key personnel attend.
 - .4 Departmental Representative will provide written notification of change to meeting schedule established upon contract award, 24 hours prior to scheduled meeting.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit copies of certified receipts from authorized disposal sites and reuse and recycling facilities for material removed from site upon request of Departmental Representative.
- .3 Design and Shop Drawings:
 - .1 Submit for review and approval demolition drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning as required.
 - .1 Submit demolition drawings stamped and signed by professional engineer registered or licensed in Province of British Columbia, Canada.
 - .2 Submit for review and approval temporary support drawings for the roofbeams at the columns being rehabilitated.
 - .1 Temporary supports shall be designed to provide the factored capacities and jacking requirements indicated on the project drawings.

- .2 Drawings for temporary supports to be stamped and signed by professional engineer registered or licensed in Province of British Columbia, Canada.

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: Ensure Work is performed in compliance with CEAA, and applicable Provincial and Municipal regulations.

1.7 SITE CONDITIONS

- .1 Environmental protection:
 - .1 Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.
 - .2 Ensure Work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
 - .3 Fires and burning of waste or materials is not permitted on site.
 - .4 Do not bury rubbish waste materials.
 - .5 Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
 - .1 Ensure proper disposal procedures are maintained throughout project.
 - .6 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
 - .7 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction and as directed by Departmental Representative.
 - .8 Protect trees, plants and foliage on site and adjacent properties where indicated.
 - .9 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
 - .10 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

Part 2 Products

2.1 EQUIPMENT

- .1 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

Part 3 Execution

3.1 PREPARATION

- .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 requirements of authorities having jurisdiction
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during demolition.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal after completion of demolition work.
- .2 Protection of in-place conditions:
 - .1 Work in accordance with Section 01 35 43 - Environmental Procedures.
 - .2 Prevent movement, settlement or damage of adjacent structures, services, paving, lighting, trees, adjacent grades and parts of existing building to remain.
 - .1 Provide bracing and shoring as required.
 - .2 Repair damage caused by demolition as directed by Departmental Representative.
 - .3 Support affected structures and, if safety of structure being demolished, adjacent structures or services appears to be endangered, take preventative measures, stop Work and immediately notify Departmental Representative.
 - .4 Prevent debris from blocking surface drainage systems.
- .3 Surface Preparation:
 - .1 Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.
 - .2 Do not disrupt active or energized utilities or lighting traversing premises.

3.2 DEMOLITION

- .1 Do demolition work in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .2 Blasting operations not permitted during demolition.
- .3 Demolish parts of structures to permit construction of modifications as indicated on the Contract Drawings.
 - .1 Column Concrete Removal:
 - .1 Install and jack temporary supports as indicated prior to starting concrete removals.
 - .2 Do not rehab adjacent columns on a line concurrently.
 - .3 Limits of concrete removal shall be outlined by 25 mm deep sawcuts.
 - .4 Leave existing reinforcement intact as indicated.
 - .5 Concrete removals to extent 20 mm behind the column ties.
 - .6 Pneumatic hammers heavier than nominal 14 kg class and chipping hammers heavier than nominal 7 kg class shall not be used within 150 mm of any existing concrete which is to remain in place.

- .7 Clean all exposed concrete and reinforcement surfaces to remove any unsound concrete, corrosion materials and all debris, dirt and laitance materials.
- .8 Removal of temporary supports: as indicated.
- .2 Wall Panel Concrete Removal:
 - .1 Limits of concrete removal shall be outlined by 20 mm deep sawcuts.
 - .2 Leave existing reinforcement intact as indicated.
 - .3 Concrete removals to extent 25 mm behind the column ties.
 - .4 Pneumatic hammers heavier than nominal 14 kg class and chipping hammers heavier than nominal 7 kg class shall not be used within 150 mm of any existing concrete which is to remain in place.
 - .5 Clean all exposed concrete and reinforcement surfaces to remove any unsound concrete, corrosion materials and all debris, dirt and laitance materials.
- .4 To permit construction of modifications as indicated.
- .5 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.
- .6 At end of each day's work, leave Work in safe and stable condition.
- .7 Demolish to minimize dusting. Keep materials wetted as directed by Departmental Representative.
- .8 Components designated for reinstallation following column rehabilitation are to be removed in a manner that minimizes damage to the component. The Contractor is responsible for repairing any damage caused to the component during the removal process.
- .9 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.
- .10 Use natural lighting to do Work where possible.
 - .1 Shut off construction lighting except those required for security purposes or safe travel at end of each day.

3.3**REMOVALS FOR PARTIAL DEPTH CONCRETE PATCH REPAIRS**

- .1 Provide access scaffolding or other means suitable for close proximity inspection of all above ground/water substructure elements and arrange for inspection with the Departmental Representative to mark out all areas for repair.
- .2 Thoroughly clean all substructure surfaces above ground/water prior to close proximity inspection with Departmental Representative.
 - .1 Surfaces to be free of all debris, dirt and laitance material.
- .3 All saw cuts shall be in accordance with the drawings or as directed by the Departmental Representative.
 - .1 All patch areas to have straight edges only, preferably rectangular in shape.
 - .2 Cut into existing concrete to a minimum depth of 20 mm.

- .4 Remove concrete in partial depth patch areas identified by the Departmental Representative.
- .5 Remove concrete a minimum of 25 mm behind existing reinforcement.
- .6 Do not damage existing reinforcing during the removal process.
 - .1 Remove and replace any existing reinforcement with corrosion resulting in net section loss of 20% or greater at any location with a new bar of matching diameter and material.
 - .2 Repair or replace any reinforcing steel structurally compromised during the removal process, as determined by the Departmental Representative, at no extra cost.
- .7 Remove, contain, collect, and dispose of all concrete and other materials identified for removal to prevent debris from falling into any waterway in accordance with Section 01 35 43 – Environmental Procedures.
- .8 Use pneumatic hammers less than nominal 14 kg class and "Chipping Hammer" less than nominal 7 kg within 150 mm of any existing concrete which is to remain in place.
- .9 Supply and placement of patch material shall be in accordance with Section 03 30 00 - Cast-in-Place Concrete

3.4 CLEANING

- .1 Develop Construction Waste Management Plan related to Work of this Section.
 - .1 Remove recycling and waste containers and bins from site and dispose of materials at appropriate facility.
- .2 Designate appropriate security resources / measures to prevent vandalism, damage and theft.
- .3 Remove stockpiled material as directed by Departmental Representative, when it interferes with operations of project construction.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

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

1.2 PRICE AND PAYMENT PROCEDURES

- .1 No measurement will be made under this Section.
 - .1 Include formwork costs in items of concrete work in Section 03 30 00 - Cast-In-Place Concrete.

1.3 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1-/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-O86S1, Supplement No. 1 to CAN/CSA-O86-01, Engineering Design in Wood.
 - .3 CSA O121, Douglas Fir Plywood.
 - .4 CSA O151, Canadian Softwood Plywood.
 - .5 CSA O153, Poplar Plywood.
 - .6 CAN/CSA-O325.0, Construction Sheathing.
 - .7 CSA S269.1, Falsework for Construction Purposes.
 - .8 CAN/CSA-S269.3, Concrete Formwork.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit shop drawings for formwork and falsework.
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province British Columbia, Canada.
- .3 Submit WHMIS MSDS - Material Safety Data Sheets.
- .4 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings and CAN/CSA-S269.3 for formwork drawings.
- .5 Indicate formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.

- .6 Indicate sequence of erection and removal of formwork/falsework as directed by Departmental Representative.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Waste Management and Disposal:
 - .1 Place materials defined as hazardous or toxic in designated containers.

Part 2 Products

2.1 MATERIALS

- .1 Formwork materials:
 - .1 Forms for unexposed surfaces are at the discretion of the Contractor subject to approval of the Departmental Representative.
 - .2 Forms for exposed surfaces, shall be new materials, made of "Coated Formply", consisting of Douglas Fir substrate with resin-impregnated paper overlay and factory treated chemically active release agent.
 - .3 All form material for exposed surfaces shall be full-sized sheets, as practical. The re-use of any forms must have the acceptance of the Departmental Representative.
 - .4 Wall panel rehab: All reveals on existing wall panels to be reproduced on rehab.
- .2 The minimum acceptable forming for all exposed concrete shall have 18 mm approved plywood, supported at 300 mm maximum on centres. Strong-backs or walers placed perpendicularly to the supports shall be employed to ensure straightness of the form.
- .3 Metal bolts or anchorages within the forms shall be so constructed as to permit their removal to a depth of at least 50 mm from the concrete surface.
- .4 Break-back type form ties shall have all spacing washers removed and the tie shall be broken back a distance of at least 20 mm from the concrete surface.
- .5 All fittings for metal ties shall be of such design that, upon their removal, the cavities which are left will be of the smallest possible size. Torch cutting of steel hangers and ties will not be permitted. Formwork hangers for exterior surfaces of decks and curbs shall be an acceptable break-back type with surface cone, or removable threaded type.
- .6 Cavities shall be filled with cement mortar and the surface left sound, smooth, even and uniform in colour.
- .7 Form release agent shall be non-toxic, biodegradable, and low VOC.
- .8 Falsework materials shall conform to CSA S269.1.

Part 3 Execution

3.1 FABRICATION AND ERECTION

- .1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.

- .2 Fabricate and erect falsework in accordance with CSA S269.1.
- .3 Refer to architectural drawings for concrete members requiring architectural exposed finishes.
- .4 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.
- .5 Align form joints and make watertight.
 - .1 Keep form joints to minimum.
- .6 Provide 30 mm radius corners on columns designated for GRFP Fibre Wrapping following concrete repairs.
- .7 Where no fibre wrapping is designated, use 20 mm chamfer strips on external corners and/or 20 mm fillets at interior corners, joints, unless specified otherwise.
- .8 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.
- .9 Construct forms for architectural concrete, and place ties as indicated.
 - .1 Joint pattern not necessarily based on using standard size panels or maximum permissible spacing of ties.
- .10 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.
 - .1 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.
- .11 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.

3.2 REMOVAL AND RESHORING

- .1 Leave formwork in place for following minimum periods of time after placing concrete.
 - .1 7 days.
- .2 Remove formwork when concrete has reached 50% of its design strength or minimum period noted above, whichever comes later.
- .3 Removal of temporary supports: as indicated.
- .4 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 03 10 00 – Concrete Forming and Accessories
- .2 Section 03 30 00 - Cast-in-place concrete.

1.2 PRICE AND PAYMENT PROCEDURES

- .1 Measurement and Payment:
 - .1 Supplemental reinforcing shall be installed to augment existing deteriorated reinforcement at the direction of Departmental Representative.
 - .2 Measure reinforcing steel in kilograms of steel incorporated into Work, computed from theoretical unit mass specified in CSA-G30.18 for lengths and sizes of bars as indicated or authorized in writing by Departmental Representative (**Unit Price Item No. 5 – Supply and Installation of Supplemental Reinforcement**).

1.3 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM A1064/A1064M, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
- .2 CSA International
 - .1 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CAN/CSA-A23.3, Design of Concrete Structures.
 - .3 CSA-G30.18, Carbon Steel Bars for Concrete Reinforcement.
 - .4 CSA-G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .5 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .6 CSA W186, Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .3 Reinforcing Steel Institute of Canada (RSIC)
 - .1 RSIC, Reinforcing Steel Manual of Standard Practice.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice.
- .3 Shop Drawings:
 - .1 Indicate placing of reinforcement and:
 - .1 Bar bending details.

- .2 Lists.
- .3 Quantities of reinforcement.
- .4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings.
- .5 Indicate sizes, spacings and locations of chairs, spacers and hangers.
- .2 Detail lap lengths and bar development lengths to CAN/CSA-A23.3, unless otherwise indicated.
- .4 When Chromate solution is used as replacement for galvanizing non-prestressed reinforcement, provide product description for review by Departmental Representative prior to its use.

1.5 QUALITY ASSURANCE

- .1 Submit in accordance with Section 01 45 00 - Quality Control and as described in PART 2 - SOURCE QUALITY CONTROL.
 - .1 Mill Test Report: provide Departmental Representative with certified copy of mill test report of reinforcing steel.
 - .2 Submit in writing to Departmental Representative proposed source of reinforcement material to be supplied.

1.6 DELIVERY, STORAGE AND HANDLING

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

Part 2 Products

2.1 MATERIALS

- .1 Substitute different size bars only if permitted in writing by Departmental Representative.
- .2 Plain Reinforcing steel: billet steel, grade 400W, deformed bars to CSA-G30.18, unless indicated otherwise.
- .3 Cold-drawn annealed steel wire ties: to ASTM A1064/A1064M.
- .4 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.
- .5 Mechanical splices: subject to approval of Departmental Representative.
- .6 Plain round bars: to CSA-G40.20/G40.21.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Obtain Departmental Representative's written approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.
- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

2.3 SOURCE QUALITY CONTROL

- .1 Provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis prior to beginning reinforcing work.
- .2 Inform Departmental Representative of proposed source of material to be supplied.

Part 3 Execution**3.1 FIELD BENDING**

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

3.2 PLACING REINFORCEMENT

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

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 03 10 00 - Concrete Forming and Accessories
- .2 Section 03 20 00 – Concrete Reinforcing.

1.2 PRICE AND PAYMENT PROCEDURES

- .1 Measurement and Payment:
 - .1 Measure cast-in-place concrete for column rehab in square metres calculated from neat dimensions for the final column rehabilitated surface areas as indicated on the project drawings (**Unit Price Item No. 6 – Concrete for Column Rehab**).
 - .1 Concrete placed beyond dimensions indicated will not be measured for payment.
 - .2 No deductions will be made for concrete displaced by reinforcing steel or structural steel.
 - .3 Supply and installation of anchor bolts, nuts and washers for reinstallation of snow fencing and barriers will not be measured but considered incidental to work.
 - .4 Liquid applied waterproofing membranes applied to the below ground portions of the column rehab are considered to be incidental to the Work with no separate payment.
 - .2 Measure partial depth concrete patch repairs in square metres based on the saw cut neat dimensions as directed by the Departmental Representative (**Unit Price Item No. 7 – Column Partial Depth Repairs**).
 - .3 Measure cast-in-place concrete for wall panel rehab in units of wall panels repaired as directed by the Departmental Representative (**Unit Price Item No. 8 – Concrete for Wall Panel Rehab**).
 - .1 No deductions will be made for concrete displaced by reinforcing steel or structural steel.
 - .2 Supply and installation of threaded anchor rods for installation of new precast barriers will not be measured but considered incidental to work.
 - .3 All reveals on existing panels to be reproduced on rehab. Cost to reproduce reveals will not be measured but considered incidental to work.
 - .4 Additional concrete required to fill wall voids if exposed shall be paid under Prime Cost Sum Work described in Section 01 21 00 - Allowance.
 - .2 Additional work(s) related to cold weather or hot weather concreting as required will not be measured but considered incidental to Work.

1.3 REFERENCE STANDARDS

- .1 Reference Standards:

- .1 ASTM International
 - .1 ASTM C260/C260M, Standard Specification for Air-Entraining Admixtures for Concrete.
 - .2 ASTM C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - .3 ASTM C494/C494M, Standard Specification for Chemical Admixtures for Concrete.
 - .4 ASTM C1017/C1017M, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
 - .5 ASTM D1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
 - .6 ASTM D1752, Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
 - .7 ASTM F1554, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105 ksi Yield Strength.
 - .8 ASTM F2329/F2329M, Standard Specification for Zinc Coating Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.
- .2 CSA International
 - .1 CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA A283, Qualification Code for Concrete Testing Laboratories.
 - .3 CSA A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-installation Meetings: in accordance with Section 01 32 16.19 - Construction Progress Schedules - Bar (GANTT) Chart, convene pre-installation meeting one week prior to beginning concrete works.
 - .1 Ensure key personnel, site supervisor, Departmental Representative, speciality contractor - finishing, forming, concrete producer and testing laboratories attend.
 - .1 Verify project requirements.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Concrete pours: provide accurate records of poured concrete items indicating date and location of pour, quality, air temperature and test samples taken as described in PART 3 - FIELD QUALITY CONTROL.
- .3 Concrete hauling time: provide for review by Departmental Representative deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and discharged after batching.

- .4 Provide copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.6 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
- .2 Provide Departmental Representative, minimum 4 weeks prior to starting concrete work, with valid and recognized certificate from plant delivering concrete.
 - .1 Provide test data and certification by qualified independent inspection and testing laboratory that materials and mix designs used in concrete mixture will meet specified requirements.
- .3 Minimum 4 weeks prior to starting concrete work, provide proposed quality control procedures for review by Departmental Representative on following items:
 - .1 Falsework erection.
 - .2 Hot weather concrete.
 - .3 Cold weather concrete.
 - .4 Curing.
 - .5 Finishes.
 - .6 Formwork removal.
 - .7 Joints.
- .4 Quality Control Plan: provide written report to Departmental Representative verifying compliance that concrete in place meets performance requirements of concrete as established in PART 2 - PRODUCTS.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements:
 - .1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching or in accordance with the manufactures requirements, whichever is more stringent.
 - .1 Do not modify maximum time limit without receipt of prior written agreement from Departmental Representative and concrete producer as described in CSA A23.1/A23.2.
 - .2 Deviations to be submitted for review by Departmental Representative.
 - .2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.
 - .3 Pre-mixed concrete products shall be delivered and stored on site in accordance with the manufacturer's requirements and Section 01 61 00 COMMON PRODUCT REQUIREMENTS.

Part 2 Products**2.1 MATERIALS**

- .1 Column Rehab (Tupper No. 2 and Len's):
 - .1 Acceptable concrete products:
 - .1 SikaCrete-08 SCC
 - .2 Target Flowcrete
 - .3 BASF LA40 Repair Mortar
 - .4 Other products as accepted by the Departmental Representative.
 - .2 Wall Panel Rehab (Single Bench) and column partial depth repairs:
 - .1 Concrete material to be shrinkage compensating.
 - .2 Acceptable concrete products:
 - .1 Target Flowcrete
 - .2 BASF LA40 Repair Mortar
 - .3 Other products as accepted by the Departmental Representative.
 - .3 Threaded Anchor Rods: as indicated, complete with nuts and washers. Galvanized to ASTM F2329/F2329M.
 - .4 Shrinkage compensating grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents to CSA A23.1/A23.2.
 - .1 Compressive strength: 45 MPa at 28 days.
 - .2 Net Shrinkage at 29 days: maximum 0.01%.

Part 3 Execution**3.1 PREPARATION**

- .1 Obtain Departmental Representative's written approval before placing concrete.
 - .1 Provide 24 hours minimum notice prior to placing of concrete.
- .2 Place concrete reinforcing in accordance with Section 03 20 00 – Concrete Reinforcing.
- .3 During concreting operations:
 - .1 Development of cold joints not allowed unless accepted by the Departmental Representative.
 - .2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.
- .4 Pumping of concrete is permitted only after approval of equipment and mix.
- .5 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .6 Prior to placing of concrete obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing.
- .7 Protect previous Work from staining.

- .8 Clean and remove stains prior to application for concrete finishes.
- .9 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air content, temperature and test samples taken.
- .10 Do not place load upon new concrete until authorized by Departmental Representative.

3.2 INSTALLATION/APPLICATION

- .1 Do cast-in-place concrete work to CSA A23.1/A23.2.
- .2 Sleeves and inserts:
 - .1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through joists, beams, column capitals or columns, except where indicated or approved by Departmental Representative.
 - .2 Where approved by Departmental Representative, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere.
 - .3 Sleeves and openings greater than 100 x 100 mm not indicated, must be reviewed by Departmental Representative.
 - .4 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval of modifications from Departmental Representative before placing of concrete.
 - .5 Confirm locations and sizes of sleeves and openings shown on drawings.
 - .6 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.
 - .7 Grout anchor bolts in preformed holes or holes drilled after concrete has set only after receipt of written approval from Departmental Representative.
- .3 Drainage holes and weep holes:
 - .1 Form weep holes and drainage holes in accordance with Section 03 10 00 – Concrete Forming and Accessories. If wood forms are used, remove them after concrete has set.
 - .2 Install weep hole tubes and drains as indicated.
- .4 Threaded anchor rods (new precast barriers to wall panels at Single Bench):
 - .1 Locate anchor rods to avoid existing steel in wall panels. No steel in wall panel permitted to be cut or damaged to place anchor rods.
 - .2 Drill holes in wall panels in accordance with Manufacturer's Printed Installation Instructions. Holes in wall panels shall be hammer drilled.
 - .3 Match locate hole in new precast barrier.
 - .4 Drill hole in precast barrier in accordance with Manufacturer's Printed Installation Instructions.
 - .5 Protect holes from water accumulations, snow and ice build-ups. Clean holes before installing threaded rods in accordance with Manufacturer's Printed Installation Instructions.
 - .6 Epoxy anchor rods as indicated.
- .5 Finishing and curing:

- .1 Finish concrete to CSA A23.1/A23.2.
 - .1 Schedule:
 - .1 Column Rehab – Smooth form finish.
 - .2 Partial depth repairs – Sack rubbed finish.
 - .3 Wall Panel Rehab – Sack rubbed finish.
 - .2 Use procedures as reviewed by Departmental Representative or those noted in CSA A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.

3.3 SURFACE TOLERANCE

- .1 Concrete tolerance to CSA A23.1 to tolerance schedule as indicated.
 - .1 Column Rehab: less than 3mm gap under a 3m straightedge
 - .2 Partial depth repairs: less than 3mm gap under a 3m straightedge
 - .3 Wall Panel Rehab: less than 3mm gap under a 3m straightedge

3.4 FIELD QUALITY CONTROL

- .1 Site tests: conduct tests as follows in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .1 Concrete pours.
 - .2 Slump.
 - .3 Air content.
 - .4 Compressive strength at 7 and 28 days.
 - .5 Air and concrete temperature.
- .2 Frequency of testing:
 - .1 Not less than two (2) tests for every 35 m³ concrete placed, with no fewer than two (2) tests for each class of concrete placed on any one day. Each test to consist of all items listed in this Specification Item 3.4.1.
 - .2 A compressive strength test shall consist of a minimum of four standard test specimens, sampled, made, cured, and tested in accordance with CSA Standards.
 - .1 Minimum of one cylinder shall be tested at 7 days.
 - .2 The 28 day test results shall be the average strengths of minimum of three (3) of the remaining specimens.
- .3 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by Contractor to CSA A23.1/A23.2.
 - .1 Ensure testing laboratory is certified to CSA A283.
- .4 Ensure test results are distributed for discussion at pre-pouring concrete meeting between testing laboratory and Departmental Representative.
- .5 Take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.
- .6 Non-Destructive Methods for Testing Concrete: to CSA A23.1/A23.2.

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3.5 CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 01 61 00 Common Product Requirements.

1.2 PRICE AND PAYMENT PROCEDURES

- .1 Measurement and Payment:
 - .1 Measure the fully installed GFRP Fibre Wrapping system in square metres calculated from neat dimensions for the column wrapping indicated on the project drawings (**Unit Price Item No. 9 – GFRP Wrapping of Column Rehab**).
 - .1 Each layer of installed GFRP Fibre Wrapping to be measured for payment.
 - .2 Area of required fibre strip overlaps will not be measured but considered incidental to work.
 - .3 Additional GFRP Fibre Wrapping required due to Contractor casting beyond the dimensions specified will not be measured for payment.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit Submittal submissions: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit product information for complete GFRP wrapping system for acceptance by Departmental Representative.
- .3 Submit installation procedure for GFRP wrapping system.
- .4 Quality assurance submittals:
 - .1 Submit certificates in accordance with Section 01 33 00 - Submittal Procedures.

1.4 QUALITY ASSURANCE

- .1 Conduct quality assurance testing in conformance with manufacturer's requirements.

Part 2 Products**2.1 MATERIALS**

- .1 Acceptable products are:
 - .1 TYFO SHE-51A glass fiber fabric with TYFO SCH-41 resin and a compatible UV and abrasion resistant protective coating.
 - .2 SIKAWRAP HEX 100G glass fiber fabric with SIKADUR 300 resin and a compatible UV and abrasion resistant protective coating.
 - .3 Other equivalent systems acceptable to the Departmental Representative.

Part 3 Execution

3.1 INSTALLATION OF GFRP FIBRE WRAPPING

- .1 Prepare concrete surfaces in accordance with project requirements and fibre wrapping manufacturer's requirements.
- .2 Install fibre wrapping with the primary fibres in the horizontal direction.
- .3 Provide two layers of fibre wrapping at all locations and overlap fibre strips by a minimum of 100 mm.
- .4 Apply compatible and sufficient UV and abrasion resistant protective coating.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 01 61 00 Common Product Requirements.

1.2 PRICE AND PAYMENT PROCEDURES

- .1 Measurement and Payment:
 - .1 Measure new Snowfence timbers in units of timbers installed as directed by the Departmental Representative (**Unit Price Item No. 10 – Installation of New Snowfence Timbers**).
 - .2 Measure new Snowfence steel channels in units of steel channels installed as directed by the Departmental Representative (**Unit Price Item No. 11 – Installation of New Snowfence Steel Channels**).

1.3 REFERENCE STANDARDS

- .1 American Wood-Preservers' Association (AWPA)
 - .1 AWPA M2, Standard for Inspection of Treated Wood Products.
 - .2 AWPA M4, Standard for the Care of Preservative-Treated Wood Products.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA O80 Series, Wood Preservation.

Part 2 Products**2.1 MATERIALS**

- .1 Snowfence timbers and steel channels: As supplied by Owner.

Part 3 Execution**3.1 INSTALLATION**

- .1 Install new snowfence timbers or steel channels to replace existing deteriorated timbers or as directed by the Departmental Representative.
- .2 Trim new snowfence timbers to length and field treat the end cuts with suitable wood preservative product.
- .3 Trim new snowfence steel channels to length and touch-up galvanized finish with zinc-rich primer.
- .4 Unused snowfence timbers or steel channels are to be turned over to Parks Canada and delivered to a location within Glacier or Mount Revelstoke National Parks as designated by the Departmental Representative.

3.2 APPLICATION: FIELD TREATMENT

- .1 Comply with AWPA M4 and revisions specified in CSA O80 Series, Supplementary Requirements to AWPA M2.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 BC MoTI specifications specified for the work can be found at the following website address:
 - .1 <https://www2.gov.bc.ca/assets/gov/driving-and-transportation/transportation-infrastructure/engineering-standards-and-guidelines/highway-specifications/2020-amendments/2020-standard-specification-amendment.pdf>
- .2 BC MoTI Standard Specifications for Highway Construction, Latest Edition.
- .3 AT – Standard Specifications for Highway Construction, Latest edition.
- .4 AST D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lb/ft³) (600kN-m/m³).
- .5 Changes in Definition - The following changes in definitions have been made to the specifications:
 - .1 Consultant – The word “Consultant” shall mean Departmental Representative or his duly appointed representative.
 - .2 Department – “Department” shall mean Parks Canada Agency (PCA).

1.2 WORK DESCRIPTION

- .1 Work consists of supply and installation of granular fill necessary to reinstate asphalt pavement, curbs and barriers removed for column rehabilitations.
- .2 Work shall consist of supplying, hauling and placing AT Designation 1 Class 16 (16 mm) asphalt aggregate using PG 58-37P asphalt cement at locations on the Trans-Canada Highway in Glacier National Park as directed by the Departmental Representative.
- .3 Work consists of reinstallations of curbs, barrier and guard rails removed for column rehabilitations.
- .4 Work consists of reinstallation of snowfence supports and timbers removed for column rehabilitations.

1.3 MEASUREMENT PROCEDURES AND UNIT PRICE ADJUSTMENTS

- .1 Accepted granular fill, asphalt concrete pavement, concrete curbs, barrier/guard rail installation and snowfence installation will be paid for per completed column rehab at the unit price for “Restoration of Fill, Pavement, Curbs, Barriers, Guard Rails and Snowfence” (**Unit Price Item No. 12 – Restoration of Fill, Pavement, Curbs, Barriers, Guard Rails and Snowfence**).
 - .1 Payment Adjustments for asphalt concrete pavement as described in BC MoTI 2020 Standard Specifications for Highway Construction Section 502 – Asphalt Pavement Construction (EPS) will not be applied.

Part 2 Products

2.1 MATERIALS

- .1 Granular Fill: BC MoTI 25 mm WGBC material to be supplied by the Contractor from outside the National Park.
- .2 Class 1 mix asphalt aggregate shall consist of AT Designation 1 Class 16 (16 mm) asphalt aggregate in accordance with AT – Standard Specifications for Highway Construction (latest edition). Asphalt Cement shall be PG 58-37P in accordance with BC MoTI – 2020 Standard Specifications for Highway Construction Section 502 – Asphalt Pavement Construction (EPS).

Part 3 Execution

3.1 QUALITY CONTROL

- .1 Asphalt Concrete Pavement: Contractor is responsible for all Quality Control in accordance with BC MoTI – 2020 Standard Specifications for Highway Construction Section 502 – Asphalt Pavement Construction (EPS).

3.2 REQUIREMENTS

- .1 Reinstated fill, asphalt pavement, curbs, barriers, guardrails and snowfences shall conform to the original lines, grades, dimensions and cross sections as directed by the Departmental Representative.
 - .1 Compact granular fill to density to not less than 100% maximum dry density in accordance with ASTM D698.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 03 30 00 - Cast-in-Place Concrete

1.2 REFERENCE STANDARDS

- .1 BC MoTI Standard Specification for Highway Construction (Latest Edition)
- .2 CAN/CSA-A23.1 Concrete materials and methods of concrete construction
- .3 CAN/CSA-A23.4 Precast concrete - Materials and construction
- .4 CAN/CSA-G40.21-M General requirements for rolled or welded structural quality steel / Structural quality steel

1.3 DESCRIPTION

- .1 Removal and disposal of existing precast concrete barriers outside of the National Parks.
- .2 Supply and installation of precast concrete barriers in accordance with this section and as per Drawings. Precast Concrete barriers supplied shall be as per BC MoTI Standard Specification for Highway Construction (Latest Edition) Section 941 – Precast Reinforced Concrete Barriers.
 - .1 All end faces to have 25 mm chamfered edges.

1.4 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Removal and Disposal of Existing Precast Concrete Barriers:
 - .1 Removal and disposal of existing precast concrete barrier shall be the number of existing precast concrete barriers loaded, hauled and disposed of outside of the National Parks in accordance with the Contract documents. Payment will be made under **“Unit Price Item 13 – Precast Concrete Barrier - Remove and Dispose Precast Concrete Barriers”** and shall include all labour, equipment and material to satisfactorily complete this item of Work.
 - .1 Field measure existing barrier lengths prior to removals. New barriers to match existing.
- .2 Supply and install Precast Concrete Barriers:
 - .1 Supply and Install Precast Concrete Barrier shall be measured per unit of precast concrete barrier, loaded, hauled and installed at locations as directed by the Departmental Representative in accordance with the Contract documents. Payment will be made per the applicable component in the Unit Price bid under **“Unit Price Item 14 – Precast Concrete Barrier – Supply and Install Precast Concrete Barriers”** and shall include all labour, equipment and material to satisfactorily complete this item of work.
 - .1 Precast concrete barriers are non-standard lengths. Provide new barriers to match existing.

- .2 No measurement for payment will be made under this Section for supply and installation of epoxied threaded anchor rods. Include cost in Section 03 30 00 – Cast-in-Place Concrete.

Part 2 Products

2.1 MATERIAL

- .1 Precast Concrete Barrier shall be manufactured as per BC MoTI Standard Specification for Highway Construction (Latest edition), Section 941 - Precast Reinforced Concrete Barriers with the following exceptions:

- .1 Synthetic Fiber reinforcing shall be added to the precast concrete barriers in accordance with the project Specifications,
- .2 All concrete barrier end faces to have 25mm chamfered edges.
- .3 New barriers are non-standard lengths.

2.2 PRECAST CONCRETE BARRIER

- .1 Concrete Quality:
 - .1 To CAN/CSA-A23.1 except where amended below:
 - .1 Compressive Strength: Compressive strength test result is equal to or exceeds 30 MPa.
 - .2 No individual cylinder strength is less than 27 MPa.
 - .3 Calcium chloride or admixtures containing calcium chloride are not to be used in concrete.
 - .4 Cement Content: minimum of 320 kg/m³.
 - .5 Water/Cement Ratio: maximum of 0.45.
 - .6 Coarse Aggregate: nominal maximum size not exceeding 28 mm.
 - .7 Slump: 50 mm plus or minus 20 mm.
 - .8 Entrained Air: 5 to 8%.
 - .9 Reinforcement: 50 mm fibrillated polypropylene fibres to be added at the rate of 1.0 kg/m³
- .2 Concrete Placing and Consolidation:
 - .1 To CAN/CSA-A23.4, Clause 19.
- .3 Concrete Curing and Protection:
 - .1 Strictly to CAN/CSA-A23.4, Clause 21.
 - .2 During curing period temperature differential between concrete surface and ambient air not to exceed 20°C.
- .4 Exposed Concrete Surfaces:

- .1 Uniform in texture and colour as produced from well-maintained steel form surfaces and proper vibration methods without excessive surface fines or laitance.
- .2 Surface defects will normally be cause for rejection of any unit except where such are within following permissible limits or are subject to making good within following permissible limits:
 - .1 Unobtrusive defects of any kind where their total area is not in excess of 2% of exposed surface area of unit.
 - .2 Air holes not greater than 3 mm in diameter and not more than 20 in any isolated 300 mm x 300 mm area.
 - .3 Sharp ridges at edges of exposed concrete surfaces softened where necessary by careful rubbing or grinding.
 - .4 Patching of isolated small holes, cavities and similar self-confining defects may be permitted when authorized by Departmental Representative.
- .5 Patching, if authorized, to be completed as follows:
 - .1 Defective area saturated with water and defect prepared with cement paste and filled with mortar.
 - .2 Mortar to be properly proportioned to same sand and cement as original concrete and reasonably colour-matched to cured dry unit with addition of white cement where necessary, to be pre-shrunk for about one hour before retempering and use.
 - .3 Patching mortar to be well tooled in, finished flush and smooth and area covered to cure adequately.
- .6 Surface tolerance to be ± 3 mm unless otherwise indicated on Drawings.
- .7 Finished Product:
 - .1 Contractor to notify Departmental Representative in advance of manufacturing of schedule so that inspection can be carried out. All processes are subject to inspection by Departmental Representative. Inspection or release of units by Departmental Representative is required prior to shipping.
 - .2 Identification indicated by embedding manufacturer's name or trademark, year of manufacture and form number on end of each unit in manner, size and depth that will be permanently legible.
 - .3 Authorized patching or making good to be inspected by Departmental Representative before shipment or upon delivery and rejected units replaced at no additional cost.
- .8 Welded Steel Wire Mesh Reinforcement:
 - .1 Welded wire mesh reinforcement will not be permitted.
- .9 Reinforcing Steel for Bent and Hooked Connections:
 - .1 To CAN/CSA-G40.21-M, Grade 260W.
- .10 Bending:

- .1 Carefully bend reinforcing steel to radii detailed and install as shown on Drawings.
- .2 Inspect reinforcing steel after bending for evidence of fracture. Fractured pieces to be replaced.
- .11 Surface Treatment:
 - .1 Treatment of exposed surfaces not required.
- .12 Pick-up Points:
 - .1 Form with accurately placed rigid P.V.C. pipe recessed 15 mm from both finished surfaces as shown on Drawings.

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

- .1 Compliance: comply with manufacturer's written recommendations or Specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 PRODUCTION

- .1 Precast concrete barriers shall be manufactured between May 01 and October 31.

3.3 DELIVERY

- .1 Storage of Precast Concrete Barriers on site to be in single layer, for first (7) Calendar days.
- .2 Stacking of three layers high, with wood blocking between lifts, permitted with Departmental Representative approval, after (7) Calendar days.

3.4 PREPARATION

- .1 Complete wall panel concrete rehab prior to installing new precast concrete barriers.

3.5 INSTALLATION

- .1 Precast Concrete Barriers shall be installed permanently on asphalt concrete pavement in accordance with Drawings and these Specifications.
- .2 Epoxy anchor precast concrete barriers to wall panels as indicated and in accordance with Section 03 30 00 Cast-in-Place Concrete.
- .3 Precast Concrete Barriers may also be installed temporarily for traffic protection as verified by the Departmental Representative.
- .4 Extreme care must be exercised in multiple placement of the new precast concrete barriers; any damage must be rectified to the satisfaction of the Departmental Representative at the Contractor's expense.

3.6 QUALITY CONTROL

- .1 Contractor shall carry out all the necessary quality control to ensure precast concrete barriers are supplied and installed as per these Specifications.

3.7 CLEANING

- .1 Proceed in accordance with Section 01 74 00 – Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION