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END OF SECTION

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises demolition and remediation of site, located at 329 Marten Street, Banff, AB (Lot 2, Block 12, Plan 21553 (CLSR)), ; and further identified as 329 Marten Street.

1.2 CONTRACT METHOD

- .1 Construct Work under stipulated price contract.
- .2 Relations and responsibilities between Contractor and subcontractors assigned by Owner are as defined in Conditions of Contract. Assigned Subcontractors must, in addition:
 - .1 Furnish to Contractor, bonds covering faithful performance of subcontracted work and payment of obligations thereunder.
 - .2 Purchase and maintain liability insurance to protect Contractor from claims for not less than limits of liability which Contractor is required to provide to Consultant.

1.3 FUTURE WORK

- .1 Project is designed for future building on the lot. Capped services shall have a marker post. Marker post to be 2"x4" timber protruding 1.5m above ground. Top 300mm to be painted as follows:
 - .1 Red - Sanitary.
 - .2 Blue - Water.
 - .3 Gas - write "GAS" with permanent marker

1.4 WORK SEQUENCE

- .1 Required stages:
 - .1 Excavation and removal of utilities.
 - .2 Removal and disposal of asbestos and lead based paint containing materials
 - .3 Demolition of the building and removal of all debris
 - .4 Fill excavations to adjacent existing site levels..
- .2 Maintain fire access/control.

1.5 CONTRACTOR USE OF PREMISES

- .1 Unrestricted use of site until Substantial Performance.
- .2 Co-ordinate use of premises under direction of Departmental Representative and Consultant.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

- .4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.
- .6 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.6 EXISTING SERVICES

- .1 Notify, Consultant and utility companies of intended interruption of services and obtain required permission.
- .2 All work to be coordinated with the utility providers.
- .3 Where Work involves breaking into or connecting to existing services, give Consultant 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian and vehicular traffic and tenant operations.
- .4 Provide alternative routes for personnel, pedestrian and vehicular traffic.
- .5 Apply for and receive a Town of Banff street use permit where required for the following:
 - .1 Road, lane or sidewalk closures.
 - .2 Placement or parking of any building materials, tools or machinery.
 - .3 Parking of any vehicle for longer than the posted limit.
 - .4 Loading or unloading material, machinery, or equipment.
 - .5 Construction or excavation on a public space.
 - .6 Utility excavations.
- .6 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.
- .7 Submit schedule to and obtain approval from Consultant for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .8 Provide temporary services when directed by Consultant to maintain critical building and tenant systems.
- .9 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .10 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .11 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

- .12 Record locations of maintained, re-routed and abandoned service lines.
- .13 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.7 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 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 Where security is reduced by work provide temporary means to maintain security.
- .2 Contractor to provide sanitary facilities for use by Contractor's personnel. Keep facilities clean.
- .3 Closures: protect work temporarily until permanent enclosures are completed.

1.3 SPECIAL REQUIREMENTS

- .1 Work hours are Monday to Friday from 07:30am to 6:00pm hours and on Saturdays: 10:00am to 6:00pm.
- .2 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANNT) Chart.
- .3 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .4 Keep within limits of work and avenues of ingress and egress.
- .5 See the Town of Banff bylaw for details. Materials cannot be delivered between the hours of
 - .1 Six o'clock (6:00) p.m. and seven-thirty (7:30) a.m. in the morning of the following day on Weekdays; or
 - .2 Six o'clock (6:00) p.m. and ten (10:00) o'clock a.m. in the morning of the following day which is not a Weekday.

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 Project meetings will be scheduled by Consultant throughout the progress of the work.
- .2 Provide physical space and make arrangements for meetings.
- .3 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 5 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Consultant, 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 Review of Health and Safety Plan.
 - .3 Review of Site Use plan.
 - .4 Review of Environmental Protection Plan.
 - .5 Schedule of Work: in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
 - .6 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
 - .7 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
 - .8 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .9 Record drawings in accordance with the Invitation to Tender document.
 - .10 Take-over procedures, acceptance, warranties in accordance with Invitation to Tender Document.
 - .11 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .12 Appointment of inspection and testing agencies or firms.
 - .13 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 During course of Work meetings to be scheduled at the following intervals:

- .1 Once all hazardous materials have been removed.
- .2 Once all demolition work has been completed and debris removed off site.
- .3 At the point of substantial completion.
- .2 Additional meetings may be scheduled by the Consultant depended on the progress of the work.
- .3 Contractor, major Subcontractors involved in Work, Departmental Representative and Consultant are to be in attendance.
- .4 Agenda will include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Review of Health and Safety issues.
 - .4 Review of Environmental issues.
 - .5 Field observations, problems, conflicts.
 - .6 Problems which impede construction schedule.
 - .7 Corrective measures and procedures to regain projected schedule.
 - .8 Revision to construction schedule.
 - .9 Progress schedule, during succeeding work period.
 - .10 Review submittal schedules: expedite as required.
 - .11 Maintenance of quality standards.
 - .12 Review proposed changes for effect on construction schedule and on completion date.
 - .13 Other business.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

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.

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 as per Section 01 11 00 SUMMARY OF WORK.
- .3 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Invitation to Tender Document.
- .2 Submit to Consultant within 5 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 Consultant 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 Substantial completion: March 21, 2018.
 - .2 Final completion: March 24, 2018.

1.5 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as a minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Permits.
 - .3 Mobilization.
 - .4 Hazardous Material abatement.
 - .5 Building demolition
 - .6 Capped services
 - .7 Excavation.
 - .8 Backfill.
 - .9 Finalized site

1.6 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule as required 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.

1.7 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 SECTION INCLUDES

- .1 Health and safety considerations required to ensure that PCA shows due diligence towards health and safety on construction sites.

1.2 REFERENCES

- .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 Alberta
 - .1 Occupational Health and Safety Act, R.S.A. [2000].

1.3 SUBMITTALS

- .1 Make submittals in accordance with Invitation to Tender Document.
- .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 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and Consultant 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 in accordance with Section 01 47 15 - Sustainable Requirements: Construction and Section 02 81 01 - Hazardous Materials.
- .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 3 days after receipt of comments from Departmental Representative.
- .8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of

Work, and submit additional certifications for any new site personnel to Departmental Representative.

- .10 On-site Contingency and Emergency Response Plan to be created by Contractor.

1.4 SAFETY ASSESSMENT

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

1.5 MEETINGS

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

1.6 REGULATORY REQUIREMENTS

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.7 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Laurie MacDonald, Parks Canada Agency
(403) 431-2168
Laurie.MacDonald@pc.gc.ca.
 - .2 The Town of Banff – Planning and Development
(403) 762-1200

1.8 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.

1.9 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.

1.10 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety Act, General Safety Regulation, Alberta Reg.
- .2 Comply with Occupational Health and Safety Regulations, consolidated 2013.

- .3 Comply with Occupational Health and Safety Act, General Safety Regulations, O.I.C.
- .4 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.11 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.

1.12 HEALTH AND SAFETY COORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities associated with demolition and hazardous materials.
 - .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 site supervisor.

1.13 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.

1.14 CORRECTION OF NON-COMPLIANCE

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

1.15 BLASTING

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

1.16 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 REFERENCES

- .1 Definitions:
 - .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.
 - .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Invitation to Tender Document.
- .2 Prior to commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative. Environmental Protection Plan is to present comprehensive overview of known or potential environmental issues which must be addressed during construction.
- .3 Address topics at level of detail commensurate with environmental issue and required construction task[s].
- .4 Include in Environmental Protection Plan:
 - .1 Name[s] of person[s] responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Name[s] and qualifications of person[s] responsible for manifesting hazardous waste to be removed from site.
 - .3 Name[s] and qualifications of person[s] responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.
 - .5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations, EPA 832/R-92-005, Chapter 3 requirements.
 - .6 Drawings showing locations of, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
 - .7 Spill Control Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .8 .Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

- .9 .Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, do not become air borne and travel off project site.
- .10 Contaminant prevention plan that: identifies potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

1.3 FIRE PREVENTION AND CONTROL

- .1 Carry fire extinguisher for use on each machine and at locations as required in the event of fire. (Basic fire fighting equipment recommended includes three shovels, two pulaskis, and two five gallon backpack pumps) shall be maintained at the construction site at a location known and easily accessible to Contractors' staff. Contractor's staff shall receive basic training in early response to wildfire events during the "environmental briefing".
- .2 Construction equipment shall be operated in a manner and with all original manufacturer's safety devices to prevent ignition of flammable materials in the area.
- .3 In case of fire, the Contractor or worker shall take immediate action to extinguish the fire provided it is safe to do so and call 911. The ESO and the Departmental Representative shall be notified of any fire immediately. If not available, Banff Dispatch shall be contacted at (403) 762-4506.
- .4 Fires and burning of rubbish on site not permitted.

1.4 DISPOSAL OF WASTES

- .1 All garbage must be stored and handled in conformance with the National Parks Garbage Regulations.
- .2 All surplus and waste materials shall be removed from the job site to approved sites outside of the National Parks. Disposal of all wastes shall be in compliance 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.
- .3 Contractor shall remove all demolition, construction, and trade waste from the site and dispose of materials at designated site on a regular basis or when directed by Departmental Representative. All users and vehicles must report to the transfer scales prior to the disposal of any material. Various rate schedules apply for unsorted waste, scrap metal, asphalt shingles, appliances, and painted wood.
- .4 No food, domestic garbage or hazardous wastes may be deposited in the trade waste site. Obtain bear proof garbage containers on-site for domestic garbage generated on-site by Contractor's personnel.
- .5 Dispose of all hazardous wastes in conformance 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. Take hazardous waste to Class 1 and 2 landfill.

- .6 Maintain the site in a tidy condition, free from the accumulation of waste products, debris and litter.
- .7 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .8 No separate payment will be made for waste disposal. Costs of this work shall be considered incidental to the contract.
- .9 Do not burn or bury rubbish and waste materials on-site.
- .10 Remove all demolition, construction, and trade waste from the site and dispose outside of Parks' land to a provincial approved landfill.

1.5 NATIONAL PARKS 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 all sub-Contractors, each, shall obtain a business license from the Parks Canada Administration Office, Banff, Alberta, 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.

1.6 CANADIAN ENVIRONMENTAL ASSESSMENT ACT

- .1 Execution of the work is subject to the provisions within the Canadian Environmental Assessment Act Guidelines Order of 2003 and subsequent amendments. This project and its components, has been subject to an environmental assessment.
- .2 Failure to comply with or observe environmental protection measures as identified in these specifications may result in the work being suspended pending rectification of the problem.

1.7 WILDLIFE

- .1 Avoid or terminate activities on-site that attract, disturb or harass wildlife and vacate the area and stay away from the immediate location if sheep, bears, cougars display aggressive behaviour or persistent intrusion. Wildlife must be allowed to pass through the site freely.
- .2 Notify the Departmental Representative and Parks Environmental Surveillance Officer (ESO) immediately of bear, snake or cougar activity, dens, nests, or wildlife encounters on or around the site. Other wildlife encounters should be reported within 24 hours.
- .3 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.
- .4 Pets will not be permitted on site.

1.8 DRAINAGE

- .1 Prepare erosion and sediment management plan that identifies type and location of erosion and sediment controls to be provided. The desired end result is to allow no release into watercourses of sediments or deleterious substances. Similarly, there is to be no sediment or deleterious substance release into areas of vegetation growth or sensitive areas that would adversely alter growing or hydraulic conditions. This plan shall be to the satisfaction of the Departmental Representative. The plan will include monitoring and reporting to assure that control measures are in compliance with erosion and sediment control plan, federal, provincial and municipal laws and regulations.
- .2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.
- .3 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .4 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with Parks Canada requirements and in conformance 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.

1.9 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees on site and adjacent properties where indicated or as directed by the Departmental Representative. Any materials that inadvertently fall outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation in that location.
- .2 No stripping or vegetation removal shall occur outside the designated areas or as directed by Departmental Representative or ESO.

1.10 CONTRACTOR'S EMPLOYEE BRIEFING

- .1 Conduct briefing sessions for all employees and subcontractor employees highlighting the requirements of this section, including operation of equipment strictly.
- .2 An initial site meeting with Contractor, Departmental Representative, Park Project Manager, and Park Surveillance Officer will take place prior to construction commencing.
- .3 Parks Surveillance Officer will conduct approximately 40 minute briefing sessions for all employees and sub-contractor employees highlighting the requirements of this specification section, and other requirements of the Parks Surveillance Officer including operations of equipment strictly within confines of the site; harassment or attraction of wildlife; pollution and garbage management; vehicle access and parking; and care of the environment in the work area.

1.11 CONTRACTOR'S OPERATIONS

- .1 Storage areas shall be located within the project boundaries on disturbed or hardened areas. Storage locations to be approved by Departmental Representative.
- .2 Storage locations shall be completely cleaned up and returned to original condition prior to Contractor de-mobilization and finishing the project.
- .3 Equipment maintenance shall only be carried out in designated areas or as approved by the Departmental Representative and Park Surveillance Officer. The use of on-site areas for equipment oil changes and other servicing will not be permitted.
- .4 Obtain permit from Park Surveillance Officer for on-site storage of fuel or other inflammable liquids. Observe all restrictions and conditions imposed by the permit regarding special protection and berming to control spills and tank damage, fire protection considerations, provisions for the disposal of fouled material and used petroleum products.
- .5 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 will not be permitted to sluff or roll into surrounding tree cover or to bury any plant material designated to be retained.
- .6 When, in the opinion of the Departmental Representative, 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 Departmental Representative.
- .7 Failure to comply with or observe environmental protection measures as identified in these specifications and the environmental assessment report may result in work being suspended pending rectification of the problems and operators of equipment being charged under the National Park Act.
- .8 As no non-native vegetation is allowed in Park, all construction equipment shall be thoroughly washed before entering Banff National Park.
- .9 All wash from equipment and tools from concrete pour operations such as tools, concrete pumper and delivery trucks to be contained in such a manner not to dispose debris, cement and fines onto a hard surface or other surfaces that would allowed it to eventually enter the storm system, sanitary system, body of water or water course.
- .10 Review construction access requirements with the Departmental Representative both at start-up and an ongoing bases.
- .11 The contractor shall ensure that the environment beyond the work limits is not negatively impacted or damaged by worker's vehicles or machinery and shall instruct workers so that the 'footprint' of the project is kept within defined boundaries. Areas around buildings requiring excavator or equipment access in natural areas should confine access as close to the edge of the walls as possible. Access requirements, once approved, will be flagged by the Environmental Surveillance Officer.

1.12 EQUIPMENT MAINTENANCE, FUELING, AND OPERATION

- .1 Provide, operate, and maintain equipment as indicated in Environmental Assessment Amendment, as follows:
- .2 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 the Banff National Park before delivery to the work site.
- .3 Equipment fuelling sites will be identified by the Contractor and approved by the Departmental Representative and the ESO. Except for chain saws, any fuelling closer than 100 metres to any streams, wetlands, water bodies or waterways shall require the authorization and oversight of the Departmental Representative.
- .4 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.
- .5 Mobile fuel containers (e.g. slip tanks, small fuel carboys) shall remain in the service vehicle at all times.
- .6 Oil changes, lubricant changes, greasing and machinery repairs shall be performed at locations approved by the ESO or the Departmental Representative. 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 Banff National Park.
- .7 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working order.
- .8 Fuel containers and lubricant products shall be stored only in secure locations specified by the Departmental Representative. 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 Banff National Park.

1.13 NOISE AND VIBRATION CONTROL

- .1 Low impact demolition equipment and methodologies shall be employed that do not generate significant noise or vibration levels in proximity to the sensitive wildlife habitat. Demolition activities shall take place with the use of low noise and low ground vibration inducing equipment and techniques for the project site. For example, equipment could include but is not limited to a processor or pulverizer attached to an excavator.
- .2 High impact equipment known to cause higher noise levels and potential for higher ground vibrations shall be prohibited. Blasting, portable rock crushers and large jackhammers are not permitted.
- .3 Contractor to submit for review a written procedure for concrete demolition at least 2 weeks prior to commencement of site work. Written procedure shall include descriptions of equipment, methods, and tools.

1.14 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for the Work. The Contractor shall prepare a dust management plan as part of their EPP to be approved by the Departmental Representative.
- .5 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 from any watercourse.
- .6 A Spill Response Plan will be prepared as part of the EPP and shall detail the containment and storage, security, handling, use and disposal of empty containers, surplus product or waste generated in the application of these products, to the satisfaction of the Departmental Representative and 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, sealer, grout, cement, concrete finishing agents, adhesives and sand blasting agents.
- .7 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 watercourse.
- .8 An impervious berm shall be constructed around fuel tanks and any other potential spill area. The berms shall be capable of holding 110% of tank storage volumes and shall be to the satisfaction of the Departmental Representative 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.
- .9 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 Departmental Representative or ESO.
- .10 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 ESO and Departmental Representative prior to 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.
- .11 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 Departmental Representative and the ESO shall be notified

immediately of any spill. If not available, Banff Dispatch will be contacted at (403) 762-4506 or call 911. Spill response cards will be distributed during the initial Environmental Briefing with basic instructions and phone numbers.

- .12 In the event of a major spill, all other work shall be stopped and all personnel devoted to spill containment and clean-up.
- .13 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 Departmental Representative and ESO.

1.15 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection Plan.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Waste Management: In accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

END OF SECTION

Part 1 General

1.1 REFERENCES AND CODES

- .1 Perform Work in accordance with National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Review hazardous materials report by DF Technical and Consulting Services Ltd for locations of known Asbestos containing materials. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work that are not listed in the hazardous materials report. Notify Consultant. Refer to Section 02 81 01 Hazardous Materials.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Consultant.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Consultant.

1.3 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.

1.4 NATIONAL PARKS ACT

- .1 Perform Work in accordance with National Parks Act when projects are located within boundaries of National Park.

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 INSPECTION

- .1 Allow Departmental Representative and Consultant 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 or Consultant instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative or Consultant will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Contractor for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by the Contractor.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

1.3 ACCESS TO WORK

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

1.4 PROCEDURES

- .1 Notify appropriate agency and Departmental Representative and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.5 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative or Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative or Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.6 REPORTS

- .1 Submit electronic copies of inspection and test reports to Consultant.
- .2 Provide copies to subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

1.7 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised Consultant and may be authorized as recoverable.

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 REFERENCES

- .1 CAN/CSA-S269.2-[M1987(R2003)], Access Scaffolding for Construction Purposes.
- .2 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.

1.2 SUBMITTALS

- .1 Provide submittals in accordance with Invitation to Tender Document.

1.3 INSTALLATION AND REMOVAL

- .1 Site plan is being provided by Consultant (drawing S102) indicating proposed location and dimensions of area to be fenced and used by Contractor.
- .2 Contractor to supply a site use plan including supplemental and staging areas that is to be approved by the Departmental Representative prior to commencing work.
- .3 Remove from site all such work after use except site hoarding. Hoarding to remain once project is completed.

1.4 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, temporary stairs.

1.5 HOISTING

- .1 Provide, operate and maintain hoists/cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists/cranes to be operated by qualified operator.

1.6 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.

1.7 CONSTRUCTION PARKING

- .1 Parking will be permitted on site provided it does not disrupt performance of Work. Note that street use permits will be required.

- .2 Provide and maintain adequate access to project site.

1.8 OFFICES

- .1 Provide marked and fully stocked first-aid case in a readily available location.
- .2 Subcontractors to provide their own offices as necessary. Direct location of these offices.

1.9 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.

1.10 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.

1.11 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning signs, are permitted on site.
- .2 Site hoarding to be comprised of solid wood panel fencing, min 1.8m high and painted around the full perimeter of the site. Contractor to provide a site hoarding plan at start up.
- .3 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .4 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 Departmental Representative.

1.12 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 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .9 Dust control: adequate to ensure safe operation at all times.
- .10 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .11 Provide snow removal during period of Work.

1.13 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 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 construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Town of Banff – Construction Hoarding Policy C3000 (if adopted).

1.2 INSTALLATION AND REMOVAL

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

1.3 HOARDING

- .1 Hoarding to be comprised of solid wood panel fencing, min 1.8m high and painted around the full site perimeter. Contractor to provide a site hoarding plan at start up. Apply plywood panels vertically flush and butt jointed.
- .2 Provide one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.
- .3 Paint public side of site enclosure in selected colours with one coat primer to CAN/CGSB 1.189 and one coat exterior paint to CGSB 1.59. Maintain public side of enclosure in clean condition.
- .4 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.
- .5 All site perimeter hoarding to comply with Town of Banff bylaw.

1.4 DUST TIGHT SCREENS

- .1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

1.5 ACCESS TO SITE

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.
- .2 Obtain all required permits for road access, road restrictions and road closures with authorities having jurisdiction as required.

1.6 PUBLIC TRAFFIC FLOW

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

1.7 FIRE ROUTES

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

1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

1.9 WASTE MANAGEMENT AND DISPOSAL

- .1 All waste materials to be sent to appropriate landfill in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Owner's identification of existing property limits.

1.2 EXISTING SERVICES

- .1 Before commencing work, establish and mark on ground the location and extent of service lines in area of Work and notify Consultant of findings.
- .2 See Consultant drawings for requirements for existing services. Underground services to be capped or otherwise sealed at cut-off points as directed by Consultant and noted on Consultants drawings.

1.3 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- .3 Record locations of maintained, re-routed and abandoned service lines.

1.4 SUBMITTALS

- .1 On request of Consultant, submit documentation to verify accuracy of field engineering work.
- .2 Submit certificate signed by surveyor certifying those elevations and locations of completed Work that conform with Contract Documents.

1.5 SUBSURFACE CONDITIONS

- .1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
- .2 After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

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 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, unless approved by Departmental Representative.
- .3 Clear snow and ice from site as necessary.
- .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. Dispose of food waste in bear proof bins.
- .6 Dispose of waste materials and debris off site.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

1.2 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 outside of National Park or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Rake clean other surfaces of grounds.
- .8 Sweep and wash clean paved areas.

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 WASTE MANAGEMENT GOALS

- .1 There is no recycling target or Waste Management Plan required. Transport and deliver all waste to licensed disposal facility.
- .2 Accomplish maximum control of solid construction waste.
- .3 Preserve environment and prevent pollution and environment damage.

1.2 DEFINITIONS

- .1 Class III: non-hazardous waste - construction renovation and demolition waste.
- .2 Inert Fill: inert waste - exclusively asphalt and concrete.

1.3 WASTE PROCESSING SITES

- .1 Province of: AB.
 - .1 Name: Francis Cooke Regional Class III Landfill.
 - .2 Telephone: (403) 673-2708.
 - .3 Fax: (403) 673-2709
- .2 Province of: AB.
 - .1 Name: Shepard Landfill Class II
 - .2 Telephone: (403) 268-2489.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Unless specified otherwise, materials for removal do become Contractor's property.
- .2 Transport and deliver all waste to licensed disposal facility.
- .3 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.

1.5 DISPOSAL OF WASTES

- .1 All garbage must be stored and handled in conformance with the National Parks Garbage Regulations.
- .2 All surplus and waste materials shall be removed from the job site to approved sites outside of the National Parks. Disposal of all wastes shall be in compliance 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.
- .3 Contractor shall remove all demolition, construction, and trade waste from the site and dispose of materials at designated site on a regular basis or when directed by

Departmental Representative. All users and vehicles must report to the transfer scales prior to the disposal of any material. Various rate schedules apply for unsorted waste, scrap metal, asphalt shingles, appliances, and painted wood.

- .4 No food, domestic garbage or hazardous wastes may be deposited in the trade waste site. Obtain bear proof garbage containers on-site for domestic garbage generated on-site by Contractor's personnel.
- .5 Dispose of all hazardous wastes in conformance 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. Take hazardous waste to Class 1 and 2 landfill.
- .6 Maintain the site in a tidy condition, free from the accumulation of waste products, debris and litter.
- .7 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .8 No separate payment will be made for waste disposal. Costs of this work shall be considered incidental to the contract.
- .9 Do not burn or bury rubbish and waste materials on-site.

1.6 Remove all demolition, construction, and trade waste from the site and dispose outside of Parks' land to a provincial approved landfill. SCHEDULING

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 APPLICATION

- .1 Handle waste materials in accordance with appropriate regulations and codes.

3.2 CLEANING

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.

329 Marten St.
PCA Staff Housing
Banff, AB

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CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND
DISPOSAL
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END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative inspection.
 - .2 Departmental Representative Inspection:
 - .1 Departmental Representative and Consultant and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems: tested, adjusted and balanced and fully operational.
 - .4 Operation of systems: demonstrated to Owner's personnel.
 - .5 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 or Consultant, complete outstanding items and request re-inspection.

1.2 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: See Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Methods and procedures for demolition of structures, parts of structures, basements and foundation walls and includes abandonment and removal of septic tanks and tanks containing petroleum products.

1.2 RELATED SECTIONS

- .1 Invitation to Tender Document.
- .2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- .3 Section 02 81 01 - Hazardous Materials.
- .4 Section 01 56 00 - Temporary Barriers and Enclosures.
- .5 Section 01 35 43 - Environmental Procedures.
- .6 Section 01 35 29.06 - Health and Safety Requirements.
- .7 Section 31 23 33.01 – Excavating, Trenching and Backfilling

1.3 REFERENCES

- .1 Canadian Standards Association (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).
 - .2 Canadian Environmental Protection Act (CEPA).
 - .1 On-Road Vehicle and Engine Emission Regulations.
 - .3 Transportation of Dangerous Goods Act (TDGA).

1.4 DEFINITIONS

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

1.5 SUBMITTALS

- .1 Submittals in accordance with Invitation to Tender Document.
- .2 Where required by authorities having jurisdiction, submit for approval drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning.

- .3 Submit drawings stamped and signed by qualified professional engineer registered or licensed in Province of AB, Canada.

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: Ensure Work is performed in compliance with CEPA, CEEA, TDGA and applicable Provincial/Territorial and Municipal regulations.
- .2 Meetings:
 - .1 Prior to start of Work arrange for site visit with Departmental Representative and Consultant to examine existing site conditions adjacent to demolition work.
 - .2 Ensure project manager attend.
 - .3 Departmental Representative will provide written notification of change to meeting schedule established upon contract award 24 hours prior to scheduled meeting.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 All material to be sent to landfill approved for the relevant waste.

1.8 ENVIRONMENTAL PROTECTION

- .1 Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.
- .2 Ensure that demolition 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.
- .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.

1.9 EXISTING CONDITIONS

- .1 List items to be salvaged for reuse:
 - .1 N/A.
- .2 Structures to be demolished to be based on tender drawings.

1.10 SCHEDULING

- .1 Employ necessary means to meet project time lines without compromising specified minimum rates of material diversion.
 - .1 In event of unforeseen delay notify Departmental Representative in writing.

Part 2 Products

2.1 EQUIPMENT

- .1 Equipment and heavy machinery to:
 - .1 On-road vehicles to meet applicable emission requirements as prescribed in CEPA-SOR/2003-2, On-Road Vehicle and Engine Emission Regulations.
 - .2 Off-road vehicles to meet applicable emission requirements as prescribed in EPA CFR 86.098-10 and EPA CFR 86.098-11.
- .2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

Part 3 Execution

3.1 PROTECTION

- .1 Prevent movement, settlement or damage of adjacent structures, services, walks, paving, trees, landscaping, adjacent grades.
 - .1 Provide bracing, shoring and underpinning as required.
 - .2 Repair damage caused by demolition as directed by Departmental Representative.
- .2 Support affected structures and, if safety of structure being demolished or adjacent structures or services appears to be endangered, take preventative measures, stop Work and immediately notify Departmental Representative.
- .3 Prevent debris from blocking surface drainage system, elevators, mechanical and electrical systems which must remain in operation.

3.2 PREPARATION

- .1 Do Work in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .2 Disconnect electrical and telephone service lines entering buildings to be demolished.
 - .1 Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.

- .3 Disconnect and cap designated mechanical services.
 - .1 Natural gas supply lines: remove to property line and in accordance with gas company requirements.
 - .2 Sewer and water lines: remove to property line as directed by Departmental Representative.
 - .3 Other underground services: remove and dispose of as indicated on tender drawings
- .4 Existing services to be capped at site boundary, refer to Consultant drawings for information.
- .5 Do not disrupt active or energized utilities traversing premises.
- .6 Remove rodent and vermin as required by Departmental Representative.

3.3 SAFETY CODE

- .1 Do demolition work in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .2 Blasting operations not permitted during demolition.

3.4 REMOVAL OF HAZARDOUS WASTES

- .1 Refer to DF Technical and Consulting Services Ltd Hazardous Materials Assessment Report for locations of known hazardous materials and abatement/removal procedures and refer to Section 02 81 01 Hazardous Materials.
- .2 Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.
- .3 Prior to start of demolition work remove contaminated or hazardous materials as defined by authorities having jurisdiction and as directed by Departmental Representative from site and dispose of at designated disposal facilities in safe manner and in accordance with TDGA and other applicable requirement and Section 02 81 01 - Hazardous Materials. Refer Existing Conditions in Part 1.

3.5 DEMOLITION

- .1 Demolish structures as indicated on tender drawings.
- .2 At end of each day's work, leave Work in safe and stable condition.
- .3 Demolish to minimize dusting. Keep materials wetted as directed by Departmental Representative.
- .4 Contain fibrous materials (e.g. Insulation) to minimize release of airborne fibres while being transported within facility.
- .5 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.

- .6 Use natural lighting to do Work where possible.
 - .1 Shut off lighting except those required for security purposes at end of each day.

3.6 STOCKPILING

- .1 Label stockpiles, indicating material type and quantity.
- .2 Contractor to supply a drawing to the Consultant indicating areas on site required stockpiling materials. This location is to be agreed by the Consultant prior to being used.
- .3 Designate appropriate security resources/measures to prevent vandalism, damage and theft.
- .4 Supply separate, clearly marked disposal bins for categories of waste material.

3.7 REMOVAL FROM SITE

- .1 Remove stockpiled material as directed by Departmental Representative, when it interferes with operations of project construction.
- .2 Remove stockpiles of like materials by alternate disposal option once collection of materials is complete.
- .3 Transport material designated for alternate disposal using approved haulers, facilities, receiving organizations listed in Waste Reduction Workplan and in accordance with applicable regulations.
 - .1 Written authorization from Departmental Representative is required to deviate from haulers, facilities, receiving organizations listed in Waste Reduction Workplan.
- .4 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.
 - .1 Disposal facilities must be those approved of and listed in Waste Reduction Workplan.
 - .2 Written authorization from Departmental Representative Waste Reduction Workplan.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Definitions:
 - .1 Dangerous Goods: product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.
 - .2 Hazardous Material: product, substance, or organism used for its original purpose; and is either dangerous goods or material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
 - .3 Hazardous Waste: hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .2 Reference Standards:
 - .1 Canadian Environmental Protection Act
 - .1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations.
 - .2 Department of Justice Canada (Jus)
 - .1 Transportation of Dangerous Goods Act.
 - .2 Transportation of Dangerous Goods Regulations.
 - .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Invitation to Tender Document.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for hazardous materials and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements, 01 35 43 - Environmental Procedures to Departmental Representative for each hazardous material required prior to bringing hazardous material on site.
 - .3 Refer to Hazardous Materials Report by DF Technical and Consulting Services Ltd and section 3.1 and 3.2 of this document that identifies known hazardous materials, usage, location, personal protective equipment requirements, and disposal arrangements.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance 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 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
- .4 Storage and Handling Requirements:
 - .1 Refer to Hazardous Materials Report by DF Technical and Consulting Services Ltd.
 - .2 Co-ordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.
 - .3 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
 - .4 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada requirements.
 - .5 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.
 - .1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.
 - .2 Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written approval of the Departmental Representative.
 - .6 Transfer of flammable and combustible liquids is prohibited within buildings.
 - .7 Transfer flammable and combustible liquids away from open flames or heat-producing devices.
 - .8 Solvents or cleaning agents must be non-flammable or have flash point above 38 degrees C.
 - .9 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.
 - .10 Observe smoking regulations, smoking is prohibited in areas where hazardous materials are stored, used, or handled.
 - .11 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.
 - .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 stored in separate containers.
 - .6 Store hazardous materials and wastes in secure storage area with controlled access.
 - .7 Maintain clear egress from storage area.
 - .8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.

- .9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.
- .10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
- .11 When hazardous waste is generated on site:
 - .1 Co-ordinate transportation and disposal with Departmental Representative.
 - .2 Comply with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste.
 - .3 Use licensed carrier authorized by provincial authorities to accept subject material.
 - .4 Before shipping material, obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and it is licensed to accept this material.
 - .5 Label container[s] with legible, visible safety marks as prescribed by federal and provincial regulations.
 - .6 Only trained personnel handle, offer for transport, or transport dangerous goods.
 - .7 Provide photocopy of shipping documents and waste manifests to Departmental Representative.
 - .8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide photocopy of completed manifest to Departmental Representative.
 - .9 Report discharge, emission, or escape of hazardous materials immediately to Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.
- .12 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
- .13 Report spills or accidents immediately to Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.

Part 2 Products

2.1 MATERIALS

- .1 Description:
 - .1 Bring on site only quantities hazardous material required to perform Work.
 - .2 Maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.1 ASBESTOS ABATEMENT

- .1 Professional abatement will be required to remove the ACM identified.

- .2 Removal of the ACM should be completed following high risk abatement procedures as outlined in the Alberta Asbestos Abatement Manual, 2012. For the removal of the linoleum flooring from the main floor kitchen. Area is approximately 10'x18'= 180sq ft. The identified secondary layer of flooring beneath the linoleum floor was identified as non-asbestos containing, and does not require removal; however, expect some of the material to be removed in the process.
- .3 Removal of the ACM should be completed following high risk abatement procedures as outlined in the Alberta Asbestos Abatement Manual, 2012. For removal of the Asbestos containing vermiculite insulation was identified in the attic (approximately 1500 sq. ft.). All insulation in the attic space (vermiculite, cellulose, and batt insulation) should be considered asbestos containing or contaminated. This material should therefore be handled and disposed of as such. Investigation of the masonry block located in the basement was completed in a few locations. No indication of asbestos was identified in the masonry block foundation wall.
- .4 Removal of the ACM should be completed following moderate risk abatement procedures as outlined in the Alberta Asbestos Abatement Manual, 2012. For the removal of all drywall finishes within the property Square footage calculations are approximate, further verification is recommended;
 - .1 Main floor east living room approximately 15'x11'x8'= 461sq ft
 - .2 Front entry porch (assuming there is no drywall material under the vaulted shiplap ceiling). Area is approximately 5'x14'x10' ceilings on the interior wall 8' ceiling on the exterior = 307 sq ft.
 - .3 Main floor bedroom hallway approximately 3'x5'x8'= 119sq ft. Area has a false drywall ceiling, with an additional finished drywalled ceiling above, square footage is inclusive of the additional ceiling .
 - .4 South main floor bathroom approximately 5'x12'x8'= 960 sq ft.
 - .5 Northeast main floor bedroom approximately 9'x13'x8'= 352 sq ft
 - .1 Walking closet approximately 3'x9'x8'= 168 sq ft
 - .6 Northwest main floor bedroom approximately 8'x11'x8'= 240 sq ft
 - .1 South bedroom closets approximately 4'x5'x8'= 112 sq ft
 - .2 North bedroom linen closet approximately 1'x3'x8'= 56 sq ft
 - .7 Main floor kitchen approximately 10'x18'x8'= 368 sq ft
 - .8 Main floor south sun room (assuming there is no drywall material under the vaulted shiplap ceiling) approximately 10'x19'x 6' for the exterior wall, ceilings on the interior wall are 12'= 412 sq ft
 - .9 Stairwell to basement approximately 6'x3'x8'= 96 sq ft
 - .10 Northeast basement bedroom. Although the area is enclosed with paneling it is recommended to remove with abatement procedures as the panels have joint compound at the seams approximately 7'x11'x8'= 288sq ft
 - .11 Basement bathroom approximately 5'x9'x7'= 161 sq ft
 - .12 Drywall must be removed to base structure insuring that no joint compound is remaining on the dimensional framing or on the floor plate. Removal should also be inclusive of all drywall fasteners.
 - .13 The insulation and vapor barrier is to be removed and disposed of as asbestos waste for the removal of the drywall and attic insulation.

- .5 Moderate Risk – Drywall removal
 - .1 Removal of the asbestos containing materials should be completed following moderate risk abatement procedures as outlined in the Alberta Asbestos Abatement Manual, 2012.
 - .2 Submit a completed Asbestos Project Notification Form, NOP, to Workplace Health and Safety 72 hours before workers may be exposed to airborne fibres, including set up operations that may release fibres. A copy of the acknowledgement should remain on site for the duration of the project.
 - .3 Ensure the work area is isolated utilizing barriers and warning signs restricting access to the area until the work is completed.
 - .4 Access contents in work area. Manipulate and dispose of or otherwise clean, store and protect all contents ensuring that the work area is free of any content.
 - .5 Install fiber reinforced polyethylene sheeting containment enclosure separating the abatement work zone from the remainder of the area. Ensure a positive seal is achieved and maintained throughout the abatement process.
 - .6 Containment should be constructed utilizing 6 mil thick polyethylene sheeting and a two stage decontamination facility should be attached to the entrance of the containment.
 - .7 Where floor finishes are to remain Ensure that the floor has two layers of 6 mil thick polyethylene sheeting running at 90 degrees to one another, to avoid tearing. The floor covering should overlap the wall by 30 cm, with the wall sheeting overlapping the turn-up on the inside of the containment to avoid breaches.
 - .8 Ensure that the heating, ventilation, and air conditioning (HVAC) components are isolated from the abatement area.
 - .9 Install high efficiency particulate assembly (HEPA) filtered air filtration device (AFD) in containment to provide negative air. Exhaust outdoors
 - .10 Ensure that negative air is achieved within containment and maintained at a minimum of - 5 Pascal's throughout the entire remediation process.
 - .11 The AFDs should be Di-octyl Phthalate/Poly Alpha Olefins, DOP/PAO, tested prior to the commencement of the abatement project. A copy of the successful DOP/PAO test should remain on site for the duration of the project.
 - .12 During abatement localized wetting of the asbestos containing materials must be undertaken to minimize fibre release.
 - .13 Removal and cleaning of dust must be undertaken utilizing a damp cloth and HEPA equipped vacuum cleaner. The HEPA-equipped vacuum cleaner should be DOP/PAO tested prior to the commencement of the abatement project. A copy of the successful DOP/PAO test should remain on site for the duration of the project.
 - .14 Ensure all workers are, at a minimum, equipped with a National Institutes for Occupational Safety and Health, NIOSH, approved half-mask with P-100, R-100 or N-100 particulate filters and disposable coveralls. Workers may be required to wear full-face or powered air purifying respirators, PAPR, depending on the fibre levels encountered during the project.
 - .15 On site occupational and perimeter air quality monitoring will be required daily during the abatement project. On project completion an aggressive air clearance must also be completed.

- .16 On completion of work efforts, the work area must be visually inspected to ensure that all visible asbestos-containing debris has been cleaned. Following completion of a success final visual inspection, the area should be encapsulated.

- .6 High Risk – Attic insulation and kitchen linoleum flooring
 - .1 Removal of the asbestos containing materials should be completed following high risk abatement procedures as outlined in the Alberta Asbestos Abatement Manual, 2012.
 - .2 Submit a completed Asbestos Project Notification Form, NOP, to Workplace Health and Safety 72 hours before workers may be exposed to airborne fibres, including set-up operations that may release fibres. A copy of the acknowledgement should remain on site for the duration of the project.
 - .3 Ensure the work area is isolated utilizing barriers and warning signs restricting access to the area until the work is completed.
 - .4 Access contents in work area. Manipulate and dispose of or otherwise clean, store and protect all contents ensuring that the work area is free of any content.
 - .5 Install fiber reinforced polyethylene sheeting containment enclosure separating the abatement work zone from the remainder of the area. Ensure a positive seal is achieved and maintained throughout the abatement process.
 - .6 Containment should be constructed utilizing 6 mil thick polyethylene sheeting and a threestage decontamination facility should be attached to the entrance of the containment that should include; a clean room, a shower facility, and a dirty room. A waste transfer room may be constructed should there be enough room to do so.
 - .7 Where floor finishes are to remain Ensure that the floor has two layers of 6 mil thick polyethylene sheeting running at 90 degrees to one another, to avoid tearing. The floor covering should overlap the wall by 30 cm, with the wall sheeting overlapping the turn-up on the inside of the containment to avoid breaches.
 - .8 Ensure that the heating, ventilation, and air conditioning (HVAC) components are isolated from the abatement area.
 - .9 Install high efficiency particulate assembly (HEPA) filtered air filtration device (AFD) in containment to provide negative air. Exhaust outdoors.
 - .10 Ensure that negative air is achieved within containment and maintained at a minimum of - 5 Pascal's throughout the entire abatement process.
 - .11 The AFDs should be Di-octyl Phthalate/Poly Alpha Olefins, DOP/PAO, tested prior to the commencement of the abatement project. A copy of the successful DOP/PAO test should remain on site for the duration of the project.
 - .12 During abatement localized wetting of the asbestos containing materials must be undertaken to minimize fibre release.
 - .13 Removal and cleaning of dust must be undertaken utilizing a damp cloth and HEPA equipped vacuum cleaner. The HEPA-equipped vacuum cleaner should be DOP/PAO tested prior to the commencement of the abatement project. A copy of the successful DOP/PAO test should remain on site for the duration of the project.
 - .14 Ensure all workers are, at a minimum, equipped with a National Institutes for Occupational Safety and Health, NIOSH, approved powered air purifying

respirator with P-100, R-100 or N-100 particulate filters and disposable coveralls. Street clothing may not be worn underneath the disposable coveralls.

- .15 On site air quality monitoring will be required prior to project commencement and daily during the abatement project. Occupational and perimeter air quality monitoring are required during abatement. On project completion an aggressive air clearance must also be completed. DF Technical & Consulting Services Ltd. can provide these services.
- .16 On completion of the work effort, the work area must be visually inspected to ensure that all visible asbestos-containing debris has been cleaned. Following completion of a successful final visual inspection, the area should be encapsulated.
- .17 The possibility exists for other forms of asbestos containing materials on the property. This sample may not represent all possible areas that contain asbestos products. Review the potential asbestos containing materials potentially found in a workplace by reviewing the attached Alberta Infrastructure Technical Bulletin-Asbestos Management in Appendixes.

3.2 LEAD ABATEMENT

- .1 Exterior paint coatings on building siding finishes and trims, were found to be lead containing. A leachable analysis was ordered to determine whether the paint was found to exceed waste guidelines and determine disposal requirements in accordance with Alberta Environment Protection guidelines.
- .2 As all other paint samples were identified as containing greater than 90 mg/kg of lead, it is recommended that all paint finishes be handled as lead containing hazards.
- .3 During demolition of the building workers should be protected from exposure to lead. Proper PPE, including ½ mask respirators, nitrile gloves, work gloves, and Tyvek suits are recommended for sweepers and manual demolition workers. A hand wash, face wash decontamination facility should be supplied for workers.
- .4 It is a requirement that air monitoring be conducted during demolition to ensure workers are not overexposed to lead.
- .5 Lead is categorized as a Schedule 1 Chemical Substance in the Alberta Occupational Health and Safety Code, 2009. Lead abatement activities require a code of practice from the contractor outlining work controls for safe removal, handling and disposal.

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.
- .3 Waste Management: separate waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and 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 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 timely fashion in accordance with applicable provincial regulations.
- .7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.
- .8 Identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:
 - .1 Hazardous wastes recycled in manner constituting disposal.
 - .2 Hazardous waste burned for energy recovery.
 - .3 Lead-acid battery recycling.
 - .4 Hazardous wastes with economically recoverable precious metals.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM D698-[00ae1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).

1.2 SOIL REPORT

- .1 Work this section with *Phase 2 Environmental Site Assessment for Parks Canada Agency at 329 Marten Street, Banff, AB* by McElhanney Consulting Services Ltd. provided as an appendix to the Contract Documents.

1.3 REGULATIONS

- .1 Shore and brace excavations, protect slopes and banks and perform all work in accordance with Provincial and Municipal regulations whichever is more stringent.
- .2 No blasting will be permitted.

1.4 TESTS AND INSPECTIONS

- .1 Compaction of backfill and fill will be the responsibility of the contractor.
- .2 Do not begin backfilling or filling operations until material has been approved for use by Departmental Representative.
- .3 Before commencing work, conduct, with Departmental Representative, condition survey of existing structures, trees and other plants, lawns, fencing, service poles, wires, rail tracks and paving, survey bench marks and monuments which may be affected by work.

1.5 BURIED SERVICES

- .1 Before commencing work establish the location of all buried services on and adjacent to the site.
- .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work. Pay costs of relocating services.

1.6 PROTECTION

- .1 Protect excavations from freezing.
- .2 Keep excavations clean, free of standing water, and loose soil.
- .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative's approval.
- .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.

- .5 Protect buried services that are required to remain undisturbed.

Part 2 Products

2.1 MATERIALS

- .1 Backfill material to be supplied by Parks Canada Agency (PCA). Contractor to coordinate with PCA regarding access to collect fill and material volumes required. Material will be made available from the Peyto Pit located on Tunnel Mountain, Banff, approximately 6km one way from 329 Marten Street, Banff.

Part 3 Execution site Preparation

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Cut pavement or sidewalk, if required, neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.2 CLEARING AND GRUBBING

- .1 Remove trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris within areas designated on drawings.
- .2 Remove stumps and tree roots below footings, slabs, and paving, and to 600 mm below finished grade elsewhere.
- .3 Dispose of cleared and grubbed material off site daily to disposal areas acceptable to authority having jurisdiction.

3.3 EXCAVATION

- .1 Excavated topsoil to be removed from site and disposed of at approved landfill facility.
- .2 Excavate as required to carry out work, in all materials met. Do not disturb soil or rock below bearing surfaces. Notify Departmental Representative and Consultant when excavations are complete.

3.4 BACKFILLING

- .1 Inspection: do not commence backfilling until fill material and spaces to be filled have been inspected and approved by Departmental Representative.
- .2 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.
- .3 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.
- .4 Placing:

- .1 Place backfill, fill and basecourse material in 150 mm lifts. Add water as required to achieve specified density.
- .5 The minimum compaction standard shall be 95% of Standard Proctor Maximum Dry Density (SPD). Under seeded and sodded areas: use site excavated material to bottom of topsoil except in trenches and within 600 mm of foundations.
- .6 Blown rock material, not capable of fine grading, is not acceptable, imported material must be placed on this type of material.

3.5 GRADING

- .1 Grade backfilled excavations to blend into existing site levels. Grade to be gradual between finished spot elevations shown on drawings.

3.6 SHORTAGE AND SURPLUS

- .1 Supply all necessary fill to meet backfilling and grading requirements and with minimum and maximum rough grade variance.
- .2 Dispose of surplus material off site.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section [31 23 33.01 - Excavation, Trenching and Backfilling].

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM D698-[91(1998)], Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m ;).

1.3 EXISTING CONDITIONS

- .1 Known underground and surface utility lines and buried objects are as indicated on site plan.
- .2 Refer to dewatering in Section 31 23 33.01 - Excavating Trenching and Backfilling.

1.4 PROTECTION

- .1 Maintain access roads to prevent accumulation of construction related debris on roads.

Part 2 Products

2.1 MATERIALS

- .1 Backfill material to be supplied by Parks Canada. Material will be made available from the Peyto Pit located on Tunnel Mountain, Banff, approximately 6km one way from 329 Marten Street, Banff. The Contractor is responsible for trucking the material from Peyto Pit to site. Fill material in accordance with of Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .2 Excavated or graded material existing on site may be suitable to use as fill for grading work if approved by Consultant.

Part 3 Execution

3.1 STRIPPING OF TOPSOIL

- .1 All existing topsoil is to be removed from site and disposed of at an approved facility.
- .2 Dispose of unused topsoil off site.

3.2 GRADING

- .1 Rough grade to finished levels

- .2 Prior to placing fill over existing ground, scarify surface to depth of 150 mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
- .3 Compact filled and disturbed areas to maximum dry density to ASTM D698, 95% of Standard Proctor Maximum Dry Density (SPD).
- .4 Do not disturb soil within branch spread of trees or shrubs to remain.

3.3 SURPLUS MATERIAL

- .1 Remove surplus material and material unsuitable for fill, grading or landscaping off site

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 29 00 – Payment Procedures.
- .2 Invitation to Tender Document.
- .3 Section 01 15 43 – Environmental Procedures.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft; (600kN-m/m;).

1.3 DEFINITIONS

- .1 Excavation classes: one class of excavation will be recognized; common excavation and rock excavation.
 - .1 Common excavation: excavation of materials of whatever nature.
- .2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .3 Topsoil:
 - .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
 - .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters in any dimension.
- .4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .5 Backfill material to be supplied by Parks Canada Agency (PCA). Contractor to coordinate with PCA regarding access to collect fill and material volumes required. Material will be made available from the Peyto Pit located on Tunnel Mountain, Banff, approximately 6km one way from 329 Marten Street, Banff. The Contractor is responsible for trucking the material from Peyto Pit to site. See Appendix for material sieve analysis

1.4 SUBMITTALS

- .1 Make submittals in accordance with Invitation to Tender Document.
- .2 Quality Control: in accordance with Section 01 45 00 - Quality Control:
 - .1 Submit for review by Departmental Representative proposed dewatering methods as described in PART 3 of this Section.

- .2 Submit to Departmental Representative testing results and inspection report as described in PART 3 of this Section.
- .3 Preconstruction Submittals:
 - .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
 - .2 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field, clearance record from utility authority, location plan of relocated and abandoned services, as required.

1.5 QUALITY ASSURANCE

- .1 Qualification Statement: submit proof of insurance coverage for professional liability.
- .2 Submit design and supporting data at least 5 days prior to beginning Work.
- .3 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Province of Alberta, Canada.
- .4 Keep design and supporting data on site.
- .5 Do not use soil material until written report of soil test results are reviewed and approved by Consultant.
- .6 Health and Safety Requirements:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.6 EXISTING CONDITIONS

- .1 Buried services:
 - .1 Before commencing work establish location of buried services on and adjacent to site.
 - .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
 - .3 Underground services to be capped or otherwise sealed at cut off points as shown on Consultant drawings. Capped services shall have a marker post. Marker post to be 2"x4" timber protruding 1.5m above ground. Top 300mm to be painted as follows:
 - .1 Red - Sanitary.
 - .2 Blue - Water.
 - .3 Gas - write "GAS" with permanent marker
 - .4 Location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
 - .5 Prior to beginning excavation Work, notify applicable Departmental Representative and authorities having jurisdiction, establish location and state of use of buried utilities and structures. Contractor to clearly mark locations .
 - .6 Confirm locations of buried utilities by careful soil hydrovac methods.
 - .7 Record location of maintained, re-routed and abandoned underground lines.
 - .8 Confirm locations of recent excavations adjacent to area of excavation.

- .2 Existing buildings and surface features:
 - .1 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Departmental Representative at own cost.
 - .2 Where required for excavation, cut roots or branches as directed by Departmental Representative.
- .3 Above ground services:
 - .1 Remove telephone wires to house and cap at power pole adjacent property.

Part 2 Products

2.1 MATERIALS

- .1 Granular Fill:
 - .1 Backfill material to be supplied by Parks Canada Agency (PCA). Contractor to coordinate with PCA regarding access to collect fill and material volumes required. Material will be made available from the Peyto Pit located on Tunnel Mountain, Banff, approximately 6km one way from 329 Marten Street, Banff.
 - .2 The minimum compaction standard shall be 95% of Standard Proctor Maximum Dry Density (SPD).

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .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.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- .2 Protection of in-place conditions:
 - .1 Protect excavations from freezing.
 - .2 Keep excavations clean, free of standing water, and loose soil.
 - .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative's approval.
 - .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.

3.2 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.3 STRIPPING OF TOPSOIL

- .1 Excavated topsoil to be removed from site and disposed of at approved landfill facility.

3.4 STOCKPILING

- .1 Contractor to supply a drawing to the Consultant indicating areas on site required stockpiling materials. This location is to be agreed by the Consultant prior to being used.
- .2 Protect fill materials from contamination.
- .3 All stockpiled materials to be fully tarped to reduce dust/erosion.
- .4 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.5 COFFERDAMS, SHORING, BRACING AND UNDERPINNING

- .1 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Section 01 35 29.06 - Health and Safety Requirements and Health and Safety Act for the Province of Alberta.
 - .1 Where conditions are unstable, Consultant to verify and advise methods.
- .2 During backfill operation:
 - .1 Unless otherwise indicated or directed by Departmental Representative, remove sheeting and shoring from excavations.
 - .2 Do not remove bracing until backfilling has reached respective levels of such bracing.
 - .3 Pull sheeting in increments that will ensure compacted backfill is maintained at elevation at least 500 mm above toe of sheeting.
- .3 When sheeting is required to remain in place, cut off tops at elevations as indicated.
- .4 Upon completion of substructure construction:
 - .1 Remove cofferdams, shoring and bracing.
 - .2 Remove excess materials from site as indicated and as directed by Departmental Representative.

3.6 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while Work is in progress.

- .2 Avoid excavation below groundwater table if quick condition or heave is likely to occur.
 - .1 Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.
- .3 Protect open excavations against flooding and damage due to surface run-off.
- .4 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures to approved runoff areas and in a manner not detrimental to public and private property, or portion of Work completed or under construction.
 - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.

3.7 EXCAVATION

- .1 Excavate to lines, grades, elevations and dimensions as indicated
- .2 Excavation must not interfere with bearing capacity of adjacent foundations.
- .3 Do not disturb soil within branch spread of trees or shrubs that are to remain.
 - .1 If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
- .4 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by Departmental Representative.
- .5 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .6 Notify Departmental Representative when excavation is complete.
- .7 Excavation taken below depths shown without Departmental Representative's written authorization to be filled with granular fill meeting these specifications at Contractor's expense.

3.8 BACKFILLING

- .1 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .2 Do not use backfill material which is frozen or contains ice, snow or debris.
- .3 Place backfill material in uniform layers not exceeding 150 mm compacted thickness. Compact each layer before placing succeeding layer.
- .4 Compaction: compact each layer of material to 95% of Proctor Density to ASTM D698.

3.9 GRADING

- .1 Ground levels over excavated areas to tie into existing adjacent ground levels.. A smooth, consistent grade should be used between existing site levels.

3.10 RESTORATION

- .1 Replace topsoil as directed by Departmental Representative.

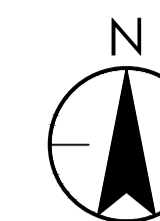
- .2 Reinstall lawns to elevation which existed before excavation.
- .3 Reinstall pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.
- .4 Clean and reinstall areas affected by Work as directed by Departmental Representative.

END OF SECTION

329 Marten St.
PCA Staff Housing
Banff, AB

APPENDIX A

EXISTING SITE SURVEY



Copyright Reserved

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.
The Copyrights to all designs and drawings are the property of Stantec. Reproduction or use for any purpose other than that authorized by Stantec is forbidden.

Disclaimer

The position of buried facilities shown hereon have been determined by electronic locator. This locate methodology has limitations. It should not be assumed that all buried facilities have been shown. The depth and position of all buried facilities hereon cannot be confirmed unless they are physically exposed. Prior to excavation or construction all underground installations should be marked by the appropriate authority or facility owner.
This is not a plan of survey and shall not be used except for the purpose indicated in the title block.

PLAN SHOWING SITE SURVEY AND ELEVATIONS ON AND ADJACENT TO

LOT 2, BLOCK 12, PLAN 21553 (C.L.S.R.)

WITHIN TOWN OF BANFF (BANFF NATIONAL PARK, ALBERTA)

NOTES

THE BASIS OF THIS PLAN IS AS FOLLOWS:
DATUM - NORTH AMERICAN DATUM 1983 (ORIGINAL)
PROJECTION - UNIVERSAL TRANSVERSE MERCATOR
COMBINED FACTOR - 0.999998
REFERENCE MERIDIAN - ZONE 11 (C.M.=117 W.)
ALL DISTANCES AND ELEVATIONS ARE IN METRES AND DECIMALS THEREOF.
ELEVATIONS ARE REFERRED TO GEODETIC DATUM AND ARE DERIVED FROM SURVEY CONTROL MARKER CCM85-23 (ELEVATION = 1384.5)
ELEVATIONS SHOWN ARE TO BE PREFIXED BY 1 - x^{284.10}

LEGEND

- C.L.S. STANDARD POST
- ALBERTA STATUTORY IRON POST
- CATCHBASIN MANHOLES
- MANHOLE
- GAS VALVES
- FIRE HYDRANTS
- VALVES
- FENCE LINES
- SANITARY SEWER LINES
- STORM LINES
- WATER LINES
- GAS LINES
- OVERHEAD POWER LINE
- CONTOURS (0.20m INTERVALS)
- A.L.S. DENOTES ALBERTA LAND SURVEYOR
- SEC. DENOTES SECTION
- TWP. DENOTES TOWNSHIP
- RGE. DENOTES RANGE
- M. DENOTES MERIDIAN
- N. DENOTES NORTH
- S. DENOTES SOUTH
- E. DENOTES EAST
- W. DENOTES WEST
- Fd. DENOTES FOUND
- I. DENOTES STATUTORY IRON POST
- WL. DENOTES WITNESS
- Mk. DENOTES MARK
- C.L.S. DENOTES CANADA LAND SURVEYOR

THE SURVEY WAS PERFORMED BETWEEN THE DATES OF DECEMBER 8th AND DECEMBER 22nd, 2016

CERTIFIED CORRECT ON _____, 2017

JONATHAN M. TINGLEY
CANADA LAND SURVEYOR



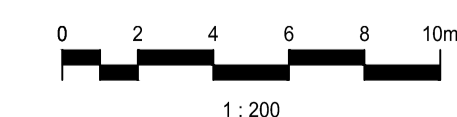
ADDRESS OF SITE

329 - Marten Street, Banff, Alberta

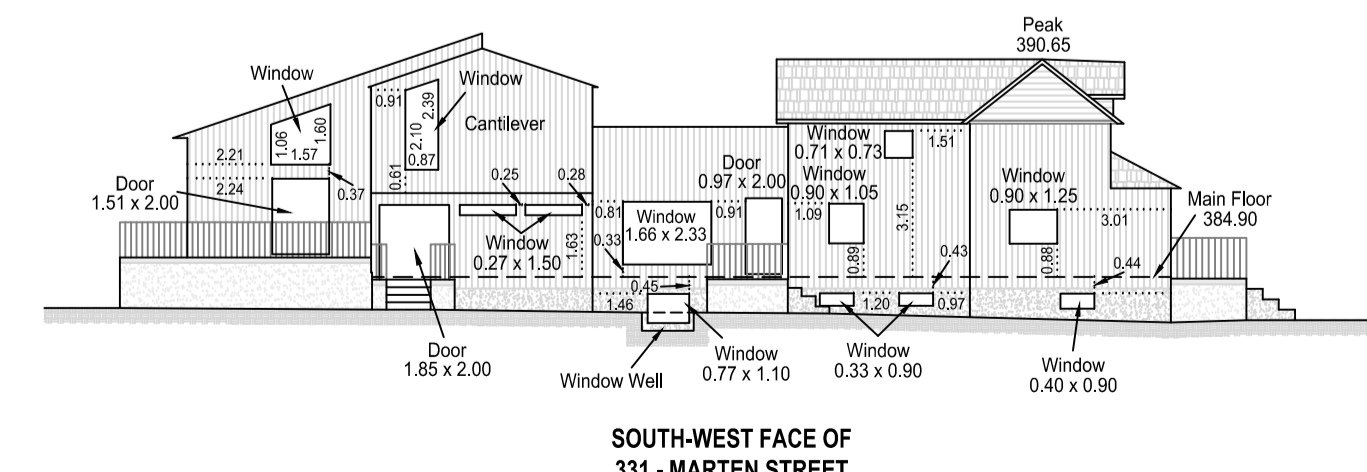
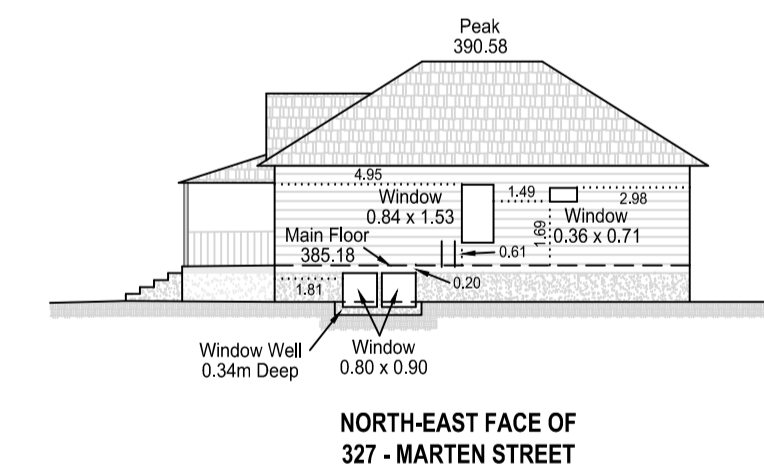
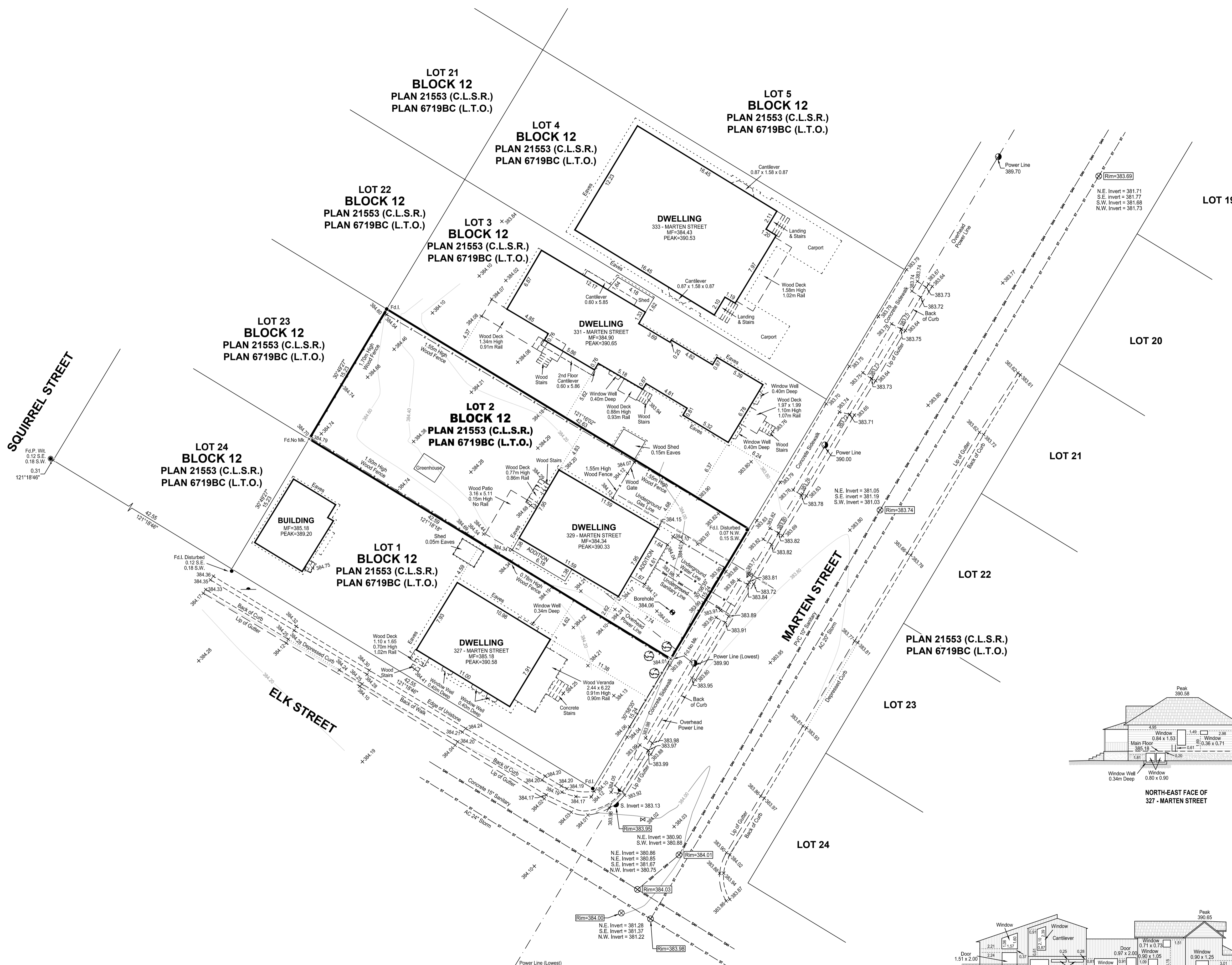
Original Issue	MP	17.01.03
Revision	By	Appd. YY.MM.DD

Client/Project
PARKS CANADA AGENCY
BANFF STAFF HOUSING

SITE SURVEY



Project No. 123312892.300 Scale 1:200 Sheet 1 of 1



ORIGINAL SHEET - A1 PLOT DATE: Feb. 06, 2017 3:36pm PLOTTED BY: mpostor FILE NAME: V:\566\active\123312892\design\drawing\marten_street\SP - marten_street_ground.dwg

329 Marten St.
PCA Staff Housing
Banff, AB

APPENDIX B

HAZARDOUS MATERIALS REPORT



DF Technical & Consulting Services Ltd.
104, 6330 - 12 St SE Calgary, AB T2H 2X2
Ph: 403.229.3131 Fax: 403.245.3224
Toll Free: 855.668.3131

October 24, 2017

McElhanney Consulting Services Ltd.
Suite 203, 502 Bow Valley Trail
Canmore, Alberta
T1W 1N9

Attention: Mr. Richard Collumbine,

Regarding: Hazardous Materials Assessment
Location: 329 Marten Street, Banff, Alberta

Please find enclosed a copy of the report for the Hazardous Materials Assessment that was performed by DF Technical & Consulting Services Ltd. at the requested location of: 329 Marten Street, Banff, Alberta on October 16, 2017.

If you have any inquiries or require more information, please feel free to contact the undersigned at (403) 229 3131 at your earliest convenience. Thank you for your patronage, and we look forward to assisting you in the future for your indoor air quality requirements.

Sincerely,

DF Technical & Consulting Services Ltd.

A handwritten signature in black ink, appearing to read 'Belle Givens', is written over a faint, light-colored signature line.

Belle Givens
DF Technical & Consulting Services Ltd

Distribution:

1 copy- McElhanney Consulting Services Ltd
1 copy- DF Technical & Consulting Services Ltd.

Enclosures



DF Technical & Consulting Services Ltd.
104, 6330 - 12 St SE Calgary, AB T2H 2X2
Ph: 403.229.3131 Fax: 403.245.3224
Toll Free: 855.668.3131

Hazardous Materials Assessment

Final Report

Date:

October 24, 2017

For:

McElhanney Consulting Services Ltd

Location:

329 Marten Street, Banff, Alberta

By:

Belle Givens

DF Technical & Consulting Services Ltd.

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Appendixes

Appendix I: Photographs

Appendix II: Independent Laboratory Results

Appendix III: Alberta Infrastructure Bulletin - Asbestos Containing Materials List

Appendix IV: Works Cited

Executive Summary

The hazardous materials assessment involved the collection of suspect hazardous materials by **DF Technical & Consulting Services Ltd.** at the requested location of 329 Marten St. Banff, Alberta to determine the presence and extent of hazardous materials.

The hazardous materials assessment was requested to determine the extent of hazardous materials within the above structures as part of the planned site demolition. Those materials identified as hazardous will need to be dealt with and disposed of accordingly.

Asbestos Handling

- Asbestos containing materials requiring removal prior to demolition were identified in the structure.

Lead Paint Handling

- The paint samples that were analyzed were found to contain lead in concentration of >90 mg/kg and is therefore considered lead paint. The concentration exceeds >600 mg/kg. Removal must be undertaken utilizing specific **Lead Abatement Procedure** and **Air Monitoring**.

Lead Disposal

- The paint samples that were analyzed and were found to contain lead in concentrations of >5000 mg/kg therefore further leachable lead analysis was conducted to determine proper disposal requirements as per Alberta Environment Protection guidelines;
- The leachate sample analysis for the interior basement white paint is **under** <5mg/L therefore the paint debris as analyzed can be disposed of at a regular class 2 landfill with proper authorization.
- The leachate sample for the exterior paint analysis is **over** >5mg/L therefore the paint debris as analyzed must be disposed of as class 1 hazard in a class 1 landfill with proper authorization.
- One source of radioactive material, smoke detector, was noted on the main floor of the structure.
- Mercury source was identified on the main floor of the structure.
- CFCs were identified on the property

Introduction

The hazardous materials assessment was conducted on October 16, 2017 by Belle Givens of **DF Technical & Consulting Services Ltd.** The assessment and sampling was conducted on behalf of Richard Collumbine of **McElhanney Consulting Services Ltd.** The following report is an overview of the observations, findings, conclusions, and recommendations generated during the assessment.

Site History & Background Information

The residence is a bungalow style structure, with a below grade cinder block wall foundation, with a concrete basement floor. Structure appears to have had an extension off of the kitchen at some point, due to the area not inclusive of the foundation walls. Joist system is 2"x6", with the main floor subfloor tongue and groove interlocking shiplap. The residence was reportedly built between the 20s and 30s and is an approximately 1500 square feet. The interior wall finishes consist of drywall, wall paneling, and wood stained paneling, Floors are inclusive of multi-layer in select areas with the combination of vinyl floor with carpet and or linoleum flooring. Other areas are strictly single layer. The attic is insulated with vermiculite, blown in cellulose, and fibreglass.

Regulations and Guidelines

Exposure to asbestos containing materials and lead is regulated under the Alberta Occupational Health & Safety Act, Regulation and Code, July 2009 (OH&S): Part 4: Chemical Hazards, Biological Hazards and Harmful Substances. Under the heading General Requirements an employer must ensure that a worker's exposure to any substances listed in Schedule 1: Table 2 is kept as low as practicable and does not exceed its occupational exposure limit (OH&S Code 2009).

The Government of Alberta, Employment, Immigration and Industry developed a best practice manual for asbestos titled Alberta Asbestos Abatement Manual, AAAM, published in October, 2012. The following excerpts are from the manual.

- This manual describes the principles to be followed when selecting the most appropriate techniques for safe abatement of asbestos-containing materials. The manual presents basic information on asbestos and asbestos products, health hazards, and requirements for worker protection, safe work procedures, inspection criteria, applicable legislation and competency profiles for those persons involved in abatement activities.

Waste considered environmentally hazardous must be disposed of in accordance with The Alberta User Guide for Waste Managers, Alberta Environmental Protection.

Assessment & Sampling Methodologies

Asbestos Sample Collection

Suspected potential ACM were visually identified, sampled in accordance with the sampling protocols outlined in the Alberta Asbestos Abatement Manual, AAAM, 2012; 5.6.4.1. Bulk sampling of materials suspected to contain asbestos was conducted and samples were submitted to an independent laboratory for analyses and classification.

All bulk asbestos containing materials samples are analyzed by polarized light microscopy, PLM, conducted by **Bio-Chem Consulting Services Ltd.** in Calgary, Alberta, an independent laboratory, and Member of the American Industrial Hygiene Association, AIHA, Bulk Asbestos Proficiency Analytical Testing, BAPAT, Laboratory Quality Assurance Program.

Lead-Based Paint (LBP) and other Lead Products Sample Collection

Sampling for lead based paint was conducted. Samples of suspect paint were collected and sent for analysis. Those samples found to be lead containing, near or in excess of 5000 mg/kg of lead, were sent for leachable analysis.

All lead-based paint and other lead product samples are analyzed by **KaizenLAB** in Calgary, Alberta, an independent laboratory, and Member of the American Industrial Hygiene Association, AIHA, Bulk Asbestos Proficiency Analytical Testing, BAPAT, Laboratory Quality Assurance Program.

Mercury

T-type and F type light tubes as well as Mercury Vapour lamps which potentially contained mercury. Mercury containing thermostat(s) were visually noted. Compact fluorescent light (CFL) also contain mercury.

Polychlorinated Biphenyls (PCBs)

No visual indication of the presence of PCB light ballasts were identified within the structure.

Ozone Depleting Substances: CFC,'s Halon, HFC; HCFC

Visual inspections throughout all accessible areas in the building was conducted. Visible presence of potential ozone depleting substances were noted where observed.

Visible Mould

No visual inspections throughout accessible areas in the building were conducted. No visible presence of mould on building materials were noted where observed.

Biohazards

Visual inspections throughout all accessible areas in the building were conducted. No visible presence of potential biohazards was noted where observed.

Chemicals

Visual inspections throughout accessible areas in the building were conducted. Visible presence of chemicals was noted where observed.

A chain of custody, COC, is initiated to assign pertinent information to all samples suspected of containing asbestos. Typically, the date, type of sampling media, requested analysis methodology, sample collection location, sample measurement, and name of the person in care and control of the sample, and other relative assessment information is recorded. The COC is attached to the sample and the sample is sent to the laboratory. Analysis is returned with a copy of the COC specifying the condition of the sample at the time it was logged, the requested analysis, and signature of the attending lab technician.

Table 1: Sampling Methodologies

Analyte	Methodology
Bulk Asbestos PLM	NIOSH 9002 Issue : 2
Lead in Paint: Acid Digestion of Sediments, Sludges, and Soils and Inductively Coupled Plasma/Mass Spectrometry (ICP-MS)	ASTM D3335-85A; EPA SW 846-(3050B:7000B)

Scope and Methodology

The Survey carried out by **DF Technical & Consulting Services Ltd.** consisted of the following:

- Visual survey of potentially hazardous materials.
- Individual field sampling and independent laboratory analysis of suspected ACM and lead containing materials.
- Interpretation of laboratory analysis results.
- Preparation of a report including results and recommendations.

The survey consisted of a visual inspection of the residential structure on the site. The information pertaining to the specified building, including the quantities, condition, of suspected hazardous materials was documented.

Asbestos Survey Results

Sample #	Location	Material	Asbestos Result
1	Main Floor Kitchen	Linoleum flooring Layer 1	60 % chrysotile asbestos containing
2	Main Floor Kitchen	Vinyl Flooring w/Paper Backing Layer 2	Non Detected
3	Main Floor Kitchen	Underlay 3rd Layer	Non Detected
4	Main Floor Bathroom	Linoleum flooring	Non Detected
5	Main Floor Bathroom Hallway Transition	Vinyl Flooring 2nd Layer	Non Detected
6	Main Floor South Sun Room	Ceiling Stipple	Non Detected
7	Main Floor Kitchen , Southeast corner behind fridge	Drywall joint compound	<1% chrysotile asbestos containing
8	Main Floor Front Entry East Living Room. From the Northeast corner	Drywall joint compound	Non Detected
9	Main Floor South Sun Room , from Northwest Corner Adjacent Patio Doors	Drywall joint compound	Non Detected
10	Main Floor West Bedroom, from Northwest Corner of the South Closet	Drywall joint compound	Non Detected
11	Basement	Chimney Mortar	Non Detected
12	Basement Bathroom	Ceiling Tiles	Non Detected
13	Basement Bathroom, from behind toilet	Drywall joint compound	Non Detected
14	Basement Northeast Bedroom, from Wall Panels on North Exterior Wall	Drywall joint compound	Non Detected
15	Basement Foundation Block Wall	Brick Mortar	Non Detected
16	Attic	Vermiculite / Cellulose Insulation	0.05% Actinolite/ Tremolite asbestos containing
17	Exterior Foundation	Parging	Non Detected
18	Exterior Roof	Shingles	Non Detected
19	Exterior Window	Caulking	Non Detected

The results of the laboratory analysis indicate that three of the nineteen samples submitted for analysis were found to be asbestos containing. A copy of the independent laboratory analysis is included in the Appendixes.

Lead Survey Results

Lead in Paint Analyses

Sample #	Location	Result mg/kg	Guideline
1-1	Basement Interior foundation/ window trim pain	6980	90 mg/kg
2-2	Exterior Paint	9280	

- Bolded results indicate levels in excess of guidelines

The results of the laboratory analysis indicate that the samples submitted for analysis were found to be above the recommended guideline and has been submitted for leachable analysis. A copy of the independent laboratory analysis is included in the Appendixes.

Leachable Analyses

Sample #	Location	Result mg/L	Waste Control Limit
1-1	Basement Interior foundation/ window trim pain	0.42	5.0 mg/L
2-2	Exterior Paint	78	

- Bolded results indicate levels in excess of guidelines

A leachable lead analysis was conducted, as the paint sample that was analyzed was found to contain lead in concentrations of >5000 mg/kg, one of the paint samples were found to exceed waste guidelines of 5.0 mg/L.

Mercury

Mercury was visually identified in the T12 fluorescent light bulbs. Mercury thermostats were also noted on the main floor of the property. Mercury sources must be removed and disposed appropriately prior to demolition of the building.

Radioactive Materials

A smoke detector in the building was noted on the main floor of the property, detector must be removed and properly disposed prior to demolition.

Ozone Depleting Substances; CFC's Halon, HFC; HCFC

Ozone depleting substances were visually identified on the main floor kitchen, and basement of the property. As the appliances within the property appear to be older than 2005 it is recommended to dispose of at an approved facility.

PCBs

No visual indication of the presence of PCB light ballasts were identified within the structure.

Mould

No fungal activity was identified within the structure.

Biohazards (Pigeon, mouse, bat, sewage)

No biohazards were visually identified in the facility.

Chemicals

All paints and paint containers and residential and industrial chemicals should be collected, sorted and sent for disposal.

Additionally on the perimeter of some of the exterior walls within the basement primarily observed along the stairwell and around the bottom of the stairs and the adjacent standalone freezer, there appears to be a substance (visually unidentifiable), potentially could be a deterrent to pets or vermin. Recommend inquiry to the occupant occupying the space at this time for assistance in identifying the substance.

Additionally there are multiple propane tanks at the rear of the building adjacent to the attached deck. Unaware of the current content levels.

The backyard also hosts a small green house structure, recommend review of the content and disposal of any subsequent discovered chemicals.

General Comments and Recommendations

The following comments apply to the analysis as reported.

Asbestos

- Professional abatement will be required to remove the ACM identified.
- Removal of the ACM should be completed following **high risk** abatement procedures as outlined in the Alberta Asbestos Abatement Manual, 2012. For the removal of the linoleum flooring from the main floor kitchen. Area is approximately 10'x18'= 180sq ft. The identified secondary layer of flooring beneath the linoleum floor was identified as non-asbestos containing, and does not require removal, however expect some of the material to be removed in the process.
- Removal of the ACM should be completed following **high risk** abatement procedures as outlined in the Alberta Asbestos Abatement Manual, 2012. For the removal of the asbestos identified vermiculite attic insulation, approximately 1500 sqft. All insulation in the attic space (vermiculite, cellulose, and batt insulation) should be considered all asbestos contaminated and disposed of as such. Investigation within the block was of the basement foundation was completed in a few locations, with no indication of vermiculite in the block foundation wall.
- Removal of the ACM should be completed following **moderate risk** abatement procedures as outlined in the Alberta Asbestos Abatement Manual, 2012. For the removal of all drywall finishes within the property Square footage calculations are approximate, further verification is recommended;
 - Main floor east living room approximately 15'x11'x8'= 461sq ft
 - Front entry porch (assuming there is no drywall material under the vaulted shiplap ceiling). Area is approximately 5'x14'x10' ceilings on the interior wall 8' ceiling on the exterior = 307 sq ft.
 - Main floor bedroom hallway approximately 3'x5'x8'= 119sq ft. Area has a false drywall ceiling, with an additional finished drywalled ceiling above, square footage is inclusive of the additional ceiling .
 - South main floor bathroom approximately 5'x12'x8'= 960 sq ft.
 - Northeast main floor bedroom approximately 9'x13'x8'= 352 sq ft
 - Walking closet approximately 3'x9'x8'= 168 sq ft
 - Northwest main floor bedroom approximately 8'x11'x8'= 240 sq ft
 - South bedroom closets approximately 4'x5'x8'= 112 sq ft
 - North bedroom linen closet approximately 1'x3'x8'= 56 sq ft
 - Main floor kitchen approximately 10'x18'x8'= 368 sq ft
 - Main floor south sun room (assuming there is no drywall material under the vaulted shiplap ceiling) approximately 10'x19'x 6' for the exterior wall, ceilings on the interior wall are 12'= 412 sq ft
 - Stairwell to basement approximately 6'x3'x8'= 96 sq ft
 - Northeast basement bedroom. Although the area is enclosed with paneling it is recommended to remove with abatement procedures as the panels have joint compound at the seams approximately 7'x11'x8'= 288sq ft
 - Basement bathroom approximately 5'x9'x7'= 161 sq ft

- Drywall must be removed to base structure insuring that no joint compound is remaining on the dimensional framing or on the floor plate. Removal should also be inclusive of all drywall fasteners.
- The insulation and vapor barrier is to be removed and disposed of as asbestos waste for the removal of the drywall and attic insulation.

Moderate Risk – Drywall removal

- Removal of the asbestos containing materials should be completed following moderate risk abatement procedures as outlined in the Alberta Asbestos Abatement Manual, 2012.
- Submit a completed Asbestos Project Notification Form, NOP, to Workplace Health and Safety 72 hours before workers may be exposed to airborne fibres, including set up operations that may release fibres. A copy of the acknowledgement should remain on site for the duration of the project.
- Ensure the work area is isolated utilizing barriers and warning signs restricting access to the area until the work is completed.
- Access contents in work area. Manipulate and dispose of or otherwise clean, store and protect all contents ensuring that the work area is free of any content.
- Install fiber reinforced polyethylene sheeting containment enclosure separating the abatement work zone from the remainder of the area. Ensure a positive seal is achieved and maintained throughout the abatement process.
- Containment should be constructed utilizing 6 mil thick polyethylene sheeting and a two-stage decontamination facility should be attached to the entrance of the containment.
- Where floor finishes are to remain Ensure that the floor has two layers of 6 mil thick polyethylene sheeting running at 90 degrees to one another, to avoid tearing. The floor covering should overlap the wall by 30 cm, with the wall sheeting overlapping the turn-up on the inside of the containment to avoid breaches.
- Ensure that the heating, ventilation, and air conditioning (HVAC) components are isolated from the abatement area.
- Install high efficiency particulate assembly (HEPA) filtered air filtration device (AFD) in containment to provide negative air. Exhaust outdoors
- Ensure that negative air is achieved within containment and maintained at a minimum of -5 Pascal's throughout the entire remediation process.
- The AFDs should be Di-octyl Phthalate/Poly Alpha Olefins, DOP/PAO, tested prior to the commencement of the abatement project. A copy of the successful DOP/PAO test should remain on site for the duration of the project.
- During abatement localized wetting of the asbestos containing materials must be undertaken to minimize fibre release.
- Removal and cleaning of dust must be undertaken utilizing a damp cloth and HEPA-equipped vacuum cleaner. The HEPA-equipped vacuum cleaner should be DOP/PAO tested prior to the commencement of the abatement project. A copy of the successful DOP/PAO test should remain on site for the duration of the project.
- Ensure all workers are, at a minimum, equipped with a National Institutes for Occupational Safety and Health, NIOSH, approved half-mask with P-100, R-100 or N-100 particulate

filtres and disposable coveralls. Workers may be required to wear full-face or powered air purifying respirators, PAPR, depending on the fibre levels encountered during the project.

- On site occupational and perimeter air quality monitoring will be required daily during the abatement project. On project completion an aggressive air clearance must also be completed. **DF Technical & Consulting Services Ltd.** can provide these services.
- On completion of work efforts, the work area must be visually inspected to ensure that all visible asbestos-containing debris has been cleaned. Following completion of a successful final visual inspection, the area should be encapsulated.

High Risk – Attic insulation and kitchen linoleum flooring

- Removal of the asbestos containing materials should be completed following high risk abatement procedures as outlined in the Alberta Asbestos Abatement Manual, 2012.
- Submit a completed Asbestos Project Notification Form, NOP, to Workplace Health and Safety 72 hours before workers may be exposed to airborne fibres, including set-up operations that may release fibres. A copy of the acknowledgement should remain on site for the duration of the project.
- Ensure the work area is isolated utilizing barriers and warning signs restricting access to the area until the work is completed.
- Access contents in work area. Manipulate and dispose of or otherwise clean, store and protect all contents ensuring that the work area is free of any content.
- Install fiber reinforced polyethylene sheeting containment enclosure separating the abatement work zone from the remainder of the area. Ensure a positive seal is achieved and maintained throughout the abatement process.
- Containment should be constructed utilizing 6 mil thick polyethylene sheeting and a three-stage decontamination facility should be attached to the entrance of the containment that should include; a clean room, a shower facility, and a dirty room. A waste transfer room may be constructed should there be enough room to do so.
- Where floor finishes are to remain Ensure that the floor has two layers of 6 mil thick polyethylene sheeting running at 90 degrees to one another, to avoid tearing. The floor covering should overlap the wall by 30 cm, with the wall sheeting overlapping the turn-up on the inside of the containment to avoid breaches.
- Ensure that the heating, ventilation, and air conditioning (HVAC) components are isolated from the abatement area.
- Install high efficiency particulate assembly (HEPA) filtered air filtration device (AFD) in containment to provide negative air. Exhaust outdoors
- Ensure that negative air is achieved within containment and maintained at a minimum of -5 Pascal's throughout the entire abatement process.
- The AFDs should be Di-octyl Phthalate/Poly Alpha Olefins, DOP/PAO, tested prior to the commencement of the abatement project. A copy of the successful DOP/PAO test should remain on site for the duration of the project.
- During abatement localized wetting of the asbestos containing materials must be undertaken to minimize fibre release.

- Removal and cleaning of dust must be undertaken utilizing a damp cloth and HEPA-equipped vacuum cleaner. The HEPA-equipped vacuum cleaner should be DOP/PAO tested prior to the commencement of the abatement project. A copy of the successful DOP/PAO test should remain on site for the duration of the project.
- Ensure all workers are, at a minimum, equipped with a National Institutes for Occupational Safety and Health, NIOSH, approved powered air purifying respirator with P-100, R-100 or N-100 particulate filters and disposable coveralls. Street clothing may not be worn underneath the disposable coveralls.
- On site air quality monitoring will be required prior to project commencement and daily during the abatement project. Occupational and perimeter air quality monitoring are required during abatement. On project completion an aggressive air clearance must also be completed. **DF Technical & Consulting Services Ltd.** can provide these services.
- On completion of the work effort, the work area must be visually inspected to ensure that all visible asbestos-containing debris has been cleaned. Following completion of a successful final visual inspection, the area should be encapsulated.

The possibility exists for other forms of asbestos containing materials on the property. This sample may not represent all possible areas that contain asbestos products. Review the potential asbestos containing materials potentially found in a workplace by reviewing the attached Alberta Infrastructure Technical Bulletin-Asbestos Management in Appendixes.

Lead

- Exterior paint coatings on building siding finishes and trims, were found to be lead containing. A leachable analysis was ordered to determine whether the paint was found to exceed waste guidelines and determine disposal requirements in accordance with Alberta Environment Protection guidelines.
- As all other paint samples were identified as containing greater than 90 mg/kg of lead, it is recommended that all paint finishes be handled as lead containing hazards.
- During demolition of the building workers should be protected from exposure to lead. Proper PPE, including ½ mask respirators, nitrile gloves, work gloves, and Tyvek suits are recommended for swamper and manual demolition workers. A hand wash, face wash decontamination facility should be supplied for workers.
- It is a requirement that air monitoring be conducted during demolition to ensure workers are not overexposed to lead.
- Lead is categorized as a Schedule 1 Chemical Substance in the Alberta Occupational Health and Safety Code, 2009. Lead abatement activities require a code of practice from the contractor outlining work controls for safe removal, handling and disposal.

Closure

This report is based on observations and collected data from October 16, 2017. The conclusions made in this report are not a certification of the site's air quality. No warranty is expressed or implied as to final site condition. This report provides an analysis and assessment of materials tested and is based on information provided to **DF Technical & Consulting Services Ltd.**

Regards,



Belle Givens

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Appendix I: Photographs

Hazardous Materials Assessment
For McElhanney Consulting Services Ltd- 329 Marten Street, Banff, Alberta
By DF Technical & Consulting Services Ltd.



Site Location-329 Marten Street, Banff,
Alberta



Mercury containing thermostats identified on
the main floor of the property



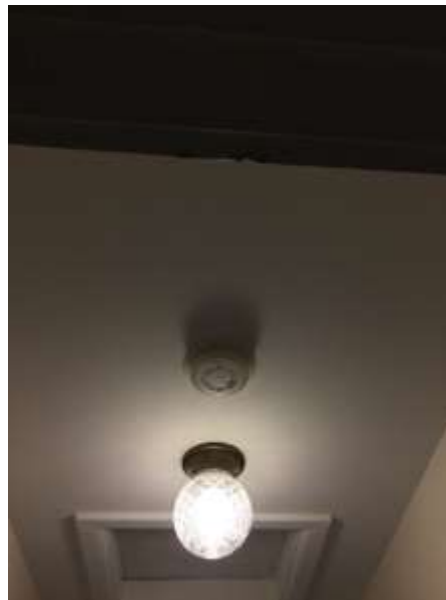
Identified asbestos containing brown linoleum flooring within the kitchen



Vermiculite insulation is located beneath the batt and cellulose insulation. Attic space is compartmentalized into four areas, three of the areas are shown in this photo



Drywall sample location with the positive asbestos identification.



Smoke detector location on the main floor of the property adjacent to the access hatch for attic access.



Exterior paint on the structure that was analyzed to have excessive lead content.



Propane cylinders on site located in the backyard of the property

Appendix II: Independent Laboratory Results

Appendix III: Alberta Infrastructure Technical Bulletin-Asbestos Management

Appendix III, Table 1: Asbestos Containing Materials, Concentrations, Date Made, Uses, and Friability

Category	Description	Asbestos %	Date Made	Uses	Friability
Ceilings, Walls, & Textiles	Drywall taping Compounds	1 - 10	1950 - 1985	Gypsum wall or ceiling board edge treatment	Low to Moderate
	Sprayed on texture or troweled on texture	1 - 95	1935 - 1985	Fire resistance acoustic treatment thermal insulation condensation control	Moderate to High
	Ceiling tiles	1 - 10	1960 - 1985	Acoustical suspended ceiling finish	Moderate to High
	Plaster (brown or finish coat) , stucco, drywall, joint cement	2 - 10	1930 - 1985	Wall - ceiling finish rough or Smooth	Low
Flooring	Vinyl asbestos (VAT) tile	30 - 50	1950 - 1985	Hard wearing floor covering	Low
	Resilient sheet	30 - 50	1950 - 1985	Backing layer to vinyl facing	Moderate to High
	Concrete leveling compounds	1 - 10	1950 - 1985	Concrete floor leveler and finished flooring	Moderate to High
	Asphalt/asbestos tile	20 - 30	1920 - 1985	Roof or exterior walls finish	Low
Mechanical	Rigid block insulation	40 - 60	1926 - 1985	Boiler or pipe work insulation	Moderate to High
	Paper like insulation	50 - 70	1910 - 1985	Pipe work insulation	Moderate
	Insulating cement	10 - 80	1949 - 1985	Pipe work insulation at elbows and fittings	Moderate to High
	Corrugated paper sheets	70 - 80	1925 - 1985	Duct and pipe insulation	Moderate
	Insulating cement parging	10 - 80	1910 - 1985	Duct parging or pipe insulation applied over glass fiber	Moderate to High
Electrical	Wire insulation	90 - 100	1910 - 1985	High heat applications	Moderate
	Insulator board	40 - 60	1930 - 1985	Electrical insulation	Low
	Reflective layers	70 - 90	Until 1985	Heat resistant incandescent light reflector	Low

(continued)

Appendix III, Table 1: Asbestos Containing Materials, Concentrations, Date Made, Uses, and Friability (continued)

Category	Description	Asbestos %	Date Made	Uses	Friability
Cement Like Products	Millboard	40 – 50	1930 – 1995	Industrial type siding, heat shields water proofing	Low
	Roof tiles	20 – 30	1930 – 1985	Roof finish	Low
	Cement pipe	20 – 30	1935 – 1995	Subterranean Water pipes	Low
	Siding and shingles	20 – 40	Until 1985	Domestic and Commercial cladding	Low
	Mortars	1 – 10	Until 1985	Brick or cement block mortar	Low
Textiles	Woven cloth	90 – 100	1910 – 1985	Fire blankets, stage/welding curtains, isolation joints in duct work, heat shields, fire hoses, gland packing	Low to Moderate
Roofing Materials	Shingles	1 – 5	1971 – 1985	Asphalt roof shingles	Low
	Roofing felts	10 – 15	1910 – 1985	Built-Up roofing	Low
	Slip layers	70 – 80	Until 1985	Base layer for Built-Up roofing	Low to Moderate
Other	Caulking	20 – 30	1930 – 1985	For flow ability in mastic	Low
	Coatings	5 – 15	1900 – 1985	Roof- Coatings and air barriers	Low
	Brake/clutch linings	30 – 40	1920 – 1995	Elevator motors-Mechanical plants	Low
	Filters	50 – 70	1930 – 1985	Cooling towers humidifiers	Low to Moderate
	Gaskets	20 – 60	1900 – 1985	Mechanical equipment	Low to Moderate
	Vinyl wallpaper	5 – 10	Until 1985	Decorative wall coverings	Low
	Textured paints	5 – 10	Until 1985	Decorative wall coverings	Low
	Fire doors	50 – 70	Until 1985	Fire ratings	Low to High but enclosed within wood or steel doors

Source: Alberta Infrastructure Technical Bulletin - Asbestos Management; *Issue No. 2B – Revised, September 2013*

Appendix IV: Works Cited

Works Cited

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329 Marten St.
PCA Staff Housing
Banff, AB

APPENDIX C

TOWN OF BANFF MITIGATIONS

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects

Activity	Potential Impacts	Mitigation Measures
Pre-planning		
Site investigation, including geotechnical investigation	Sensory disturbance, disturbance of archaeological resources, slope failure, sedimentation	<ul style="list-style-type: none"> • Conduct Phase I Environmental Site Assessment, if not already completed for the site, and additional site surveys, test pits, bore holes etc. if necessary. • Minimize the time boreholes remain open in order to reduce small terrestrial wildlife mortality. Properly seal boreholes and fit PVC pipes. • Use existing roadways or disturbed areas for site access and travel within the site. • Follow appropriate excavation mitigation measures for geotechnical investigation (see mitigations for “Trenching”).
General planning activities specific to all building projects.	Runoff / sedimentation; soil contamination	<ul style="list-style-type: none"> • Prepare an Emergency Response Plan for the worst case, i.e., heavy rainfall and runoff events, high winds, spills, fires, etc. • In the event of emergency operations (as defined in Section 4.11 of the MCSR), call 911. The Warden Dispatch can also be contacted (available 24 hours/day) at (403) 762-4506 or the Wardens Office at (403) 762-1470 to notify of any emergency procedures required. • Ensure all activities are conducted at least 30 m from waterbodies.
	Dust production	<ul style="list-style-type: none"> • Have a water source available to wet down exposed soil and dry areas.
	Wind and water erosion	<ul style="list-style-type: none"> • Prepare a satisfactory Sediment and Erosion Control Plan covering all construction and restoration periods. • Acquire necessary sediment control equipment (i.e., straw bales, landscaping fabric, sediment fences, etc.) and install prior to construction. • Extra planning should be used for areas with silty deposits (VL3 and VL4) and sloped areas with sandy deposits (see Figure 4.2).
	Compaction of soils	<ul style="list-style-type: none"> • Identify soils susceptible to compaction (fine textured and organic soils). • In sensitive areas, use equipment of low bearing weight, low PSI tires, or tracked vehicles.
	Slope failure	<ul style="list-style-type: none"> • Assess slope stability (based on slope length, soil texture, steepness, soil depth) and adjust activities to avoid these areas if possible. Use appropriate setbacks. • Pay particular attention when planning for slopes of Class 6 (15-30%) or greater, especially where soils are shallow and likely to move with disturbance.
	Habitat loss and fragmentation; or encroachment on wildlife movement corridor	<ul style="list-style-type: none"> • Identify wildlife habitat that may be impacted by activities and avoid sensitive areas, including wetlands. • Ensure only necessary vegetation is removed and delineate areas to be avoided with biodegradable flagging tape and/or temporary fences.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

Activity	Potential Impacts	Mitigation Measures
General planning activities (continued)	Sensory disturbance and mortality of wildlife	<p>When working adjacent to natural areas:</p> <ul style="list-style-type: none"> • According to the wildlife that may be present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages (breeding, nesting, rearing, migration). Consult with Parks Canada (403-762-1416) to discuss any localized wildlife concerns. • Confine “noise” activities to hours set out in Town of Banff Noise Bylaw. • Consider posting wildlife signs to reduce vehicle speeds and increase driver awareness near construction areas where wildlife mortality has or is likely to occur. • Educate workers to not harass or attract wildlife, keep the site free of food scraps, and dispose of garbage in bear proof containers.
	Disturbance of archaeological resources	<ul style="list-style-type: none"> • Consult with Parks Canada (403-762-1416) to discuss if consultation with the Park’s archaeologist is required (see Figure 4.1). • If it is deemed that potential archaeological sites may be subject to ground disturbance activities should be adapted to avoid them. • Educate workers to notify site supervisor upon finding any archaeological artefacts and to stop work immediately.
	Increased water and energy consumption	<ul style="list-style-type: none"> • Identify water and energy conservation opportunities for building design (e.g., low flow fixtures, low energy heating and lighting) and outdoor requirements (e.g., yard lighting, drip irrigation systems).
	Public safety	<ul style="list-style-type: none"> • Outline traffic control measures and assess the need for flagging personnel. • Call utility line companies to identify infrastructure locations (Alberta OneCall: 1-800-242-3447).
	Reduced aesthetics (noise and visual)	<ul style="list-style-type: none"> • Evaluate the site layout, access routes and construction activities to minimize their visual impact. • Plan work schedule to confine “noise” activities to hours set out in Town of Banff Noise Bylaw and, if possible, periods of low visitation.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

Activity	Potential Impacts	Mitigation Measures
Site Preparation		
Clearing of vegetation	Dust production	<ul style="list-style-type: none"> • Wet down dry, exposed soils, particularly during windy periods. • Ensure materials being stored or transported are covered with tarps or equivalent material.
	Runoff / sedimentation	<ul style="list-style-type: none"> • Halt construction activity on exposed soil during events of high rainfall intensity and runoff and refer to the Sediment and Erosion Control Plan. Periodically inspect erosion control structures for effectiveness.
	Wind and water erosion	<p>Particularly in areas with silty deposits (VL3 and VL4) and sloped areas with sandy deposits (Figure 4.2):</p> <ul style="list-style-type: none"> • Protect exposed soils with coarse granular materials, mulches, straw, or landscaping fabric along drainage pathways. • Minimize grubbing.
	Damage to adjacent vegetation, loss of native vegetation	<p>To protect undeveloped areas adjacent to development site:</p> <ul style="list-style-type: none"> • Minimize area cleared. Clearly mark area to be cleared with biodegradable flagging tape and/or temporary fences. • Ensure vertical (Rocky Mountain) juniper, Douglas fir and limber pine are protected. • For every tree removed, two native trees must be planted. • Hoarding around trees to be retained must be installed beyond the tree's drip line prior to commencement of site work. • A development permit from the Town of Banff Planning and Development Division (403-762-1215) is required before removing any trees. • Ensure excavated material does not damage or bury plant material that is to be retained on the site or in adjacent areas. • Trees are to be cut so that they fall inside the cleared perimeters. • Care must be taken during grubbing and stripping to ensure that trees and roots on the edge of the cleared area are not disturbed. • Grubbing and stripping may not be permitted on steep slopes to reduce the potential for erosion.
	Wildlife habitat loss and fragmentation; or encroachment on wildlife movement corridor	<p>When working adjacent to all undeveloped areas and areas bordering natural habitat, especially wildlife movement corridors and natural wetlands:</p> <ul style="list-style-type: none"> • Clear only the minimum area required for construction activities. • Retain vegetation barriers where possible, especially trees and shrubbery.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

Activity	Potential Impacts	Mitigation Measures
Clearing of vegetation (continued)	Reduced aesthetics	<ul style="list-style-type: none"> • Transport stockpiled material offsite immediately or stockpile cleared vegetation in an area out of view from public until it can be disposed of appropriately (see mitigations for “Disposal of cleared material”). • Dispose of cleared vegetation as soon as possible.
Grading and excavation	Dust production / aesthetics	<ul style="list-style-type: none"> • Wet down dry, exposed soils. • Ensure materials being stored or transported are covered with tarps or equivalent material. • Minimize grading and excavation on windy days to limit dust production.
	Runoff / sedimentation	<p>Halt construction activity on exposed soil during events of high rainfall intensity and runoff.</p> <ul style="list-style-type: none"> • All excavations will remain free of water (see mitigations for “Dewatering”). • Cover stockpiles of soil with polyethylene sheeting, tarps, or vegetative cover. <p>Sites close to waterbodies, but not closer than 30 m:</p> <ul style="list-style-type: none"> • To ensure that site run-off is minimized, control overland flow up gradient and down gradient of excavated areas by use of effective diversion ditches, bales, vegetation filter strips, or sediment traps.
	Wind and water erosion	<ul style="list-style-type: none"> • Particularly in areas with silty deposits (VL3 and VL4 - see Figure 4.2), and sloped areas with sandy deposits: • Protect exposed soils with coarse granular materials, mulches, or straw. • Cover stockpiles of soil with polyethylene sheeting, tarps, or vegetative cover.
	Loss of topsoil and/or topsoil-subsoil mixing	<ul style="list-style-type: none"> • Use separate lifts and storage of topsoil and subsoil horizons, replacing them in the same order after completion of activity, wherever practical. • Topsoil will be stored away from any slopes, subsoils, spoil material, construction activities and day-to-day operations.
	Slope failure	<ul style="list-style-type: none"> • Avoid work on steep slopes unless absolutely necessary. <p>Areas with slopes of Class 6 (15-30%) or greater, especially where shallow soils overlie bedrock:</p> <ul style="list-style-type: none"> • Use appropriate geo-technical control measures to stabilize slopes. Consult occupational health and safety guidelines.
Disposal of cleared material	Dust production	<ul style="list-style-type: none"> • Ensure cleared vegetation being stored or transported is covered with tarps or equivalent material.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

Activity	Potential Impacts	Mitigation Measures
Disposal of cleared material (continued)	Reduced aesthetics (visual)	<ul style="list-style-type: none"> • Minimize the time cleared vegetation remains at the work site. • Large timber (trees larger than 15 cm DBH) shall be cut into blocks not to exceed 35 cm and stockpiled for re-use as firewood. • Smaller trees and other woody material may be chipped and sent to the Cascade pit, or burned, if a burning permit is obtained. Dispose of diseased vegetation by burning. • Dispose of trade waste at the Bow Valley Waste Management Commission’s Class III landfill.
Construction		
Dewatering	Sedimentation; Erosion; Damage to vegetation	<ul style="list-style-type: none"> • Dewatering is not permitted into any waterbody, including the Bow River and Whiskey Creek. <p>Dewatering is permitted across previously disturbed vegetation or natural vegetation if the following conditions are met:</p> <ul style="list-style-type: none"> • Sediment controls are used (i.e., silt fences, silt bags, etc.). • Water velocity is controlled to dissipate energy, prevent soil erosion and allow for infiltration. • Dewatering structures are continuously monitored to ensure no damage is being done to soil or vegetation. • As an interim measure, the Town may allow silty water to be pumped into the sanitary system. A permit is required (403-762-1215). • Parks Canada does not allow dewatering into storm sewers unless it can be demonstrated that the proponent has the methods and equipment to limit sediment entering the receiving waterbody. • Sediment from the traps may be used as fill on the construction site.
	Damage to adjacent vegetation	<ul style="list-style-type: none"> • For undeveloped areas adjacent to development site, ensure water and sediment is directed away from natural areas.
	Sensory disturbance and mortality of wildlife	<p>When working adjacent to natural areas:</p> <ul style="list-style-type: none"> • According to the wildlife that may be present, schedule, high noise level activities and other intrusive construction activities to avoid critical life stages (breeding, nesting, rearing, migration). Consult with Parks Canada (403-762-1416) to discuss any localized wildlife concerns. • Confine “noise” activities to hours set out in Town of Banff Noise Bylaw. • Consider posting wildlife signs to reduce vehicle speeds and increase driver awareness near construction areas where wildlife mortality has or is likely to occur. • Educate workers to not harass or attract wildlife.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

Activity	Potential Impacts	Mitigation Measures
Construction (sandblasting)	Dust production (sand blasting)	<ul style="list-style-type: none"> • Minimize sandblasting. • Confine activity to days with little or no wind and use physical barriers (e.g., shrouds, scaffold canopies) to contain dust. • Sandblasting should only remove loose paint to provide a clean surface for the new paint to adhere to. To reduce the amount of old paint needed to be removed, the new paint to be used should be as similar in colour as possible to the existing painted surface.
Construction (painting and paint stripping)	Contamination of soil and water from accidental spill of paint, stripping compounds, or thinner	<ul style="list-style-type: none"> • Prepare an appropriate Spill Response Plan and ensure that spill contingency equipment and measures are in place before work begins. • Ensure paint is stored appropriately to prevent spillage. • In the event of emergency operations (as defined in Section 4.11 of the MCSR), call 911. The Warden Dispatch can also be contacted (available 24 hours/day) at (403) 762-4506 or the Wardens Office at (403) 762-1470 to notify of any emergency procedures required. • Waste oil based paints must be transported out of the Park in accordance with the Federal and Provincial <i>Transportation of Dangerous Goods Act</i> and Regulations. • Dispose of contaminated materials at provincially certified disposal sites outside of the Park. No treatment of contaminated soils (e.g., bioremediation) is allowed in the Park. All applicable documentation demonstrating proper disposal should be obtained. Alternatively, use the paint exchange program in Banff.
Site Servicing (Subsurface)		
Trenching, Utilities excavation and removal	Runoff / sedimentation	<ul style="list-style-type: none"> • To ensure that site run-off is minimized at times of heavy rainfall, control overland flow up gradient and down gradient of exposed areas by use of effective diversion ditches, bales, vegetation filter strips, or sediment traps.
	Wind and water erosion	<p>Particularly in areas with silty deposits (VL3 and VL4) and sloped areas with sandy deposits (see Figure 4.2):</p> <ul style="list-style-type: none"> • Use interceptor ditches or berms (bales) up-gradient of excavation to divert overland flow around exposed soils • Line steep ditches with filter fabric, rock or polyethylene lining to prevent channel erosion.
	Wildlife mortality	<ul style="list-style-type: none"> • Fence trench if it is to be left unattended overnight.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

Activity	Potential Impacts	Mitigation Measures
Trenching; Utilities excavation and removal (continued)	Loss of topsoil and/or topsoil-subsoil mixing	<ul style="list-style-type: none"> • Wherever possible, use separate lifts and storage of topsoil and subsoil horizons, replacing them in the same order after completion of activity. • Minimize the amount of time that the trench remains open. • Soils will be stored away from any steep slopes, subsoils, spoil material, construction activities and day-to-day operations.
	Slope failure	<ul style="list-style-type: none"> • Avoid work on steep slopes unless absolutely necessary. Areas with slopes of Class 6 (15-30%) or greater, especially where soils are shallow: • Use appropriate geo-technical control measures to stabilize slopes. Consult occupational health and safety guidelines.
<i>Decommissioning and Abandonment</i>		
Demolition activities / foundation removal	Dust production	<ul style="list-style-type: none"> • Wet down dry, exposed soils. • Ensure fine materials being stored or transported are covered with tarps or equivalent material.
	Discovery of existing soil contamination	<ul style="list-style-type: none"> • If any contamination is found, cease work immediately. Inform the building site supervisor and, if necessary, implement Emergency Response Plan.
	Loss of topsoil and/or topsoil-subsoil mixing	<ul style="list-style-type: none"> • Wherever possible, use separate lifts and storage of topsoil and subsoil horizons, replacing them in the same order after completion of activity. • Soils will be stored away from any grades, subsoils, spoil material, construction activities and day-to-day operations.
<i>Site Reclamation or Restoration</i>		
Grading	Dust production	<ul style="list-style-type: none"> • Wet down dry, exposed soils. • Ensure materials being stored or transported are covered with tarps or equivalent material.
	Runoff / sedimentation	<ul style="list-style-type: none"> • Halt grading on exposed soil during events of high rainfall intensity and runoff. Consult the Sediment and Erosion Control Plan. • Cover stockpiles of soil with polyethylene sheeting, tarps, or vegetative cover. Where possible, establishment containment structures to trap runoff.
	Wind and water erosion	<p>Particularly in areas with silty deposits (VL3 and VL4) and sloped areas with sandy deposits (see Figure 4.2):</p> <ul style="list-style-type: none"> • Protect exposed soils with coarse granular materials, mulches, or straw along drainage pathways. • Recontour slopes to pre-disturbance conditions.
Revegetation	Runoff / sedimentation / erosion	<ul style="list-style-type: none"> • Initiate replanting of disturbed areas immediately after construction is completed.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

Activity	Potential Impacts	Mitigation Measures
Revegetation (continued)	Compaction of soils	<ul style="list-style-type: none"> • Cultivate affected areas before reclaiming, especially areas with fine textured or organic soils.
	Weed invasion	<ul style="list-style-type: none"> • Revegetate exposed areas at first opportunity. • Ensure topsoil is clean and weed free. If clean fill is unavailable, check on weeds or treat as needed for 3 years following landscaping and revegetation. • Revegetate with Parks Canada approved grass seed mix or the Town seed mix for landscape rehabilitation (see Appendix C). • Monitor the site to ensure appropriate weed control for two years following landscaping (applicable to construction crews only). • Follow Parks Canada Integrated Pest Management Plan 2.4.1 for weed control.
Herbicide/fertilizer use	Contamination of soil or water	<ul style="list-style-type: none"> • Accurately assess the need for chemicals during site revegetation. Use products and methods identified in Parks Canada Management Directive 2.4.1 (1985). • Do not use fertilizers and herbicides in areas where residue or run-off may enter a waterbody or drainage pathway. • Do not over water.
Paving	Dust production	<ul style="list-style-type: none"> • Wet down dry, exposed soils. • Ensure fine materials being stored or transported are covered with tarps or equivalent material.
	Contamination of soil or water	<ul style="list-style-type: none"> • Prepare an appropriate Spill Response Plan. In the event of emergency operations (as defined in Section 4.11 of the MCSR), call 911. The Warden Dispatch can also be contacted (available 24 hours/day) at (403) 762-4506 or the Wardens Office at (403) 762-1470 to notify of any emergency procedures required. • Use an environmentally friendly tack coat and do not apply if rain is in the forecast.
	Noise disturbance and mortality of wildlife due to increased traffic	<p>Adjacent to natural areas.</p> <ul style="list-style-type: none"> • According to the wildlife that may be present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages (breeding, nesting, rearing, migration). Consult with Parks Canada (403-762-1416) to discuss any localized wildlife concerns. • If wildlife mortality is likely to increase due to traffic, post signs to reduce vehicle speeds and increase driver awareness. • Educate workers to not harass or attract wildlife.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

Activity	Potential Impacts	Mitigation Measures
General Activities		
Materials handling / storage	Dust production	<ul style="list-style-type: none"> • Wet down dry, exposed soils or cover with tarps. • Ensure materials being stored or transported are covered with tarps or equivalent material.
	Damage to adjacent vegetation	<ul style="list-style-type: none"> • Excavated material will not be permitted to damage or bury plant material that is to be retained on the site or in adjacent areas. • Protect undisturbed land by only stockpiling materials on heavy canvas or polypropylene tarpaulins to protect native vegetation. Excavated material should not be permitted to damage or bury plant material that is to be retained on the construction site or in adjacent areas.
	Decreased aesthetics (visual) and public safety	<ul style="list-style-type: none"> • Materials will be stored within the confines of the work site.
Equipment operation and maintenance	Decrease in ambient air quality due to emissions	<ul style="list-style-type: none"> • Ensure all equipment is properly tuned, free of leaks, in good operating order, and fitted with standard air emission control devices. • Minimize idling of engines at all times.
	Dust production	<ul style="list-style-type: none"> • Wet down dry and dusty roads. • Do not use oil-based dust suppressants. • Reduce speeds. • Ensure fine materials being stored or transported are covered with tarps or equivalent material.
	Contamination of soil and water from accidental spill	<ul style="list-style-type: none"> • Prepare an appropriate Spill Response Plan. In the event of emergency operations (as defined in Section 4.11 of the MCSR), call 911. The Warden Dispatch can also be contacted (available 24 hours/day) at (403) 762-4506 or the Wardens Office at (403) 762-1470 to notify of any emergency procedures required. • Avoid work in high risk areas, particularly in areas of high water table, steep slopes or in close proximity to streams. • Have spill containment equipment on-hand and ensure that all personnel are trained in their use. • Ensure all construction equipment is free of leaks from oil, fuel or hydraulic fuels. • The crossing of any waterbody (including wetlands) by construction equipment, or the use of such equipment within waterbodies is strictly prohibited unless prior approval has been confirmed.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

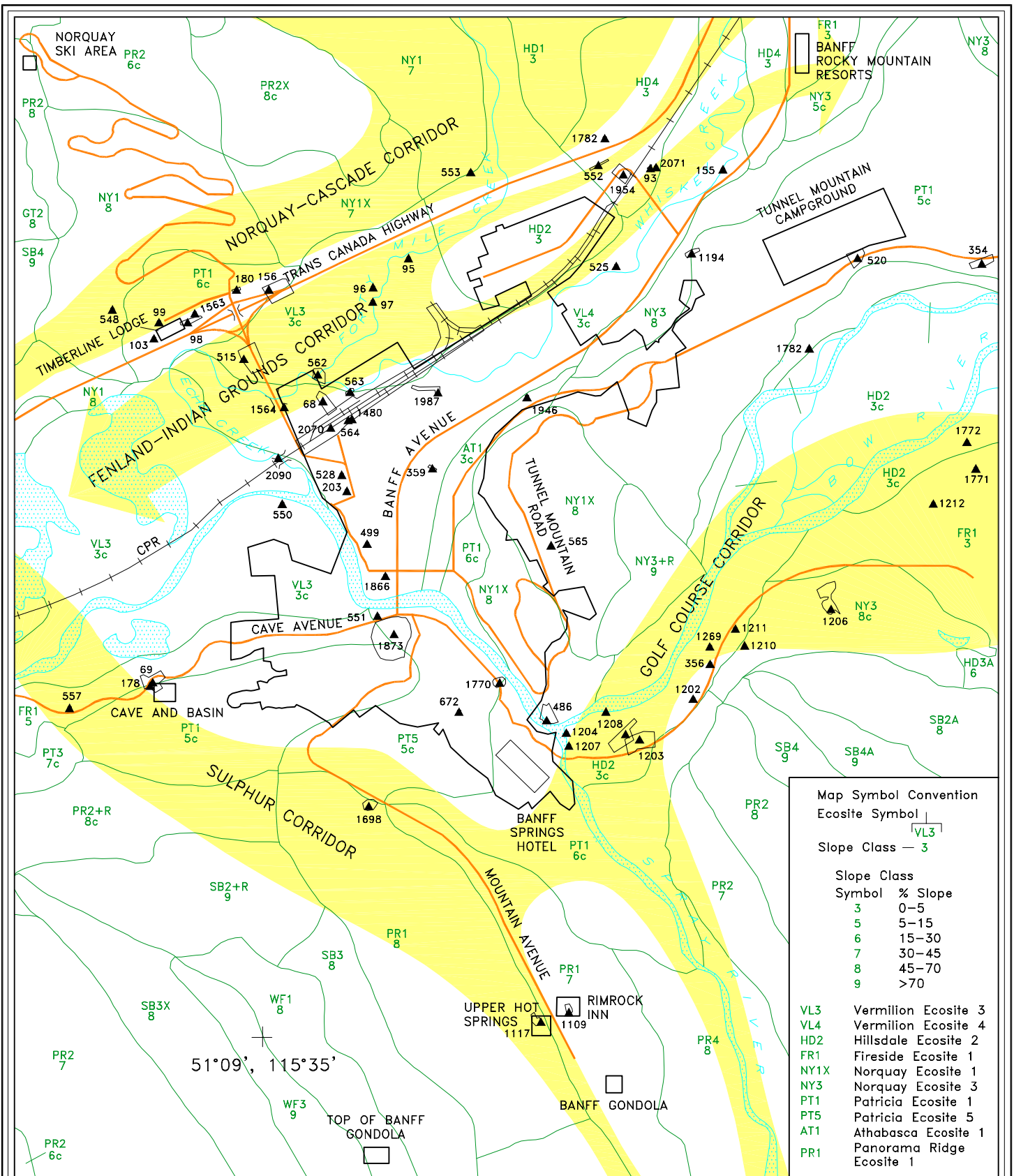
Activity	Potential Impacts	Mitigation Measures
Equipment operation and maintenance (continued)	Contamination of soil and water from accidental spill	<ul style="list-style-type: none"> • Designate refuelling areas at least 100 m away from any water body. Refuelling sites will be bermed with an impermeable liner to contain 125% of the anticipated fuel quantity. Any contaminated rainwater will be moved out of the park.
	Contamination of soil and water from accidental spill	<ul style="list-style-type: none"> • Refuelling activities should not be conducted where run-off could carry contaminants into drainage pathways (including storm sewers). • Dispose of contaminated materials at provincially certified disposal sites outside of the Park. No treatment of contaminated soils (e.g., bioremediation) is allowed in the Park. All applicable documentation demonstrating proper disposal should be obtained.
	Compaction of soils	<ul style="list-style-type: none"> • Restrict vehicular travel and other equipment operation to the construction site and approved access routes. • Vehicle parking will be restricted to specialized areas on the construction site. • Minimize or halt construction traffic during wet conditions when the soil shows signs of ponding or rutting. • In sensitive areas, if possible, use equipment which minimizes surface disturbance including low ground pressure tracks/tires, blade shoes and brush rake attachments.
	Damage to adjacent vegetation	<p>Undeveloped areas adjacent to development site:</p> <ul style="list-style-type: none"> • Careful machine operation is required to ensure that damage to surrounding vegetation does not occur. • Excavated material must not be permitted to bury plant material that is to be retained. Snow fences may be used to prevent excavated material escaping into the surrounding forest. • Hoarding around trees to be retained must be installed beyond the tree's drip line prior to commencement of site work.
	Weed invasion	<ul style="list-style-type: none"> • All construction equipment from outside Banff National Park will be steam cleaned prior to arrival to minimize the risk of introducing weeds. • Construction equipment from outside the Park will not be washed while in the Park.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

Activity	Potential Impacts	Mitigation Measures
Equipment operation and maintenance (continued)	Sensory disturbance to wildlife	<ul style="list-style-type: none"> • All undeveloped areas and areas bordering natural habitat, especially wildlife movement corridors and natural wetlands: • Use existing roadways, pathways and previously disturbed areas for site access and travel within the site. • Educate workers not to enter wildlife corridors. • Confine “noise” activities to hours set out in Town of Banff Noise Bylaw.
	Increased traffic levels	<ul style="list-style-type: none"> • Time construction activities to minimize vehicle conflicts on access roads and/or use flagging personnel.
Waste management (general)	Contamination of soil and water from accidental spill or improper disposal	<ul style="list-style-type: none"> • No rock, silt, cement, grout, asphalt, petroleum product, lumber, vegetation, domestic waste, or any deleterious substance shall be placed or allowed to disperse into any stream, river, pond, sewer, or other water course.
	Aesthetics (visual and smell)	<ul style="list-style-type: none"> • Collect all waste, store appropriately and dispose trade waste at the Bow Valley Waste Management Commission’s Class III landfill, and garbage at the Waste Transfer Station. • All garbage and food must be stored in bear-proof bins as per the Banff Waste Bylaw. • Construction sites must undergo thorough clean-up, including removal of general litter, survey stakes and flagging tape at project completion.
Hazardous materials collection and handling	Contamination of soil or water	<ul style="list-style-type: none"> • Prepare an appropriate Spill Response Plan. In the event of emergency operations (as defined in Section 4.11 of the MCSR), call 911. The Warden Dispatch can also be contacted (available 24 hours/day) at (403) 762-4506 or the Wardens Office at (403) 762-1470 to notify of any emergency procedures required. • All toxic/hazardous materials will be identified during demolition and will be handled as required under the Canadian Environmental Protection Act, Transportation of Dangerous Goods Act and Workplace Hazardous Materials Information Service. • Dispose of contaminated materials at provincially certified disposal sites outside of the Park. No treatment of contaminated soils (e.g., bioremediation) is allowed in the Park. All applicable documentation demonstrating proper disposal should be obtained. Alternatively, use the paint exchange program in Banff. • All hazardous materials and wastes will be clearly labelled with WHMIS labels and information. • Spill contingency plans, equipment and supplies will be present on-site at all times and employees trained in their use.

Attachment 1 Sub-Class 1: Buildings: Mitigations for reducing impacts of building projects -
Continued

Activity	Potential Impacts	Mitigation Measures
Hazardous materials collection and handling (continued)	Contamination of soil or water	<ul style="list-style-type: none"> • All fuels, oils, lubricants and other petrochemical products will not be stored within 100 meters of any waterbody (including wetlands). • Do not store fuels, lubricants, solvents, paints, and other chemicals on site overnight except within construction trailers secured with lock and key. Storage should be on a bermed, impervious site (secondary containment). Permits are required from Banff National Park or Town of Banff. • No rock, silt, cement, grout, asphalt, petroleum product, lumber, vegetation, domestic waste, or any deleterious substance shall be placed or allowed to disperse into any stream, river, pond, storm or sanitary sewer, or other water course.



Map Symbol Convention

Ecosite Symbol | VL3

Slope Class — 3

Slope Class	
Symbol	% Slope
3	0-5
5	5-15
6	15-30
7	30-45
8	45-70
9	>70

VL3	Vermilion Ecosite 3
VL4	Vermilion Ecosite 4
HD2	Hillsdale Ecosite 2
FR1	Fireside Ecosite 1
NY1X	Norquay Ecosite 1
NY3	Norquay Ecosite 3
PT1	Patricia Ecosite 1
PT5	Patricia Ecosite 5
AT1	Athabasca Ecosite 1
PR1	Panorama Ridge Ecosite 1

LEGEND

	Local Study Area (Town of Banff and Outlying Areas)
	Road
	Railroad
	Available Wildlife Corridors
	Ecosites
	Archaeological Site and Sensitive Area

Attachment 2
Ecological Information within the Class Screening Area (Sub-Class 1)

SOURCE: POPE (2001)

Scale 1:30,000
Metres



Attachment 3

Potentially Sensitive Sites in the Class Screening Area

The following represents sites that are potentially sensitive to disturbance. Considerations of these sensitivities should be included in future development plans.

1. General Wetlands and Riparian Habitats

Whiskey Creek and associated springs. Middle Springs Creek and associated springs, Bow River, Forty Mile Creek, Forty Mile/Echo/Whiskey Creek/CPR 'Y' Wetlands, Discharge zones along the toe of Sulphur Mountain, Stables Wetlands (Recreation grounds to Cave and Basin).

2. Sand Dune and Beach Ridges

Fenland, Recreation Centre lands, lands including the train station and extending into residential areas SE of the station into downtown blocks past Rundle Church. Rocky Mountain Resort/new corrals/Brewster Doughnut Area.

3. Stream Levees

Bow River, Forty Mile/Echo Creek

4. Fish Spawning Sites

Forty Mile Creek, Bow River, Whiskey Creek, CPR 'Y'

5. Waterfowl Habitat

Whiskey Creek behind Cougar Street, Bow River, Forty Mile/Echo/Whiskey Creek/CPR 'Y' Wetlands, Stable Wetlands.

6. Beaver Habitat

Potential beaver habitat should be identified and projects designed to minimize the disruption of habitat. Potential sites include the CPR 'Y' and associated lands, Whiskey Creek, Fenlands, Bow River Levees, Horse Bams/Cave and Basin Wetlands.

7. Avifauna

Some parts of the class screening area are used by breeding and migrating birds. The most significant bird habitat is the shrub/wetland area on the Bow River flood plain adjacent to the Recreation Area (Edwards 1988). Other sites should also be reviewed.

8. Vegetation

Disturbance of the following species should be avoided whenever possible:

- Limber Pine: Tunnel Mountain, Hoodoos.
- Douglas Maple: North slope of Tunnel Mountain.
- Douglas Fir: most dry forested sites.

- Aspen: various locations.
- Balsam Poplar: various locations, especially in the vicinity of stable wetlands.

9. Viewpoints/Viewscapes

Surprise Corner, Bow River views, views from the Banff Springs Hotel, Mt. Norquay and Tunnel Mountain Drive.

10. Incidentals

- Fossils: sites should be surveyed for the presence of fossils; known and potential sites include Norquay Road, Bow Falls outcrops. Tunnel Mountain trail, Mt. Rundle talus rocks near the climbing practice rock and the landscaping rock in the recreation grounds play areas. Any exposure/application of "Rundle Rock" should be examined for fossils.
- Glacial Deposits: evidence of glacial and periglacial activity should be preserved as interpretive features. Features include: flutings along upper Tunnel Mountain Trail; till and outwash exposure at Grizzly Street; and outwash gravels at Compound Road turnoff from Banff Avenue.
- Bedrock Exposures offer an opportunity to interpret the geologic history of Banff National Park. Potential sites include: Bow Falls areas. Tunnel Mountain, Drive rock cuts; Buffalo Street; Norquay Road; and. Vermilion Lakes Drive older stone fences.
- Historical features sites should be reviewed for potential historical/archaeological features.