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END OF SECTION

1 GENERAL**1.1 Project Location**

- 1.1.1 The project location is in the Lake Louise Campground which is located in the Lake Louise townsite.

1.2 Work Covered by the Contract Documents**1.2.1** The work includes but is not limited to:

- .1 Supply of all submittals and per the contract documents,
- .2 Traffic and pedestrian diversion and management for the duration of the project, this includes Lake Louise Campground and the Bow River Loop,
- .3 Establishment and management of Erosion Sediment Control for the duration of the project,
- .4 Grubbing and clearing, including tree removal as per the drawings and specifications,
- .5 Reclamation and reuse of the material in the existing temporary berm,
- .6 Transportation of additional berm, pathway, and road base material from Pit 69 just off the TransCanada Highway 8km to the Lake Louise Campground project site. The Contractor will need to keep a Daily Haul Card of the volume of material taken from Pit 69 based on tandem plus pup size as applicable. The Contractor must control access to and from Pit 69 always closing the gate after use to reduce the risk of wildlife getting onto the TransCanada Highway,
- .7 The construction of the new berm, including the new section of the Bow River Loop as per the drawings and specifications,
- .8 Road widening, include the supply, transportation and installation of asphalt as per the drawings and specifications,
- .9 The supply, transportation, and installation of Class 2 Riprap as per the drawings and specifications,
- .10 The supply, transportation, and installation of the all associated loam/topsoil, seeds, stakes, shrubs, and vegetation as described in the drawings and specifications,
- .11 All site remediation work as per the drawings and specifications

1.3 Codes and Standards

- 1.3.1 Perform all construction work in accordance with the relevant Federal and Provincial standards, and any other code or local application. In the event of conflict, the more stringent shall apply.
- 1.3.2 Perform all traffic control in accordance the current Province of Alberta, or British Columbia standards, as applicable. These include the provincial TMG – Traffic Management Guidelines for Work on Roadways, and the TCM – Traffic Control Manual for Work on Roadways.

1.3.3 Perform the works in accordance to the environment requirements for the Parks Canada Agency and specified in the Environmental Assessment screening done for this project.

1.3.4 Meet or exceed the requirements specified in the Contract Documents

1.4 Contractors Use of the Site

1.4.1 Restrict the work to within the area as shown on the drawings, while trying to limit impact on vegetation.

1.4.2 Use of any areas outside the designated work area will be the Contractor's responsibility to organize and use. Any additional costs for the use and recovery of any additional work areas over and above the designated area will be the responsibility of the Contractor and will not be considered for payment under this contract.

1.4.3 The Contractor will assume full responsibility for safekeeping and protection of products under this contract.

2 EXECUTION

2.1 Work Schedule

2.1.1 Preparation of required submittals to commence immediately on Contract Award.

2.1.2 The project cannot commence until after May 18, 2015. Project completion is required by June 26, 2015.

2.2 Special Precautions

2.2.1 The Contractor is responsible for locating all utilities that cross the work area and protect the located utilities from damage during the course of the Works

2.2.2 The Contractor is to reinstate any temporary access routes that were created to do the work. Reinstatement entails removal of any materials required to obtain access and then reclaim and reseed the disturbed ground. Any temporary access must be reviewed and approved by the Departmental Representative prior to construction.

2.2.3 Contractor is responsible for all survey and layout required to establish the berm as indicated in the drawings. Any surveying that is done as part of the work is considered incidental to the Work and will not be considered for additional payment.

2.2.4 The Contractor is responsible for all existing structures, roads, trails, and any other existing infrastructure that may be present in the work area and shall protect these structures from damage or injury, either directly or indirectly. Any damage or injury to these structures will be repaired and made good and the contractors expense to the satisfaction of the Departmental Representative.

END OF SECTION

Unit Price Table

No.	Detailed Description	Units	Quantity	Unit Cost	Cost
1	Mobilization and Demobilization	LS	1	\$	\$
2	Clearing and Site Preparation	LS	1	\$	\$
3	Erosion and Sediment Control	LS	1	\$	\$
4	Berm Fill Material (Supplied by Parks Canada, Contractor to Transport 8km to site)	cu.m	440	\$	\$
5	Salvage and reuse Existing Berm	cu.m	520	\$	\$
6	Rip Rap Class 2	tonne	153	\$	\$
7	Pathway (Supplied by Parks Canada, Contractor to Transport 8km to site)	sq.m	432	\$	\$
8	Geogrid	sq.m	3,360	\$	\$
9	Loam/Topsoil	cu.m	500	\$	\$
10	Native Seed	bag	2	\$	\$
11	Live Willow Stakes	each	900	\$	\$
12	Shrubs (Bog Birch, #5 Pots)	each	85	\$	\$
13	Shrubs (Abbottswood Potentilla, #5 Pots)	each	100	\$	\$
14	Road Base (Supplied by Parks Canada, Contractor to Transport 8km to site)	cu.m	7.4	\$	\$
15	Asphalt	sq.m	37	\$	\$

END OF SECTION

1 GENERAL**1.1 Related Sections**

1.1.1 Section 01 11 00 – Scope of Work

1.2 Description

1.2.1 Basis of Payment for items appearing in the Unit Price Table

1.3 Basis of Payment

1.3.1 Where not specified, basis of payment for all work included in Division 1 – General Requirements of these Specifications is considered incidental to the work and forms part of the Total Contract Amount.

1.3.2 For Lump Sum items in the Unit Price Table, progress payments shall be made on the basis of percent of work completed and accepted by the Departmental Representative at the time of the progress payment (excluding Mobilization and Demobilization which is paid per 1.4 of Section 01 29 00).

1.3.3 Support claims for products purchased, manufactured, or delivered to the place of work but not yet incorporated into the work by such evidence as that the Departmental Representative may reasonably require to establish value and percent of work completed.

1.3.4 Any work called for in the specifications or shown on the drawings but not specifically mention as an item for which payment is made, will be considered incidental to the items of work listed. No additional payment will be made for this incidental work.

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

1.4 Mobilization and Demobilization

1.4.1 Payment for Mobilization and Demobilization will be made on the basis of the Lump Sum price bid and includes all costs associated with movement of personnel, equipment, supplies, and incidentals to/from Work Site, the establishment of offices and other facilities necessary to undertake the Work, for costs incurred for the other work (including Contingency Items) and operations which must be performed prior to the commencement of the Work and for all costs incurred for clean-up and project completions.

1.4.2 Payment for this item will be made at the lump sum price and will be scheduled as follows:

- .1 50% at the beginning of construction after the Contractor required submittals have been submitted for approval, accepted, and work onsite has commenced to the satisfaction of the Departmental Representative.
- .2 50% at the end of the construction, once the site has been cleaned to the satisfaction of the Departmental Representative and the Certificate of Substantial Performance has been issued for the completion of the Works.

1.5 Berm Fill Material

- 1.5.1 Payment for Berm Fill Material will be made on the basis of price per cubic meter of fill. The Unit Price per cubic meter shall include all costs associated with the transportation, and placement of the fill as indicated on the drawings and specifications, and all other items necessary for the successful completion of the work.
- 1.5.2 Any additional Berm Fill Material required above that as quantified in the Unit Price Table and as directed by the Departmental Representative will be paid as per the unit price per cubic meter for Berm Fill Material in the Contractor's bid.
- 1.5.3 Measurement for Berm Fill Material will be based on cubic meters of berm completed and accepted by the Departmental Representative.

1.6 Salvage and Reuse Existing Berm

- 1.6.1 Payment for Salvage and Reuse Existing Berm will be made on the basis of price per cubic meter of fill. The Unit Price per cubic meter shall include all costs associated with the salvage, and placement of the fill to create the proposed berm as indicated on the drawings and specifications, and all other items necessary for the successful completion of the work.
- 1.6.2 Any additional material required to be salvaged from the existing berm above that as quantified in the Unit Price Table and as directed by the Departmental Representative will be paid as per the unit price per cubic meter for Salvage and Reuse Existing Berm in the Contractor's bid.
- 1.6.3 Measurement for Salvage and Reuse Existing Berm will be based on cubic meters of berm completed and accepted by the Departmental Representative.

1.7 Rip Rap Class 2

- 1.7.1 Payment for Rip Rap Class 2 will be made on the basis of price per metric tonne of rip rap. The Unit Price per metric tonne shall include all costs associated with the supply, transportation, and placement of the rip rap as indicated on the drawings and specifications, and all other items necessary for the successful completion of the work.
- 1.7.2 Any additional Rip Rap Class 2 required above that as quantified in the Unit Price Table and as directed by the Departmental Representative will be paid as per the unit price per metric tonne for Rip Rap Class 2 in the Contractor's bid.
- 1.7.3 Measurement for Rip Rap Class 2 will be based on metric tonne of rip rap completed and accepted by the Departmental Representative.

1.8 Pathway

- 1.8.1 Payment for Pathway will be made on the basis of price per square meter of pathway. The Unit Price per square meter shall include all costs associated with the transportation, and placement of the pathway as indicated on the drawings and specifications, and all other items necessary for the successful completion of the work.
- 1.8.2 Any additional Pathway required above that as quantified in the Unit Price Table and as directed by the Departmental Representative will be paid as per the unit price per square meter for Pathway in the Contractor's bid.
- 1.8.3 Measurement for Pathway will be based on square meters pathway completed and accepted by the Departmental Representative.

1.9 Geogrid

- 1.9.1 Payment for Geogrid will be made on the basis of price per square meter of geogrid. The Unit Price per square meter shall include all costs associated with the supply, transportation, and placement of the geogrid as indicated on the drawings and specifications, and all other items necessary for the successful completion of the work.
- 1.9.2 Any additional Geogrid required above that as quantified in the Unit Price Table and as directed by the Departmental Representative will be paid as per the unit price per square meter for Geogrid in the Contractor's bid.
- 1.9.3 Measurement for Geogrid will be based on square meters geogrid completed and accepted by the Departmental Representative.

1.10 Loam/Topsoil

- 1.10.1 Payment for Loam/Topsoil will be made on the basis of price per metric tonne of loam/topsoil. The Unit Price per metric tonne shall include all costs associated with the supply, transportation, and placement of the loam/topsoil as indicated on the drawings and specifications, and all other items necessary for the successful completion of the work.
- 1.10.2 Any additional Loam/Topsoil required above that as quantified in the Unit Price Table and as directed by the Departmental Representative will be paid as per the unit price per metric tonne for Loam/Topsoil in the Contractor's bid.
- 1.10.3 Measurement for Loam/Topsoil will be based on metric tonne of loam/topsoil completed and accepted by the Departmental Representative.

1.11 Native Seed

- 1.11.1 Payment for Native Seed will be made on the basis of price per bag of seed. The Unit Price per bag shall include all costs associated with the supply, transportation, and planting of the seed as indicated on the drawings and specifications, and all other items necessary for the successful completion of the work.
- 1.11.2 Any additional Native Seed required above that as quantified in the Unit Price Table and as directed by the Departmental Representative will be paid as per the unit price per bag for Native Seed in the Contractor's bid.
- 1.11.3 Measurement for Native Seed will be based on bags of seed completed and accepted by the Departmental Representative.

1.12 Live Willow Stakes

- 1.12.1 Payment for Live Willow Stakes will be made on the basis of price per live stake. The Unit Price per shall include all costs associated with the supply, transportation, and planting of the stakes as indicated on the drawings and specifications, and all other items necessary for the successful completion of the work.
- 1.12.2 Any additional Live Willow Stakes required above that as quantified in the Unit Price Table and as directed by the Departmental Representative will be paid as per the unit price per stakes for Live Willow Stakes in the Contractor's bid.
- 1.12.3 Measurement for Live Willow Stakes will be based on stakes completed and accepted by the Departmental Representative.

1.13 Shrubs

- 1.13.1 Payment for Shrubs will be made on the basis of price per shrub. The Unit Price per shall include all costs associated with the supply, transportation, and planting of the shrubs as indicated on the drawings and specifications, and all other items necessary for the successful completion of the work.
- 1.13.2 Any additional Shrubs required above that as quantified in the Unit Price Table and as directed by the Departmental Representative will be paid as per the unit price per shrub for Shrubs in the Contractor's bid.
- 1.13.3 Measurement for Shrubs will be based on shrubs completed and accepted by the Departmental Representative.

1.14 Road Base

- 1.14.1 Payment for Road Base will be made on the basis of price per cubic meter of road base. The Unit Price per cubic meter shall include all costs associated with the transportation, and placement of the road base as indicated on the drawings and specifications, and all other items necessary for the successful completion of the work.
- 1.14.2 Any additional Road Base required above that as quantified in the Unit Price Table and as directed by the Departmental Representative will be paid as per the unit price per cubic meter for Road Base in the Contractor's bid.
- 1.14.3 Measurement for Road Base will be based on cubic meters of road base completed and accepted by the Departmental Representative.

1.15 Asphalt

- 1.15.1 Payment for Asphalt will be made on the basis of price per square meter of asphalt. The Unit Price per square meter shall include all costs associated with the supply, transportation, and placement of the asphalt as indicated on the drawings and specifications, and all other items necessary for the successful completion of the work.
- 1.15.2 Any additional Asphalt required above that as quantified in the Unit Price Table and as directed by the Departmental Representative will be paid as per the unit price per square meter for Asphalt in the Contractor's bid.
- 1.15.3 Measurement for Asphalt will be based on square meters asphalt completed and accepted by the Departmental Representative.

END OF SECTION

1 GENERAL**1.1 Administrative**

- 1.1.1 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.
- 1.1.2 Do not proceed with Work affected by submittal until review is complete.
- 1.1.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- 1.1.4 Where items or information is not produced in SI Metric units converted values are acceptable.
- 1.1.5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- 1.1.6 Verify field measurements and affected adjacent Work are coordinated.
- 1.1.7 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- 1.1.8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- 1.1.9 Keep one reviewed copy of each submission on site.

1.2 Certificates and Transcripts

- 1.2.1 Immediately after award of Contract, submit Workers' Compensation Board status.
- 1.2.2 Submit transcription of insurance immediately after award of Contract.

2 Products**2.1 Not Used.**

- 2.1.1 Not used.

3 Execution**3.1 Not Used.**

- 3.1.1 Not used.

END OF SECTION

1 GENERAL**1.1 References**

- 1.1.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- 1.1.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- 1.1.3 Province of Alberta, or British Columbia, as applicable.
 - .1 Occupational Health and Safety Act.

1.2 Submittals

- 1.2.1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- 1.2.2 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.
- 1.2.3 Submit one copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and/or authority having jurisdiction, bi-weekly.
- 1.2.4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- 1.2.5 Submit copies of incident and accident reports.
- 1.2.6 Submit WHMIS MSDS - Material Safety Data Sheets
- 1.2.7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 after receipt of comments from Departmental Representative
- 1.2.8 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.

1.3 Filing of Notice

- 1.3.1 File Notice of Project with Provincial authorities prior to beginning of Work on behalf of the Parks Canada Agency.

1.4 Safety Assessment

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

1.5 Meetings

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

1.6 General Requirements

- 1.6.1 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.
- 1.6.2 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

- 1.7.1 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.
- 1.7.2 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

- 1.8.1 Comply with Occupational Health and Safety Regulations.
- 1.8.2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.9 Unforeseen Hazard

- 1.9.1 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 Territory having jurisdiction and advise Departmental Representative verbally and in writing.

1.10 Health and Safety Coordinator

- 1.10.1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
 - .1 Have site-related working experience.
 - .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, and monitoring Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work and report directly to and be under direction of Registered Occupational Hygienist Certified Industrial Hygienist and or site supervisor.

1.11 Posting of Documents

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

1.12 Correction of Non-Compliance

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

1.13 Work Stoppage

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

2 Products

2.1 Not Used

- 2.1.1 Not used.

3 Execution

3.1 Not Used

- 3.1.1 Not used.

END OF SECTION

1 General**1.1 CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)**

- 1.1.1 Execution of the work is subject to the provisions within the Canadian Environmental Assessment Act (CEAA) Guidelines Order of 2003 and subsequent amendments. This project and its components, has been subject to an environmental assessment pursuant to the expectations of CEAA. Environmental Protection Plans (EPPs) are the next step to achieve the desired end results of minimal adverse environmental effect, as the project is constructed.
- 1.1.2 Failure to comply with or observe environmental protection measures as identified in these specifications and the CEAA determination may result in the work being suspended pending rectification of the problems.

1.2 START-UP AND ENVIRONMENTAL BRIEFING

- 1.2.1 All staff employed at the construction site will be subject to a briefing regarding their individual and collective responsibilities lasting approximately 2 hours, 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.
- 1.2.2 Parks Canada will have an Environmental Surveillance Officer (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 Engineer, 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 Engineer

1.3 CONSTRUCTION SITE ACCESS AND PARKING

- 1.3.1 The Contractor shall review both short and long term construction access requirements with the Engineer, both at start-up and on an ongoing basis. In consultation with the Engineer, the Contractor shall formulate an agreement for worker transportation to and from the work sites and where workers shall park their private vehicles. Generally, personal vehicles shall be parked at least 10 metres distance from any watercourse.
- 1.3.2 The Contractor shall ensure that the environment beyond the work limits is not negatively impacted or damaged by workers' vehicles or construction machinery and shall instruct workers so that the "footprint" of the project is kept within defined boundaries.

1.4 PROTECTION OF WORK LIMITS

- 1.4.1 The Contractor is to prepare an EPP which details how the work limits shall be marked, and what procedures will be employed to ensure trespass outside these limits does not occur, to the satisfaction of the Engineer and the ESO.

1.5 EROSION CONTROL

- 1.5.1 Erosion control measures that prevent sediment from entering any waterway, water body or wetland in the vicinity of the construction site(s) are a critical element of the project and shall be developed and implemented by the Contractor (see Specific Concerns).
- 1.5.2 On-site sediment control measures shall be constructed and functional prior to initiating grubbing, stripping, excavating, loading, hauling, placing fill and bridge construction. The Contractor shall prepare an Erosion Control Plan, to the satisfaction of the Engineer and ESO.
- 1.5.3 The regular monitoring and maintenance of all erosion control measures shall be the responsibility of the Contractor. If the design of the control measures is not functioning effectively they are to be repaired. The Engineer and the ESO will also monitor erosion control performance.
- 1.5.4 The site will be secured against erosion during any periods of construction inactivity or shutdown.

1.6 POLLUTION CONTROL

- 1.6.1 The Contractor shall prevent any deleterious and objectionable materials from entering streams, rivers, wetlands, water bodies or watercourses that would result in damage to aquatic and riparian habitat. Hazardous or toxic products shall be stored no closer than 100 metres and water body.
- 1.6.2 A Spill Response Plan will be prepared as part of the EPP and shall detail the containment and storage, security, handling, use and disposal of empty containers, surplus product or waste generated in the application of these products, to the satisfaction of the Engineer and the ESO and in accordance with all applicable federal and provincial legislation. The EPP shall include a list of products and materials to be used or brought to the construction site that are considered or defined as hazardous or toxic to the environment. Such products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, hot poured rubber membrane materials, asphalt cement and sand blasting agents.
- 1.6.3 The containment, storage, security, handling, use, unique spill response requirements and disposal of empty containers, surplus product or waste generated in the use of any hazardous or toxic products shall be in accordance with all applicable federal and provincial legislation. Hazardous products shall be stored no closer than 100 metres from any water body.
- 1.6.4 An impervious berm shall be constructed around fuel tanks and any other potential spill area. The berms shall be capable of holding 110% of tank storage volumes and shall be to the satisfaction of the Engineer and the ESO before start-up. Measures such as collection/drip trays and berms lined with occlusive material such as plastic and a layer of sand, and double-lined fuel tanks can prevent spills into the environment

- 1.6.5 The Contractor shall prevent blowing dust and debris by covering and/or providing dust control for temporary roads and on-site work by methods that are approved by the Engineer and the ESO.
- 1.6.6 The Contractor shall provide spill kits at re-fuelling, lubrication, and repair locations that will be capable of dealing with 110% of the largest potential spill and shall be maintained in good working order on the construction site. The Engineer and the ESO prior to the project start-up must approve these spill kits. The Contractor and site staff shall be informed of the location of the spill response kit(s) and be trained in its use.
- 1.6.7 Timely and effective action shall be taken to stop, contain and clean-up all spills as long as the site is safe to enter. The Engineer and the ESO shall be notified immediately of any spill. If not available, Banff Dispatch will be contacted at 403-762-4506. Spill response cards will be distributed during the initial Environmental Briefing with basic instructions and phone numbers.
- 1.6.8 In the event of a major spill, all other work shall be stopped and all personnel devoted to spill containment and clean-up
- 1.6.9 The costs involved in a spill incident (the control, clean up, disposal of contaminants and site remediation to pre-spill conditions), shall be the responsibility of the Contractor. The site will be inspected to ensure completion to the expected standard and to the satisfaction of the Engineer and the ESO.

1.7 EQUIPMENT MAINTENANCE, FUELLING AND OPERATION

- 1.7.1 The Contractor shall ensure that all soil, seeds and any debris attached to construction equipment to be used on the project site shall be removed (e.g. power washing) outside Any of the Parks Canada National Parks before delivery to the work site.
- 1.7.2 Equipment fuelling sites will be identified by the Contractor and approved by the Engineer and the ESO. Except for chain saws, any fuelling closer than 100 metres to any other streams, wetlands, water bodies or waterways requires the authorization and oversight of the Engineer.
- 1.7.3 Diesel and gasoline delivery vehicles, including bulk tankers shall be parked more than 100 metres from any streams, wetlands, water bodies or watercourses. Gravity fed fuel systems are not allowed. Manual or electric pump delivery systems shall be used. Fuelling personnel shall maintain presence at and immediate attention to the fuelling operation
- 1.7.4 Mobile fuel containers (e.g. slip tanks, small fuel carboys) shall remain in the service vehicle at all times. Protection and containment of approved fuel storage sites is addressed in # 4 of Pollution Control above.
- 1.7.5 Equipment used on the project shall be fuelled with E10, and low sulphur diesel fuels and shall conform to local emission requirements. The Contractor is to ensure that unnecessary idling of vehicles is avoided.
- 1.7.6 Oil changes, lubricant changes, greasing and machinery repairs shall be performed at locations approved by the Engineer and the ESO. Waste lubrication products (e.g. oil filters, used containers, used oil, etc.) shall be secured in spill-proof containers and properly recycled or disposed of at an approved facility. No waste petroleum, lubricant

products or related materials are to be discarded, buried or disposed of in borrow pits, turnouts, picnic areas, viewpoints, etc anywhere within any Parks Canada National Park.

- 1.7.7 The Contractor shall ensure that all equipment is inspected daily for fuel leaks and maintained in good working order.
- 1.7.8 Fuel containers and lubricant products shall be stored only in secure locations specified by the Engineer and the ESO. Fuel tanks or other potentially deleterious substance containers shall be secured to ensure they are tamperproof and cannot be drained by vandals when left overnight in Lake Louise, Yoho & Kootenay (LLYK) National Parks. Alternatively, the Contractor may hire a security person employed to prevent vandalism.

1.8 OPERATION OF EQUIPMENT

- 1.8.1 Equipment movements shall be restricted to the 'footprint' of the construction area. The work limits shall be identified by stake and ribbon or other methods approved by the Engineer. Unless authorized by the Engineer, activities beyond the work limits are not permitted. No machinery will enter, work in or cross over streams, rivers or wetlands, water bodies or watercourses, nor damage aquatic and riparian habitat or trees and plant communities. Some of the construction shall require working in watercourses or water bodies. In these instances, the Contractor is to describe measures to be employed to ensure fugitive materials (e.g. rocks, soil, branches) and especially deleterious substances (e.g. chemicals) do not enter any watercourses, to the satisfaction of the Engineer and the ESO.
- 1.8.2 The Contractor shall instruct workers how to prevent pushing, placement, raveling, storage or stockpiling of any materials (e.g. slash, rock, fill or topsoil) in the trees bordering the right-of-way or into watercourses or water bodies.
- 1.8.3 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 designated work area, the Contractor shall be responsible, at his or her expense, for complete restoration including the replacement of trees, shrubs, topsoil, grass, etc. to the satisfaction of the Engineer and the ESO.
- 1.8.4 Restrict vehicle movements to work limits.
- 1.8.5 Workers private vehicles are to remain within the construction footprint.

1.9 FIRE PREVENTION AND CONTROL

- 1.9.1 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.
- 1.9.2 Machinery and equipment will be operated in a manner and with all original manufacturers' safety devices to prevent ignition of flammable materials in the area.
- 1.9.3 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.
- 1.9.4 The Contractor will maintain an awareness of the fire danger rating (Index) in the work area by contacting the Lake Louise, Yoho & Kootenay (LLYK) Fire Duty Officer at (250) 342-1059. Fire prevention care is to be commensurate with the fire Index.

1.9.5 In case of fire, the Contractor or worker will take immediate action to extinguish the fire provided it is safe to do so. The Engineer and the ESO will be notified of any fire immediately. If not available, Banff Dispatch will be contacted at 403-762-4506.

1.9.6 Fires or burning of waste materials is not permitted

1.10 WILDLIFE

1.10.1 During the Environmental Briefing all personnel shall be instructed by the ESO on procedures to follow in the event of wildlife appearance near or within the work site and any other wildlife concerns.

1.10.2 If necessary, the construction activity may be scheduled around important wildlife windows. Fisheries windows for avoidance of stream disturbance work will apply - see Fish and Fish Habitat Considerations section below.

1.10.3 Avoid or terminate activities on site that attract or disturb wildlife and vacate the area and stay away from the immediate location if bears, cougars, wolves, elk or moose display aggressive behaviour or persistent intrusion. Extra care to control materials that might attract wildlife (e.g. lunches and food scraps) must be exercised at all times.

1.10.4 Notify the Engineer and the ESO immediately about dens, litters, nests, carcasses (road kills), bear activity or encounters on or around the site or crew accommodation. Other wildlife related encounters are to be reported within 24 hours. If the Engineer or the ESO are not available LLYK Dispatch will be contacted at 403-762-1473 (non-emergency number).

1.11 RELICS AND ANTIQUITIES

1.11.1 Artifacts, relics, antiquities and items of historical interest such as cornerstones, commemorative plaques, inscribed tablets and similar objects found on the work site shall be reported to the Engineer and the ESO immediately. The Contractor and workers shall wait for instructions before proceeding with their work. All historical or archaeological objects found in LLYK National Park are protected under the National Parks Act and Regulations and are the property of Parks Canada. The Contractor and workers shall protect any articles found and request direction from the Engineer and the ESO.

1.12 WASTE MATERIALS STORAGE AND REMOVAL

1.12.1 The Contractor and workers shall dispose of hazardous wastes in accordance with the Environmental Contaminants Act and applicable provincial regulations while observing the Code of Good Practice for Management of Hazardous and Toxic Wastes at Federal Establishments.

1.12.2 All wastes originating from construction, trade, hazardous and domestic sources, shall not be mixed, but will be kept separate.

1.12.3 Construction, trade, hazardous waste and domestic waste materials shall not be burned, buried or discarded at the construction site or elsewhere in any Parks Canada National Park. These wastes shall be contained and removed in a timely and approved manner by the Contractor and workers, and disposed of at an appropriate waste landfill site located outside the parks. Construction waste storage containers, provided by the Contractor,

shall be emptied when 90% full. Waste containers will have lids, and waste loads shall be covered while being transported.

- 1.12.4 A concerted effort shall be made by the Contractor and workers to reduce, reuse and recycle materials.
- 1.12.5 All efforts to prevent wildlife from obtaining food, garbage or other domestic wastes shall be made by the Contractor and contract staff while undertaking their work in LLYK National Park. Such wildlife attractants shall not be stored at the work site overnight.
- 1.12.6 Lunches, coolers and food products, including waste food products, shall be securely stored away from access by animals. Daily removal of food scraps, food wrappers, pop cans or other attractive products to bear proof containers is mandatory. It is incumbent on the Contractor to notify Parks Canada and make specific arrangements to have garbage collected by Parks Canada when using existing Parks Canada receptacles.
- 1.12.7 The Contractor and workers shall immediately report any circumstances related to food garbage and wildlife to the Engineer and the ESO. If neither can be reached, the Contractor worker shall immediately contact the LLYK Dispatch at 403-762-1473 (non-emergency number) to report the details.
- 1.12.8 Sanitary facilities, such as a portable container toilet, shall be provided by the Contractor and maintained in a clean condition.

1.13 MISCELLANEOUS SITE MANAGEMENT CONTINGENCIES

- 1.13.1 The Contractor shall prepare an EPP which details how the work limits will be marked and what procedures will be employed to ensure trespass outside these limits does not occur, to the satisfaction of the Engineer and the ESO.
- 1.13.2 The Contractor shall provide toilets and maintain them in a clean and sanitary condition at the camp. These facilities shall not be used for the disposal of anything but human body wastes.
- 1.13.3 The National Park Act regulations prohibit anyone working within LLYK National Park from using public campground facilities.
- 1.13.4 The Contractor shall control blowing dust and debris generated from the construction site by means such as covering or wetting down dry materials and rubbish. Dust control measures for temporary access roads may also have to be initiated.
- 1.13.5 Security services at the construction site may be desirable or necessary during the contract, especially during quiet times. Fuel tanks or other potentially deleterious substance containers must be secured by the Contractor to ensure they are tamperproof and cannot be drained by vandals.
- 1.13.6 Pets shall not be brought to or maintained at the construction site or worker's camp.
- 1.13.7 Specific intake measures are required when water is approved to be withdrawn from open watercourses.

LLYK National Park

ENVIRONMENTAL PROCEEDURES

2 **Products**

2.1 **NOT USED**

 2.1.1 Not used.

3 **Execution**

3.1 **NOT USED**

 3.1.1 Not used.

END OF SECTION

1 GENERAL**1.1 References**

- 1.1.1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-Z321, Signs and Symbols for the Occupational Environment.
- 1.1.2 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 Submittals

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

1.3 Installation and Removal

- 1.3.1 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.
- 1.3.2 Identify areas which have to be graveled or otherwise protected to prevent tracking of mud or damage to travelling surfaces such as concrete sidewalks, asphalt roadways, parking lots etc.
- 1.3.3 Indicate use of supplemental or other staging area.
- 1.3.4 Provide construction facilities in order to execute work expeditiously.
- 1.3.5 Remove from site all such work after use.
- 1.3.6 Temporary access to the site is required. Construct access as directed by the Departmental Representative. Once the work has been completed rehabilitate the temporary access as directed by the Departmental Representative.

1.4 Site Storage/Loading

- 1.4.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- 1.4.2 Do not load or permit to load any part of Work with weight or force that will endanger Work.
- 1.4.3 Coordinate area and location with Departmental Representative.

1.5 Construction Parking

- 1.5.1 Parking will be permitted on site in the designated parking area as assigned by the Departmental Representative.
- 1.5.2 Provide and maintain adequate access to project site.

1.6 Security

- 1.6.1 It is the responsibility of the Contractor to secure their equipment and construction materials.

1.7 Offices

1.7.1 Contractor will arrange for their own office space for project administration and daily operation.

1.8 Contractor Accommodations

1.8.1 No construction camp facilities are permitted on the construction site or in the National Park, unless authorized by the Departmental Representative.

1.9 Protection and Maintenance of Traffic

1.9.1 Provide measures for protection and diversion of traffic and the travelling public, including erection of barricades, and erection and maintenance of adequate warning, danger, and direction signs

1.9.2 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public, pedestrian, and park operations traffic.

1.9.3 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

1.9.4 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.

1.9.5 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

1.9.6 Dust control: adequate to ensure safe operation at all times.

1.9.7 Location, grade, width, and alignment of construction and hauling roads: subject to approval by Departmental Representative.

1.9.8 Provide snow removal during period of Work.

1.10 Clean-Up

1.10.1 Remove construction debris, waste materials, packaging material from work site daily.

1.10.2 Clean dirt or mud tracked onto paved or surfaced roadways.

1.10.3 Store materials resulting from demolition activities that are salvageable.

1.10.4 Stack stored new or salvaged material not in construction facilities.

2 Products

2.1 Not Used

2.1.1 Not used.

3 Execution

3.1 NOT USED

3.1.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 Definition of Roles

- 1.1.1 "The Contractor" means the constructor of the works.
- 1.1.2 "The Owner" means Parks Canada
- 1.1.3 "The Engineer" means Parks Canada or their authorized representative.

1.2 Procurement of Materials

- 1.2.1 The Contractor shall submit to the Engineer a list of imported materials including riprap, berm material, loam, topsoil and backfill, prior to mobilization to site. The source of the material shall be indicated on the list.

1.3 Field Engineering

- 1.3.1 The Engineer will be on-site for the first day of construction to assist with layout of the works and to explain features in the drawings and any field fitting that will be required.

1.4 Quality Control

- 1.4.1 The Contractor will be responsible for quality control. This includes but is not limited to ensuring material properties, specifications and methods of installation are in accordance with the contract drawings.

1.5 Quality Assurance

- 1.5.1 The Engineer is responsible for quality assurance. During the course of the work, and prior to acceptance, the Contractor will provide assistance to the Engineer in conducting quality assurance testing.
- 1.5.2 The Contractor shall cooperate with the Engineer during testing to allow for the above noted tests to occur.

1.6 Schedule

- 1.6.1 Work shall be done outside of snow conditions between August 15 and May 15 to reduce risk of high water levels during freshet or poor ground conditions during winter impacting construction.

1.7 Regulatory Approvals

- 1.7.1 Approval from Parks Canada shall be in-hand and documentation on site prior to commencement of work.
- 1.7.2 The contractor shall familiarize themselves with, and abide by, the commitments and stipulations in the regulatory approvals and relevant codes of practice for this work.
- 1.7.3 The contractor shall familiarize themselves with Stantec's report titled "Lake Louise Campground Flood Control Design"

PART 2 SITE PREPARATION

2.1 Site Security and Safety

- 2.1.1 Site security and safety will be the responsibility of the Contractor.

- 2.1.2 The campground is open year round and the Contractor's construction plan shall include provisions for visitor access to the campground and safety near the work site.
- 2.1.3 The Bow River Loop is a very popular trail in Lake Louise and the berm is being built on top of the existing trail. The Contractor will provide a detour for the trail with signage as indicated in the contract drawings.

2.2 Site Clearing and Removals

- 2.2.1 Prior to mobilization, The Engineer will identify and mark trees that shall be removed as part of the work. All other trees will be protected and left un-damaged following construction. Removal of un-marked trees will require approval of Parks Canada.
- .1 Tree protection consists of the installation of 1.5m high orange geofabric fence on T-Bars, 2.0m o.c. or as necessary at drip line of trees. Maintain fence until construction is complete.
- 2.2.2 Before commencing site clearing the Contractor shall notify and obtain prior approval from the Engineer. Areas stripped by the Contractor without prior approval will not be measured for payment and the Engineer may require the Contractor to rehabilitate the disturbed area to Engineer's satisfaction and at the Contractor's expense.
- 2.2.3 Locate and protect utility lines, survey reference points, instrumentation, culverts, and all other existing facilities before commencing site clearing operations.
- 2.2.4 Loam and topsoil (including duff) shall be stockpiled separately for later use in surface treatment on the berm.
- 2.2.5 Suspend stripping operations during rain or wet ground conditions or during high winds in dry periods.
- 2.2.6 The sections of the road which are to be relocated shall have the asphalt striped. Base material can remain for re-use, so long as it generally meets the specifications for base material described herein.

2.3 Existing Berm Removal

- 2.3.1 The material in the existing berm shall be used in its re-construction and the material balance shall be made using similar material as described in these specifications.
- 2.3.2 The existing berm material shall be pulled back 'removed' where indicated on the contract drawings and stockpiled such that it can be replaced in the re-construction with minimal movement. Removal that is done concurrently with the berm construction will maximize efficiency and minimize lay-down areas.
- 2.3.3 Obtain prior authorization from the Engineer for temporary stockpile locations on site if required. Do not stockpile materials in areas where contamination with the underlying soils can occur. Do not stockpile materials in areas where it may impact campground site users or active roadways.

PART 3 MATERIALS

3.1 Riprap Materials Supply and Handling

- 3.1.1 The Contractor shall provide the Consultant with evidence of the acceptability of the riprap material and the riprap material shall be in accordance with the following:

- .1 Class 2 Riprap will be in conformance with the following gradation:

Gradation for Class 2 Riprap		
% Passing	Dia. (mm)	Mass (kg)
100	800	700
50-80	600	300
20-50	500	200
0	300	40
D50	500	200

- .2 The rock supplied shall be hard, durable and angular in shape, resistant to weathering and water action, free from overburden, spoil, shale or shale seams and organic material, and shall meet the gradation requirements for the class specified. No sandstone will be permitted. Fieldstone shall be considered to have a reliable performance record, and will be accepted if it meets the gradation requirements.
- .3 The minimum dimension of any single rock shall be not less than one third of its maximum dimension.
- .4 The minimum acceptable unit weight of the rock material is 2.5 tonnes/m³. Approximate unit weight of riprap product is 1.7 tonnes/m³.
- 3.1.2 Obtain prior authorization from the Engineer for temporary stockpile locations on site. Do not stockpile materials in areas where contamination with the underlying soils can occur. Stockpile riprap in a manner that minimizes segregation.
- 3.2 Berm Fill Material**
- 3.2.1 Berm Fill Material will be supplied by Parks Canada. The material is stored in Pit 69 and the Contractor will be required to transport the material 8km from Pit 69 to the Lake Louise Campground Flood Control Berm site.
- 3.2.2 The Contractor will need to keep a Daily Haul Card of the volume of material taken from Pit 69 based on tandem plus pup size as applicable.
- 3.2.3 The Contractor must control access to and from Pit 69 always closing the gate after use to reduce the risk of wildlife getting onto the TransCanada Highway.
- 3.2.4 All rocks larger than 200 mm diameter should be removed from the material prior to re-use.
- 3.2.5 Any additional material imported to site shall meet similar gradation and shall be approved by the Engineer prior to placement. The material commonly known as pit-run fill would generally meet this requirement.
- 3.2.6 The Engineer shall be consulted prior to the Contractor's procurement of the additional berm fill material and the Engineer's approval is needed for imported materials.

3.3 Native Loam and Imported Topsoil

- 3.3.1 The loam and topsoil that is stripped during clearing activities will be used in the surface treatment of the berm with the balance made up of imported material.
- 3.3.2 The Engineer shall be consulted prior to the Contractor's procurement of the additional loam and topsoil because the Owner may have suitable material for use as the surface treatment. The Owner's material (if available) will take precedent over the Contractor's imported loam and topsoil material.
- 3.3.3 Any imported topsoil shall be free of noxious weeds.
- 3.3.4 Quality of imported loam or topsoil shall be inspected and approved by the Engineer prior to placement.
- 3.3.5 Friable, fertile, natural loam, neither heavy clay or of very light sandy nature containing minimum of 4% organic matter of clay loams and not less than 2% organic matter for sandy loams to a maximum of 15%, and capable of sustaining vigorous plant growth, free of rocks of 50 mm in diameter and over, subsoil contamination, roots, weeds, toxic materials, foreign objects and with an acidity range of 7.0 to 8.5, topsoil containing quackgrass, or noxious weeds will be rejected.

3.4 Geogrids

- 3.4.1 Geogrids shall be Nilex Biaxial Geogrid Type 1 or and approved equivalent.
- 3.4.2 Handling and storage of grids shall be as per manufacturer's specifications.

3.5 Seed

- 3.5.1 Grass seed shall be certified Canada #1 Grade to Government of Canada, free of disease, weed seeds or other foreign materials, meeting the requirements of the Seed Act and having minimum germination of 75% and minimum purity of 97%.
- 3.5.2 Deliver grass seed in original container showing:
 - .1 Analysis of seed mixture.
 - .2 Percentage of pure seed.
 - .3 Year of production.
 - .4 Net mass.
 - .5 Date when tagged and location.
 - .6 Percentage of germination.
 - .7 Name and address of distributor.
- 3.5.3 Deliver any erosion control agent (for hydroseeding) in moisture proof containers, showing manufacturer, content and net mass.
- 3.5.4 The seed mix shall contain the following:

Grasses	Percentage of Mix
slender wheatgrass (<i>Agropyron trachycaulum</i>)	15
pine grass (<i>Calamagrostis rubescens</i>)	25
hairy wild rye (<i>Elymus innovatus</i>)	15
mountain rice grass (<i>Oryzopsis asperifolia</i>)	25
purple oatgrass (<i>Schizachne purpurascens</i>)	15

	95%
Forbs	
wild strawberry (<i>Fragaria virginiana</i>)	2
cream coloured peavine (<i>Lathyrus ochroleuchus</i>)	1
veiny meadow rue (<i>Thalictrum venulosum</i>)	1
American vetch (<i>Vicia americana</i>)	1
	5%

3.6 Live Willow Stakes

This section pertains to the installation of the live willow stakes that are specified for the riprap and overbank areas. The section focuses on the use of cuttings harvested from the area. The contractor may elect to use rooted stock in place of cuttings upon approval from the Engineer.

- 3.6.1 Cuttings can be harvested from the local genera *Salix* sp. The Engineer will identify these areas for harvest.
- 3.6.2 Cuttings shall be harvested only when dormant between March 1 and April 15 or October 1 to November 30 and planted during that time, or kept in cold storage.
- 3.6.3 Cuttings shall be well formed and taken at random from healthy, vigorous plants free from splits, scale, disease and defects such as knots, galls, sunscald, injuries, serious abrasions of the bark, bark stripping or major disfigurement.
- .1 Cuts shall be made with sharp clean tools.
 - .2 No more than 50 percent of each individual plant shall be cut.
 - .3 Remove cuttings from crown area of plants rather than perimeter and spread harvesting activity throughout the stand.
 - .4 Cuttings shall be woody, reasonably straight, approximately 1.0 m in length, and approximately 20 mm to 30 mm in diameter at the base of each cutting.
 - .5 Cuttings shall have leaves and branches (twigs) removed.
 - .6 The top of the main lateral of each cutting shall be cut square above a leaf bud.
 - .7 The base of each cutting shall be cut an angle of approximately 45 degrees.
- 3.6.4 Cuttings shall be stored submerged in water for a period not less than 2 days and not to exceed 10 days prior to installation to allow buds to swell and to initiate rooting from the bark.
- 3.6.5 Cuttings shall be kept wet and shaded or covered with a tarp or burlap until installation. Do not use cuttings which have dried out.
- ### 3.7 Shrubs (Potted Stock)
- 3.7.1 Potted stock shall adhere to the Guide Specifications for Nursery Stock prepared by the Canadian Nursery Trades Association (CNTA) and the International Society of Arboriculture (ISA).
- 3.7.2 New shrubs shall be locally grown by a registered commercial nursery.
- 3.7.3 No herbicides, chemicals or fertilizers are to be applied beyond what may already arrive with the potted stock.

- 3.7.4 Plants dug from native stands, wood lots, orchards or neglected nurseries and which have not received proper cultural maintenance as advocated by the Canadian Nursery Trades Association shall be designated as "collected" plants. The supply and planting of "collected" plants will not be permitted, unless specified by the Engineer.
- 3.7.5 Shrubs shall have a minimum of four (4) canes and will have the following properties:
- .1 Grown in containers for minimum of three (3) months.
 - .2 Established root system which will "hold" soil when removed from container.
 - .3 Container sized in proportion to plant size.
 - .4 Root bound plants are not acceptable.
- 3.7.6 All plant materials which cannot be planted immediately upon arrival on the site shall be properly heeled in or well protected with soil or similar material to prevent drying out and shall be kept moist until commencement of planting.
- 3.7.7 Shrubs shall be of the following species as they relate to the contract drawings:
- .1 Bog Birch (*Betula pumila*) – 85 #5 Pots
 - .2 Abbottswood Potentilla (*Potentilla fruticosa*)- 100 #5 pots
- 3.8 Pathway Gravel (Crushed Gravel)**
- 3.8.1 Pathway gravel will be supplied by Parks Canada. The material is stored in Pit 69 and the Contractor will be required to transport the material 8km from Pit 69 to the Lake Louise Campground Flood Control Berm site.
- 3.8.2 The Contractor will need to keep a Daily Haul Card of the volume of material taken from Pit 69 based on tandem plus pup size as applicable.
- 3.8.3 The Contractor must control access to and from Pit 69 always closing the gate after use to reduce the risk of wildlife getting onto the TransCanada Highway.
- 3.8.4 The material shall be compacted with a walk behind plate compactor.
- 3.8.5 Crushed gravel shall consist of hard, durable, angular particles, and shall be free of clay lumps, cementation, organic material, frozen material and other deleterious materials
- 3.9 Asphalt**
- 3.9.1 Asphalt material shall be a 75 mm thick layer asphalt concrete commonly known as Mix A (or base layer asphalt). Detailed specifications for this material are as per the City of Calgary, "Standard Specifications Roads Construction".
- 3.10 Road Base (Crushed Gravel)**
- 3.10.1 Road base will be supplied by Parks Canada. The material is stored in Pit 69 and the Contractor will be required to transport the material 8km from Pit 69 to the Lake Louise Campground Flood Control Berm site.
- 3.10.2 The Contractor will need to keep a Daily Haul Card of the volume of material taken from Pit 69 based on tandem plus pup size as applicable.
- 3.10.3 The Contractor must control access to and from Pit 69 always closing the gate after use to reduce the risk of wildlife getting onto the TransCanada Highway.

- 3.10.4 Crushed gravel shall consist of hard, durable, angular particles, and shall be free of clay lumps, cementation, organic material, frozen material and other deleterious materials.
- 3.10.5 The existing road base shall be preserved for re-use where possible and so long as it generally meets the specification for base material.

PART 4 CONSTRUCTION

4.1 Riprap Placement

- 4.1.1 It is recommended that the riprap be placed prior to construction of the berm.
- 4.1.2 Place riprap at the locations, and to the lines, grades, and elevations specified in the Contract Documents.
- 4.1.3 Maintain a minimum 2.0 m buffer from the edge of water. As much as possible avoid damaging or altering any vegetation or bank material within this buffer area.
- 4.1.4 Do not place riprap until the receiving trench has been inspected by the Engineer. Rectify defects, including any identified by the Engineer, until the receiving surfaces meet the requirements of the Contract Documents.
- 4.1.5 Place riprap by backhoe, or similar lifting equipment. Do not end-dump and push riprap into place on the slopes.
- 4.1.6 Riprap voids are to be filled with loam for planting which may require alternating placement of riprap and loam into the trench.
- 4.1.7 Do not cause segregation, particle damage, breakdown, or excessive displacement of the previously placed riprap. Replace or repair damaged or displaced material.
- 4.1.8 Obtain the specified distribution of the various sizes of particles throughout the mass by using selective loading at the source or stockpile, by controlled dumping of successive loads during placing, or by other methods of placement.
- 4.1.9 Compaction is not required but rocks must be arranged to eliminate any tendency of the rocks to move or slide after placement.
- 4.1.10 Place riprap in a closely packed arrangement such that smaller rocks fill the voids between larger rocks and there are no unfilled spaces that would permit the escape of underlying layers of placed materials. Interlock particles and dress slopes as required.

4.2 Berm Construction

- 4.2.1 The process for constructing the berm is as follows:
- .1 Remove the top 0.2 m of organic material and vegetation from grade.
 - .2 Install the river edge of the geogrid at the toe of slope as indicated on the manufacturer's instructions.
 - .3 Install the first lift (0.3 m uncompacted thickness) of berm fill material as per the contract drawings. The material shall be compacted to 98% standard proctor maximum dry density at a moisture content to $\pm 2\%$ of optimum.

- .4 Pull back the geogrid to cover the first lift of the berm and anchor on the road-side edge as per the manufacturer's instructions.
- .5 Install and anchor the river-side edge of the next layer of geogrid as per the manufacturer's instructions.
- .6 Install the second lift (0.3 m thick) of berm fill material as per the contract drawings. Compact the lift as described above.
- .7 Pull back the geogrid to cover the second lift of the berm and anchor on the road-side edge as per the manufacturer's instructions.
- .8 Repeat lifts until final berm height is achieved.
- .9 Install the pathway as described herein.

4.3 Road Relocation

- 4.3.1 Prior to placement of gravel, the existing subgrade surfaces shall be re-shaped and re-compacted.
- 4.3.2 Re-shaping shall be conducted such that the finished surface is uniformly at the design subgrade elevations as shown on the Contract drawings.
- 4.3.3 Re-compact to 98 percent of standard proctor density.
- 4.3.4 Crushed Gravel Placement
 - .1 Do not use frozen material as fill material.
 - .2 Ensure areas to be receiving fill are free from debris, snow, ice and water. Do not place fill against frozen ground.
 - .3 Use placing methods that do not segregate or degrade the aggregate.
 - .4 Place the material a uniform layer not exceeding 200mm when compacted, or to such depth as approved by the Engineer.
 - .5 Remove and replace any materials that become segregated during placement or otherwise softened or contaminated.
- 4.3.5 No surface lift asphalt mix shall be placed regardless of temperature or thickness until the road surface is 5°C or higher.
- 4.3.6 The asphalt concrete shall be placed to the design thickness as shown on the contract drawings.
- 4.3.7 Longitudinal and transverse joints shall be made in a manner consistent with industry standards.
- 4.3.8 The asphalt mixture shall be compacted to a minimum of 93% of Maximum Relative Density (MRD).

4.4 Gravel Pathway

- 4.4.1 Gravel pathway shall consist of 200 mm of 19 mm minus well graded, crushed gravel.
- 4.4.2 Gravel for pathway shall be placed in two 100-mm lifts and each compacted.
- 4.4.3 Compact gravel using a plate tamper to 98% standard proctor maximum density.

PART 5 SURFACE TREATMENT AND LANDSCAPING**5.1 Planting of Live Stakes in Riprap**

- 5.1.1 Planting in riprap can be done in conjunction with riprap and loam installation. Alternatively an iron bar or stinger could be used to open holes in riprap and install plantings.
- 5.1.2 Cutting shall be spaced no more than 0.5 m apart with the goal being to fill all voids where a cutting could be placed.
- 5.1.3 4/5th of the live-stake length to be below top of riprap.
- 5.1.4 Cutting shall be installed with buds pointing up.
- 5.1.5 Hand compact loam around base of the cutting.
- 5.1.6 Cuttings shall be saturated with water following installation.
- 5.1.7 Topsoil shall be placed on top of vegetated riprap in preparation for seeding.

5.2 Spreading of Topsoil

- 5.2.1 Do not spread topsoil until the Engineer has inspected and approved subgrade.
- 5.2.2 Manually spread topsoil and/or planting mix around trees and plants.
- 5.2.3 Spread topsoil with adequate moisture in uniform layers during dry weather over approved dry, unfrozen subgrade, where seeding, sodding or planting is indicated.
- 5.2.4 Apply topsoil to the following minimum depths:
 - .1 150 mm for seeded areas.
 - .2 300 mm for shrub beds (see planting of shrubs)
- 5.2.5 Remove stones, roots, grass, weeds, constriction materials, debris and other foreign non-organic objects from the topsoil.

5.3 Hydroseeding

- 5.3.1 Tackifier: Acceptable colloidal polysaccharide tackifier that adheres to mulch during manufacturing, non toxic, without growth or germination inhibiting factors. pH value to be between 7 and 8.
- 5.3.2 Water: Potable, free of impurities that would inhibit germination.
 - .1 Application rate is 160 L/100 m².
- 5.3.3 Cultivate areas to be seeded to a depth of 25 mm (1"). Fine grade free of lumps and hollows and free of deleterious and refuse material.
- 5.3.4 Seeding time is between May 15 and May 31.
- 5.3.5 Charge seeder with water, seed, mulch, and mix thoroughly. Add material into seeder under agitation. Add tackifier into seeder and mix thoroughly to complete seeding slurry.
- 5.3.6 Blend applications into existing adjacent grass areas and previous applications to form uniform surfaces.
- 5.3.7 Rake in seed in all areas not accessible with hydro seeder.

5.4 Shrub Planting

- 5.4.1 Shrubs are to be planted through individual planting holes cut into the geogrid as shown in the contract drawings.
- 5.4.2 Stake out location, as per the planting plan, and obtain approval from the Engineer prior to excavating.
- 5.4.3 Remove subsoil, rocks, roots, debris and toxic material from excavated material that will be used as planting soil for individual shrubs. Dispose of excess material off-site as directed by the Engineer.
- 5.4.4 Scarify sub-grade within tree pit before placing soil.
- 5.4.5 Place plants at same depth they were originally grown.
- 5.4.6 For container stock or root balls in non-degradable wrapping, remove entire container or wrapping without damaging football.
- 5.4.7 Backfill with topsoil in 150 mm lifts. Firmly tamp to ensure the plant retains its orientation and that no air pockets remain around the roots.
- 5.4.8 Finish grade, after settlement, shall be as shown on drawings.

PART 6 SITE RESTORATION AND CLEAN-UP

- 6.1.1 Remove surplus materials and debris; trim slopes, and correct defects noted by Engineer
- 6.1.2 Restore or replace all pathways, or other property and surface structures damaged or removed during the course of the work to a condition equal to that before the work began.
- 6.1.3 Broom clean pavement and walkways clean soil and rubble
- 6.1.4 Remove all signage, fences and the like.
- 6.1.5 Leave site in neat and clean condition. Remove excess material from site.
- 6.1.6 Apply water in sufficient quantities for grass and shrubs to flourish.