FORESTS FOR TOMORROW (FFT)
FFT ACCESS STANDARDS

ARTICLE 1: DEFINITIONS

In this document:

"culvert" means a pipe, arch or box, or a log structure, not greater than 6 m in span that is located below the surface of a road and is designed to carry water from one side of the road to the other;

"discontinue and close" means a formal notification by MOFR that the ministry no longer administers a road as a forest service road, in accordance with section 121 (9) of the *Forest Act*;

"ford" means a natural or constructed shallow place in a stream where one can cross in a vehicle

"forest resource" means a resource or value associated with the forests of British Columbia, and includes: soils; visual quality; timber; forage and associated plant communities; water; fish; wildlife; biodiversity; recreation resources; resource features; and cultural heritage resources.

"forest service road" means a road owned by the BC Ministry of Forests and Range (MOFR), and as defined in section 1 of the *Forest Act*.

"Global Positioning System (GPS)" means a satellite navigation system, funded by and controlled by the US Department of Defence, that enables the receiver to compute position.

"hazard" (in general terms) means a source of potential harm, or a situation for causing harm, in terms of human injury; damage to health, property, the environment, and other elements of value; or some combination of these. (A landslide is one example of a hazard);

"industrial use" means access for tree planting requiring more than 12 months to complete, or silvicultural treatments requiring transportation of machinery, in accordance with section 22.1 of the *Forest and Range Practices Act*;

"non-status road" means an existing road on Crown land that is not being used under any authorization by a government agency;

"risk" (in general terms) means the chance of injury or loss as defined as a measure of the probability and severity of human injury; an adverse effect to health, property, the environment, or other elements of value, or some combination of these;

"professional engineer" means the same as given in the *Engineers and Geoscientists Act*;

"road" includes roads and bladed and excavated trails;

"road permit" is a permit issued under section 115 of the *Forest Act* to authorize road construction and maintenance by someone who has a right to harvest timber.

"road prism" means the width bounded by the top of the road cut slope on one side and the toe of the road fill on the other side;

"road tenure means those licenses or permits issued by MOFR under the *Forest Act* to authorize forest companies to construct and use roads, and includes road permits, road use permits, cutting permits and various timber harvesting licenses;

"safe fish passage" means passage of fish through culverts for the purposes of spawning, rearing or migration.

"special use permit" means a permit issued by MOFR for road construction and use by non forest users under the *Provincial Forest Use Regulation*;

"turnout" means a short auxiliary lane of sufficient width to provide space for safe passage of motor vehicles;

"wilderness road" means a Forest Service Road or other road under permit that is not being used by industrial users;

ARTICLE 2: OBJECTIVES OF FFT ACCESS

The objectives of FFT access are to provide a safe, environmentally sound road or road network to fully meet the expected results of any FFT project, with proper consideration of information sharing with First Nations and other stakeholders. Proper planning by recipients and MOFR project staff, and resulting lead time for project implementation are key elements in ensuring a successful access project.

The following types of hazards can develop on roads:

- An unsafe road surface for transporting workers due to lack of proper brushing, grading or other surface maintenance treatments, or as a result of washouts or uncontrolled surface erosion;
- an unstable road prism or clearing width, or non-functioning road drainage system, that could result in a landslide or adverse gully erosion process;
- a non-functioning road drainage system that could result in sediment transport from the road prism and clearing width.

To increase the efficiency of program delivery, there may be benefits in carrying out fish passage restoration projects or major drainage structure repairs at priority stream crossings on Forest Service roads serving FFT projects concurrently with other access-related activities for these FFT projects. These are issues that MOFR would otherwise have to address at some future time. Such work could be partially or wholly funded by the program, depending on the immediate FFT need, and carried out as part of the remediation of the access. However, FFT's participation may be limited by the overall project return on investment (ROI).

When a recipient moves out of an area for the season, the roads need to stabilized to a wilderness level of maintenance. When an FFT project or project phase has been completed, the road or road network may need to be deactivated, or stabilized for periods of inactivity to a wilderness road level of maintenance, or returned to a condition similar to that at the outset of the road use if the road is needed for ongoing use by others.

ARTICLE 3: FFT ACCESS

Normally, access works to be carried out by MOFR under this program will be:

- restoring existing roads to a safe, useable, environmentally acceptable state;
- carrying out structural maintenance of the roads where required during the life of the FFT project;
- stabilizing roads as part of a wilderness level of maintenance; and
- deactivating roads that will no longer be required after the FFT project is completed.

The types of works under restoration are re-activating a road that has been previously deactivated, upgrading the condition of an existing road that is in a state of disrepair, and minor surface improvements to facilitate the FFT operations. The Recipients will normally be responsible for the routine surface maintenance of the required roads during the life of the FFT project.

Note: Based on the foregoing, the Recipient is responsible for meeting the statutory requirements of the Forest and Range Practices Act for the routine surface maintenance while they are using the roads for site preparation, danger tree falling, planting or stand tending, including brushing and thinning. MOFR is responsible for meeting the statutory requirements of the Forest and Range Practices Act for the road restoration, structural maintenance, road deactivation/stabilization plus wilderness level road maintenance while the Recipient is not using the road for the activities described above.

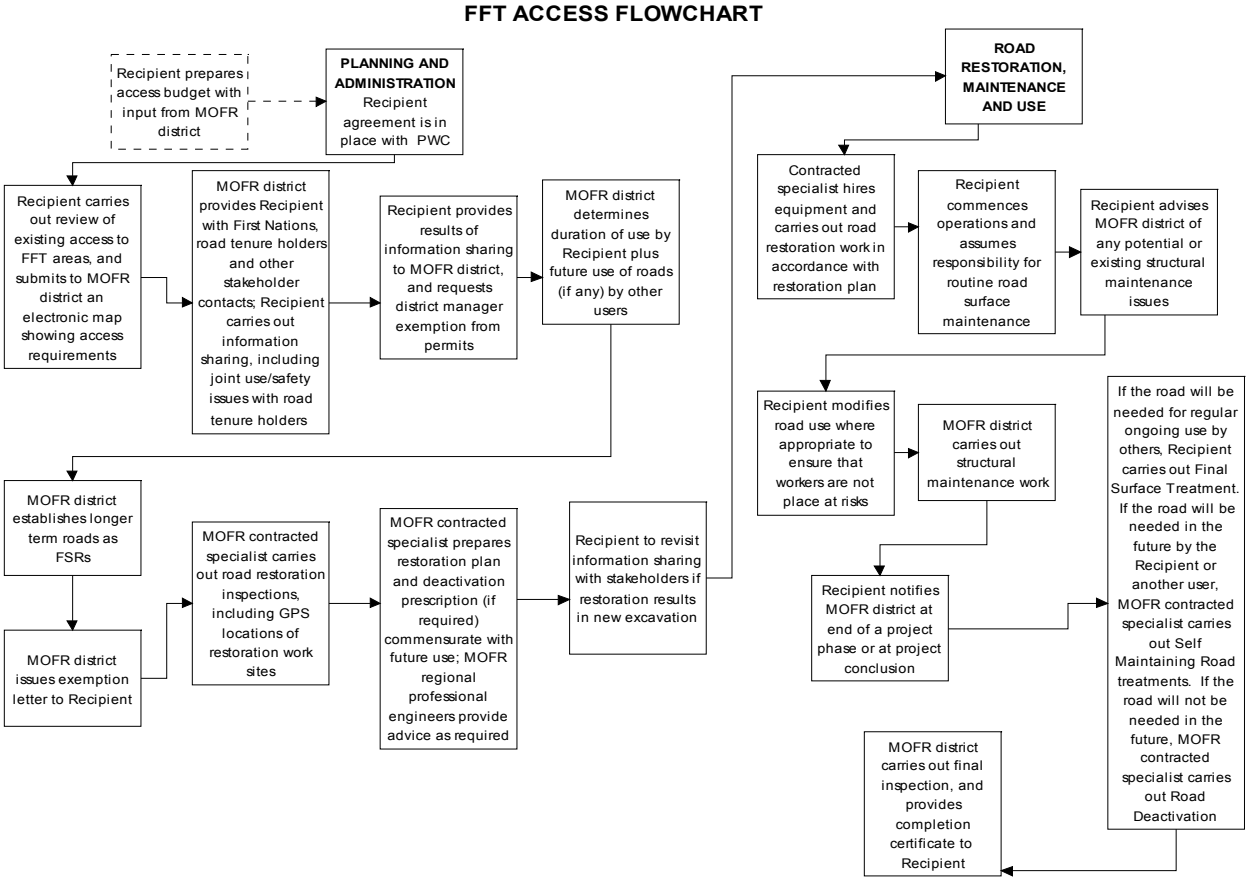
Should it become necessary for MOFR to undertake any works on behalf of the Recipient due to the emergency nature of the work or because of available equipment or expertise, the Recipient must cover off the applicable costs incurred by the ministry.

In rare situations, it may be necessary to construct a new road for an FFT project. In such cases, the road will be established as an FSR and constructed by MOFR in accordance with a plan and specifications.

ARTICLE 4: GENERAL ACCESS REQUIREMENTS

Project Implementation

The following are a flowchart and a corresponding project tracking checklist that show the linkage between access project components, and some of the decision processes and submission requirements associated with the component stages.



FFT Access Project Tracking Checklist

Use this checklist to track key actions/decisions by Recipients and MOFR, and

Access Element	N/A ?	P.Eng required?	Done by
PLANNING AND ADMINISTRATION			
Recipient Agreement in place, together with project budget estimate			RT
Proposed access map prepared and discussed with and submitted to MR			RT
Provide stakeholder contact information to RT			MD
Carry out stakeholder information sharing; share results with MD; request exemption letter			RT
Issue exemption letter to RT			MD
Future use of roads determined, and results provided to RT, MR; establish long term roads as FSRs			MD
Carry out detailed road inspections, locating potential work sites with GPS; prepare road restoration plan, preliminary deactivation prescriptions		□ YES□ NO	CS
Forward data on any unforeseen road works to RT			MD
Revisit information sharing process if required			RT
ROAD RESTORATION, MAINTENANCE AND USE			
Before commencing work, provide 48 hours notice to community watershed purveyors			CS
Carry out road restoration work using hired equipment			CS
Commence FFT project operations; inspect and maintain roads, advise MD of any structural maintenance issues; modify road use as required			RT
Carry out structural repairs		□ YES□ NO	CS
Prepare initial prescription for leaving road in self maintaining state			CS
Conclude seasonal project operations and notify MD			RT
Conclude normal project operations, and notify MD			RT
Carry out self maintaining road treatments			CS
Maintain road to a wilderness level while RT is inactive			MD
Restore/maintain roads for successive RT activities			As above
Once FFT access will no longer be required: Carry out final surface treatment, or			RT
Carry out road deactivation			CS
Field inspection of RT works after all FFT work is completed			MD
Issue completion certificate to RT			MD

Contractual and Legal Requirements

All project component activities must be carried out consistent with the terms and conditions of any permits issued under the *Forest Act* or the *Forest and Range Practices Act* or exemptions to those permits, and with any requirements found in the *Forest and Range Practices Act* and its regulations respecting the maintenance of the roads. In addition, all works and processes must be consistent with the Recipient Agreement.

Duties of Recipient

The Recipient must initially determine the required access routes and specific road sections to provide this access, and this information must be provided to the MOFR district ideally one year or more in advance of the planting work. The Recipient may participate in joint initial road inspections with the contracted specialist, and must share with MOFR district any data that it has respecting access to the FFT project, including proposed access routes to the planting area and any specific information related to the location and condition of the road or road network.

Once any road restoration work has been completed and the Recipient has commenced operations, the Recipient is responsible for:

- road inspections, including bridges and culverts, during the period of road use, as well as
- surface maintenance on the roads serving the FFT project, unless the road is already being maintained by a permit holder.

As a result of the road inspections (or through any other process), should the Recipient find any structural problems during the period of road use, the Recipient must so advise the MOFR district and request repairs. The Recipient has a duty of care to its employees to modify its use of the roads when problems arise so that users are not subjected to an elevated risk.

The Recipient must contact any existing road permit, road use permit or special use permit holders on the roads serving the FFT project. The Recipient must come to an agreement with those permit holders as to the Recipient's share of the road maintenance costs while the FFT project is operational. If such an agreement becomes problematic, the recipient must so advise the MOFR district and request assistance in negotiating with the permit holder.

ARTICLE 5: SURVEY AND MAPPING OF FFT ACCESS

General

As part of the overall FFT project plan, the Recipient must determine the location and extent of existing road access to the planting areas. This information normally is obtained using current map information supplemented by field reconnaissance and surveys. Each road or trail must be at or improved to one of the following levels:

- 2 wheel drive (usually roads currently being maintained by a road tenure holder or MOFR)
- 4 wheel drive (usually roads on which access is to be restored prior to the commencement of the FFT project)
- ATV (usually non-bladed trails that service the actual planting sites from the junctions at the nearest roads)

Survey and Mapping

GPS Surveys

Roads are originally established by the Recipient on the road map using existing spatial information. The road map must contain UTM coordinates on the axes. Generally no further map data will be required, but in those circumstances where required by MOFR district, spatial data must then be confirmed and

amended by the Recipient using GPS surveys. In addition, the contracted specialist may be required to spatially locate individual works sites such as drainage structures using GPS instrumentation.

All GPS traversing must be completed with a survey grade instrument, and all GPS traversing shall conform to the Standards outlined in the British Columbia Standards, Specifications and Guidelines for Resource Surveys Using Global Positioning System (GPS) Technology Operational (Release 3.0 March 2001). This document is available at: http://srmwww.gov.bc.ca/bmgs/gsr/gsr_standards.htm

All GPS data must be captured in such a manner to yield positional accuracy results that are plus or minus 10 meters in x, y. Existing roads are to be submitted as single line strings (centerline). Each section from tie to tie point, (road intersections) is to be a discreet line string. All roads must intersect with a connecting road at a noded point.

Digital Mapping Submission Standards

The existing roads must be added to base map information at a scale of 1:20,000. Mapping submissions may be PDF files derived from a hard copy map.

Information Sharing

The Recipient must carry out all necessary First Nations and other stakeholder information sharing, and provide MOFR district with the results of the information sharing. MOFR district will assist the Recipient in identifying local stakeholders and providing contact information.

Road Tenures

If a road is an existing forest service road with no existing road use permit holder (maintainer):

- MOFR district, through its contracted specialist, will carry out required road restoration to a standard that will enable the Recipient to carry out its project works safely and address environmental issues
- MOFR district will provide an exemption letter to exempt the Recipient from any road use permits to maintain the road during the life of the FFT project (see Appendix I attached)
- for those roads that will be deactivated at the conclusion of the FFT project, MOFR district will discontinue and close the road at that time; if the decision is not to deactivate the road, there will be no change to the road tenure

If a road is an existing forest service road with a road user permit holder in place that is responsible for carrying out the road maintenance:

- no work will be carried out by MOFR district or the Recipient; for such roads, a Recipient must enter into an agreement with the license/permit holder regarding restoration work in accordance with the approved plan, as well as joint road use and safety issues;
- if no road use agreement can be worked out between the Recipient and the road use permit holder, MOFR district may consider issuing a road use permit to the Recipient, and shifting the maintenance responsibilities to the Recipient for the duration of the Recipient's activities.

If a road is an existing road under license, cutting permit, road permit or special use permit:

- no work will be carried out by MOFR district or the Recipient; for such roads, a Recipient must enter into an agreement with the license/permit holder regarding restoration work in accordance with the approved plan, as well as joint road use and safety issues;

If a road is an existing non-status road:

- for those roads that will remain in use for forest management purposes after the completion of the FFT project, MOFR district will establish the road as an FSR; otherwise, MOFR district will not establish the road as an FSR (however, by carrying out works on such a road, MOFR district has accepted the road as an FSR)
- MOFR district, through its contracted specialist, will carry out required road restoration to a standard that will enable the Recipient to carry out its project works safely

- MOFR district will exempt the Recipient from requiring a Special Use Permit to maintain the road during the life of the FFT project

ARTICLE 6: ROAD WORKS

Implementation:

Works that are required to be carried out on roads that will serve as FFT project access are:

- detailed initial road inspection (including GPS locations of specific drainage structures or other works sites, restoration report and deactivation prescriptions) – carried out by MOFR district, through its contracted specialist
- road restoration – carried out by MOFR district, through its contracted specialist
- road structural maintenance – carried out by MOFR district, through its contracted specialist
- routine road surface maintenance – carried out by the Recipient
- road treatment at project conclusion – carried out by MOFR district, through its contracted specialist, or by Recipient, depending on treatment

Any professional assessments or designs needed for the above activities will be carried out by MOFR district, either by utilizing MOFR's regional professional engineers or qualified consultants recommended by the regional professionals. In the latter case, the regional professional engineers will also assist in drafting the terms of reference for any professional contracts, and reviewing the reports/designs for acceptance.

Road Inspection

MOFR district, through its contracted specialist, will undertake a detailed field inspection of the roads that are expected to provide access to the FFT project. This may be done as part of or in conjunction with a joint site visit with the Recipient to ensure that the restoration plan is compatible with the Recipient's expectations of access.

Inspection records must ensure that key road elements are covered and any deficiencies noted. Where major problems exist, it is recommended that photographs be taken to accompany the inspections records. Information on the following items should be recorded on the FFT Road Inspection Report (see Appendix I attached) when an inspection is carried out:

- structural integrity of the road prism
- drainage systems
- road and bridge surfaces
- safe fish passage at stream crossings
- road safety

MOFR district, through its contracted specialist, will prepare a restoration plan based on the inspection report information as well as a deactivation prescription, and will also prepare a cost estimate for the restoration and deactivation work to be included in the MOFR region's ROI calculation for the FFT project. Based on positive results of the ROI calculation, MOFR district, through its contracted specialist, will proceed to restoration of some or all of the proposed road access. Otherwise, a negative ROI figure may result in selecting some alternative access options (helicopter, ATV) or in deletion of some of the planting sites from the program.

Road Restoration

Overview:

Road restoration work is the responsibility of MOFR district, and may include both surface and structural maintenance activities to improve the condition of the access. The program's objectives are that, consistent with the proposed lifespan of the road, the restoration work:

- provides the Recipient with timely 4 wheel drive truck access to FFT projects
- meets safety requirements associated with the implementation of FFT project operations, which include use by equipment, service and crew vehicles supporting the Recipient's operations
- protects the structural integrity of the road prism and cleared area
- ensures that drainage systems are functional
- minimizes the transport of sediment from the road and its effects on other forest resources
- ensures that safe passage for fish is provided at stream crossings

Based on the restoration plan, MOFR district, through its contracted specialist, will carry out any required restoration work on those non-status roads required for access to the FFT project, using hired equipment on an hourly basis, directed by an equipment supervisor hired/retained by MOFR district using an FS21 Engineering Equipment Rental Agreement (see Appendix I attached). This equipment will be selected using MOFR's EES [http://apps28.for.gov.bc.ca/ees] list of available equipment, on the basis that the total equipment rental cost for any one road project will not exceed $50,000.

In keeping with government's objectives, the FFT program will encourage First Nations engagement in delivery of on the ground activities. Where qualified First Nation contractors are available and prices can be negotiated comparable to tendered contracts, MOFR district and the Recipient are to target 25% of their investment schedules to First Nations proponents, subject to their:

- meeting the eligibility requirements, and
- negotiation of competitive pricing for the hired equipment hourly rates.

General Requirements:

Restoration work will normally involve some or all of the following:

- brushing of the road clearing width to achieve vegetation control and to provide safe sight distances;
- removal of snags and leaning or overhanging trees that are a safety concern for road users;
- cleaning and grading ditches;
- cleaning and repairing culverts (including restoring fish passage) and fords;
- stabilizing road cut and fill slopes, landslides, rockfalls, and other sites of significant hazard;
- repairing of minor scours and washouts;
- repairing and grading the running surface of the road;
- repairing or replacing bridges;
- repairing or replacing cattleguards; and
- repairing or replacing damaged or missing signs.

Detailed Road Restoration Standards:

Brushing

Brushing is to be carried out when one of the following conditions occurs:

- The sight distance (the distance at which oncoming vehicles can be seen) and/or the usable road width are dangerously impeded or reduced. For example, potential hazards exist where brush

limits visibility at the inside of a curve or at bridge approaches

- The useable road width is dangerously reduced to the point that vehicles cannot safely pass each other at road widenings or turnouts.
- Drainage systems are functioning below acceptable levels and roadside vegetation is a major contributing factor.

Manual methods for removing trees, brush, and other vegetation may include the use of axes, machetes, sandvik axes, chainsaws, or gasoline- or air-powered circular saws. These methods are labour-intensive and require close supervision to ensure good production and worker safety.

Mechanical methods may include the use of crawler tractors, graders, hydro-axes, hydro-mowers or attachments for graders, front-end loaders, and excavators. The higher cost of operating mechanical equipment is usually offset by increased brushing productivity and user safety when compared to manual brushing and vegetation control methods.

Site chipping or mulching should be used to minimize the fire hazard and increase the rate of decomposition. Mulch material can often be left in the ditchline as it will usually flush out and through cross-drain culverts.

Unless specifically approved by MOFR district, chemical defoliants and herbicides will not be used.

Brushing projects can create several hazards that must be taken into account during operations:

- Accumulated cut vegetation can plug culvert intakes and should be cleaned by hand concurrently with the brushing operation.
- Accumulated vegetation can plug ditchlines and should be either cleaned by hand or by a follow-up machine concurrent with brushing operations.
- Serious physical injury or equipment damage can occur when debris being cut by a machine shatters and flies in unpredictable directions. Appropriate roadway control (such as warning signs) should be used during operations.

Dangerous Tree Removal

All snags and leaning or overhanging trees that are a safety concern for road users or workers are known as “dangerous trees” and are defined by the Workers’ Compensation Board of BC (WorkSafeBC), in Occupational Health and Safety Regulation (Sec. 26.11). That regulation also **requires** that such trees must be felled; this is usually accomplished by hand falling.

Ditch and Culvert Repairs

One of the most critical aspects of any road restoration project is maintenance of the drainage system. Depending on the life of the road for the FFT project, the following types of works usually help to minimize the likelihood of clogged or damaged drainage systems which can potentially cause road washouts:

- Clean and grade ditches.
- Replace or repair ditchblocks, small culverts, flumes and rip rap, head walls, and spillways, particularly during and after major storms and after yarding and loading operations.
- Shape and grade off-take ditches to drain away from the road prism.
- Clean and repair culvert inlets, outlets, catch basins, trash racks, flumes, and transition areas from the ditchline to catch basins.

The primary function of road side ditches is to collect moisture from the road surface and the road base, directing the water to suitable discharge locations.

The following steps will be carried out as appropriate for the life of the road:

- Ditch maintenance will normally be limited to removing rock falls and any slumping or ravelling material, while maintaining as much grass cover or other low vegetative cover as is practicable.

- For those roads that will remain in service beyond the life of the FFT work, clean and grade ditches to keep them clear of obstructions that might seriously impede drainage flow. Debris that is hindering the flow of water should be removed. However, grass or low vegetation lining the ditches is desirable to minimize scour and sediment transport.
- Ensure that ditch water can enter culverts freely and directly. Ditches should be free of large pools of standing water to prevent saturation and weakening of the road subgrade, which can result in surface rutting.
- Keep the ditch elevation below the level of the subgrade to ensure the free drainage of the road base. The ditch gradient must be sufficient to maintain a continuous flow.
- When cleaning ditches, do not undermine ditch slopes, cutbanks, road shoulders, and culvert catch basins, and do not block the ends of culverts.

Material excavated during ditch cleaning that is unsuitable as surfacing or sidecast should be hauled to a designated spoil site. Ditches must be unobstructed by tall vegetation, so that maintenance equipment operators can prevent damage to culvert ends while they are cleaning the ditches.

A critical element with closed bottom culverts is their propensity for hindering fish passage, particularly over time. Culverts must be assessed, and appropriate actions taken to restore fish passage. This may require reconstruction of the culvert or modification of the site by backwatering or through baffle or weir installation to achieve passage flows.

Culvert maintenance operations must be carried out at a time and in such a way as to minimize the potential for sediment transport to streams, and include:

- cleaning and repairing culverts and ancillary drainage works (including outlet scour holes, the inlet settling basin, debris barriers and trash racks) to provide for flow of water; during cold weather operations, hot water generators, steam generators, or compressed air may be required to thaw culverts to provide for flow;
- replacing cross-drain culverts, flumes, and rip rap;
- installing additional cross-drain culverts and ditch blocks where required (usually evident where standing water or scour is observed in the bottom of the ditches).

If an existing cross‑drain culvert cannot be unplugged in place, consideration should be given to removing and cleaning it, and then re-installing the culvert. Irreparable culverts must be replaced.

Road Subgrade

Road subgrade restoration is necessary to ensure that the road system will fulfill its designed function until deactivation. The measures that might be suitable, depending on the remaining life of a road, are:

- stabilizing the road cut and fill slopes, repairing minor scours and washouts;
- removing loose rocks and stumps, or other unstable materials that present a hazard to road users;
- cleaning up slides, slumps, rock falls, and other sites where potential hazards are evident; and implementing professional measures to stabilize the site (if materials generated by the work cannot be otherwise used or sidecast on site, they should be removed and disposed of in designated disposal sites);
- correcting the potential failure of approach fills at stream crossings.

For roads that will remain in service beyond the FFT project, additional measures may include:

- repairing chronic soft subgrade areas and problematic frost sections by excavating and replacing the weak soils with suitable granular material, including use of geosynthetics where appropriate;
- replacing or repairing the running surface if the road has chronic problems with ruts, potholes, and a broken surface that renders the road unable to support design loads;
- relocating the road (may require an approved road layout and design);

Road Surface (Grading)

Roads must be graded to prevent water from standing or running down the road in wheel ruts or because of a lack of crowning, to maintain structural integrity or help protect the subgrade from damage. Grading to remove wash-boarding or pothole formation can also help reduce the costs of maintenance for those vehicles using the road, and can improve the safety of road users.

Road grading must take place when moisture conditions are suitable, and not when the road is either too wet or too dry. Grading material over the banks or into ditches must be minimized, as this material is difficult to retrieve.

Routine Road Surface Maintenance

Overview:

Routine road surface maintenance is the responsibility of the Recipient while carrying out the following FFT project operations:

- site preparation;
- planting; and
- stand tending, including brushing, thinning, etc.

At other times, while the road is active, MOFR district will be responsible for this routine road surface maintenance at a wilderness road level until the responsibility can be transferred to another user, whether it be the Recipient or another industrial user.

This type of maintenance incorporates regular inspections, and both regularly scheduled and remedial works carried out to ensure that road users can operate safely and forest resources are suitably protected.

General Requirements:

Brushing of the road clearing width must be carried out to achieve vegetation control and to provide safe sight distances.

Grading must be carried out to facilitate traffic and provide proper road surface drainage.

Ditches must be cleaned and graded as necessary so that there is no serious impediment to water flow.

Other required works may include the maintenance/repair of stream culverts, bridge surfaces, signs, cattleguards, and fences, as well as snow ploughing.

Detailed Routine Surface Maintenance Standards:

Brushing

This work consists of cutting all vegetative growth, including trees and other vegetation on roadway surfaces and roadsides. In addition to the following, ensure that any dangerous trees that may reach the road surface are felled.

Brushing is required when one of the following conditions occurs:

- Usable road width may be reduced to the point that vehicles cannot safely pass each other at road widenings or turnouts, or brush dangerously impedes sight distance at the inside of a curve or at bridge approaches or where heavy snow loads, on roadside trees, may cause the trees to bend over the road surface, both restricting use of the road and creating a safety hazard. In addition, where snow removal is an issue, brushing must be sufficient to accommodate snow placement beyond the road shoulder without impeding sight distance.
- Drainage systems are functioning below acceptable levels and roadside vegetation is a major contributing factor.

Grading

Roads must be graded to improve vehicle efficiency and ensure user safety. A properly graded road will also reduce the chance of sediment transport from the road surface. As such, roads must be graded before the surface:

- reaches severe stages of washboarding or pothole formation
- begins to trap water in windrows or ruts (windrows can result in water flowing down the road, scouring the surface, and causing a washout when it reaches a dip in the road).

Grading, including the shaping of the road shoulders, should take place only when moisture conditions are suitable, and not when the road is either too wet or too dry. Preferably, no windrows should remain after the final pass; at the very least, those that do remain should be breached to provide for drainage. Surfacing material should not be graded over the banks or into ditches, as this material is difficult to retrieve onto the road.

Where roads are required for winter operations, snow must be removed from all or part of the traveled way, including turnouts, when the road becomes unsafe for the FFT operations. Gravel or other surfacing material must not be bladed off the road, and snow removal must be restricted to the usable road surface having roadbed support, including turnouts. Keep drainage ditches, drainage dips and culverts functional during periods of melt.

Ditch and Cross Drain Culvert Maintenance

The following types of maintenance works must be carried out where required to minimize the likelihood of clogged or damaged drainage systems which can potentially cause road washouts:

- clean and grade ditches; care must be taken to prevent undercutting of the cut slopes—a practice that will reduce their stability.
- clean and repair culvert inlets, outlets, catch basins, trash racks, flumes, and transition areas from the ditchline to catch basins.
- replace or repair ditchblocks, small culverts, flumes and rip rap, head walls, and spillways, particularly during and after major storms.

Particular care must be taken to minimize sediment when maintaining roads near fish streams or streams that are within domestic or community watersheds.

Installation of additional cross-drain culverts may be required to reduce ponding of water or scour in ditches.

Ditches must be kept unobstructed by vegetation, so that operators of maintenance equipment can see the drainage structures.

Stream Culvert Maintenance

In addition to the guidelines for maintenance related to fish habitat set out in the Fish-stream Crossing Guidebook, stream culvert maintenance must be carried out to ensure that a structure maintains its capability to convey stream flow. Such works include:

- repairing damaged inlets and outlets;
- repairing armouring around inlets and outlets to reduce sediment transfer, particularly in community watersheds; and
- removing debris blocking or obstructing culvert inlets;

Before beaver dams are removed, the Ministry of Environment must be contacted for permission and advice. Installation of beaver protection devices should also be considered.

Bridge Surface Maintenance

The maintainer must repair or protect parts of the bridges and approaches that do not directly affect structural integrity, including:

- repairing and replacing bridge signage including delineators;
- keeping the waterway opening free of logs and debris;
- resetting nails protruding from running planks;

- replacing missing or damaged running planks;
- repairing or replacing damaged guardrails or curbs; and
- eliminating pot holes on bridge approaches.

Sign Maintenance

Sign maintenance includes cleaning, replacing, and reconditioning signs, posts, and markers that currently exist or are the maintainer's responsibility to install. These may include radio frequency call signs, information signs, kilometer markers, traffic control signs and bridge delineators.

Sign maintenance includes regular hand brushing around them to ensure they are fully visible.

Maintaining Fences

Range fences that have been damaged as a result of activities on the road must be repaired or replaced. The Range Section in the local district office of MOFR can advise on acceptable fence construction specifications and practices.

Maintaining Cattleguards

Cattleguard maintenance includes:

- keeping rails, fences, posts, and gates in good condition to ensure that the cattleguard fulfills its function.
- repairing broken welds or members promptly.

Winter maintenance

To facilitate safe use of the roads during winter use, the maintainer must:

- remove snow from all or part of the travelled way, including sufficient turnouts for safe and efficient if to be used for timber transportation.
- restrict snow removal to the usable road surface having roadbed support, including turnouts.
- wing back or breach snow banks to facilitate drainage at a sufficient number of locations to reduce water flow along road surfaces during periods of melt.

and must not undercut cut slopes or blade surfacing material off the road.

Road Shut Down criteria

The Recipient must cease vehicle traffic on the road or sections of the road that exhibit any or all of the following:

- rutting to the point that there is mixing of subgrade material with surfacing material (this can occur during thawing of the road or during periods of road saturation).
- damage to the subgrade is occurring
- surfacing material is eroding due to flowing water on the road

and must not resume use until the road is able to support vehicle loads and sedimentation has abated.

Road Structural Maintenance

Overview:

The MOFR district, through its contracted specialist, will carry out any required structural maintenance of the roads serving FFT projects during the life of the FFT project. Generally, MOFR district will inspect the affected road sections as a result of information provided by the Recipient.

General Requirements:

Structural maintenance is necessary to ensure that the road subgrade and drainage structures will fulfill their designed functions until deactivation. Measures may include:

- repairing the road subgrade and drainage structures where problems are occurring
- road modifications (may require a road design)
- cleaning up slumps and rockfalls and other sites of significant hazard, and stabilizing the site where necessary.

Detailed Structural Maintenance Standards:

Repairs to the road subgrade and drainage structures are normally specific to the element at risk and its shortcomings. As such, the detailed site specific requirements must be detailed by MOFR district, through its contracted specialist, together with any professional engineering input, prior to the works being carried out.

Road Treatment at Project End

Overview:

Three options are available to deal with roads at the conclusion of the FFT project, based on the district's determination of future needs for the roads:

- deactivated road - carried out by MOFR district, through its contracted specialist
- self-maintaining road – carried out by MOFR district, through its contracted specialist
- final surface treatment – carried out by the Recipient

At the conclusion of the FFT project, the Recipient must notify MOFR district that the project is complete, and that the Recipient has addressed all of its road responsibilities. The MOFR district will carry out an inspection of the roads serving the project, and MOFR district will provide the Recipient with:

- a completion certificate (see Appendix I attached) if satisfied with the Recipient's road works; or
- a remediation order to properly complete its road obligations, if not satisfied with the Recipient's road works.

General Requirements:

Deactivated Road

For roads maintained by the Recipient that MOFR district has determined will not be required when the Recipient concludes operations on an FFT project, MOFR district, through its contracted specialist, will deactivate the roads. The intent of road deactivation is to place a road in a self-maintaining state that will indefinitely protect adjacent resources at risk. Road deactivation requirements typically include removing bridges and stream culverts, stabilizing the road prism, and barricading the road surface width in a clearly visible manner to prevent access by motor vehicles (other than all-terrain vehicles).

Self-Maintaining Road

For roads maintained by the Recipient that MOFR district has determined will be left as wilderness roads when the Recipient suspends or concludes operations on an FFT project, MOFR district, through its contracted specialist, will construct cross ditches and water bars, and take other actions as required to provide environmental protection while the road is a wilderness road (according to a plan similar to a ***Type 1 deactivation prescription*** described below and with hired equipment as per restoration and deactivation works). Until such time as the Recipient continues operations or until another user is made responsible for maintenance, MOFR district, through its contracted specialist, will carry out inspections and road maintenance.

Final Surface Treatment

At the conclusion of the FFT project, for those roads that have been maintained by the Recipient that MOFR district has determined will be required for continuing access by others, the Recipient must return the road to a state that is at least equivalent to when the Recipient commenced work on the FFT project.

The Recipient's work will generally consist of a final grading together with ensuring that drainage structures and ditches are functional.

Detailed Road Deactivation Standards:

The decision to deactivate roads is made by the district manager, who identifies the roads as being candidates for road deactivation because there is no future use required, or to reduce risk, or the cost of deactivating plus eventually reactivating these roads is less than the cost of carrying out maintenance to a wilderness road level of maintenance over the period of expected closure.

For roads maintained by the Recipient that MOFR district has determined will no longer be required for use once the FFT project is completed, MOFR district, through its contracted specialist, must deactivate the road so as to place the road in a self-maintaining state, to meet the following objectives:

- stabilizing the road prism and clearing width.
- maintaining natural surface drainage patterns on the area within the road right-of-way and in adjacent or connected areas affected by the works both during and after construction.
- minimizing the impact of silt and sediment transport on other forest resources.
- in a fish stream, providing for safe fish passage and protection of fish habitat immediately upstream and downstream, and ensure the timing and description of the work are also aimed at achieving those objectives.

To achieve these objectives, MOFR district, through its contracted specialist, will carry out the works as required by a deactivation prescription and in accordance with statutory requirements.

Deactivation Prescription

Deactivation work must be carried out in accordance with an approved deactivation prescription. A deactivation prescription is a written document that clearly communicates the objectives and the works to be performed. A deactivation prescription must:

- define the objectives of the planned deactivation work, the vehicle access requirements (if an exemption under legislation has been granted to permit access by motor vehicles), and the techniques to be performed by station; and
- report special requirements (e.g., worker safety issues and other important requirements explained below).

A terrain stability professional must carry out a terrain stability assessment and prepare a road deactivation prescription if any of the following apply:

- terrain stability mapping indicates that the road is located on terrain that is unstable or potentially unstable;
- terrain stability mapping has not been done, and the road is located on terrain with slopes greater than 60%;
- the road is located on terrain where there are indicators of slope instability;
- the areas downslope or upslope of the road (or adjacent to or connected to it) contain elements at risk of damage or loss from a landslide, and the road crosses areas having a moderate or high likelihood of landslide occurrence;
- the road crosses areas where the product of the likelihood of a landslide occurring within a given period of time, and the likelihood will reach or affect the site occupied by a specific element of concern, is greater than low.

Following are the types of deactivation prescriptions:

Type 1 deactivation prescription: *The road traverses gentle terrain with no landslide hazard. There are a few crossings of S6 streams and some cross-drain culverts on the road. The risk of damage to adjacent resources is low or minimal. Deactivation measures are limited to water management techniques (such as installation of cross-ditches or waterbars and back-up of some stream culverts) and revegetation of*

exposed soils using a suitable grass seed and legume mixture.

- The prescription requirement is a 1:5000 scale topographic map (or other suitable scale) showing the locations of recommended actions (and corresponding to the chainages of field markings) suitable for communication of the required works to field crews (and review and acceptance by the District).

Type 2 deactivation prescription: *The road traverses gentle to moderate terrain with no landslide hazard. There are culvert and bridge crossings of S5 and S4 streams, and cross-drain culverts along the road. Deactivation measures may include water management techniques (such as installation of cross-ditches or waterbars, removal or back-up of cross-drain culverts, and removal or back-up of stream culverts) and other measures such as repair of bridges and revegetation of exposed soils using a suitable grass seed and legume mixture.*

- The prescription requirements are a 1:5000 scale map (or other suitable scale) showing the locations of the actions corresponding to the chainages of field markings, and a tabular summary (spreadsheet) to accompany and complement the map. The tabular summary will provide more detailed information such as general site conditions, the size of existing culverts and bridges, sediment transport hazards and consequences, and methods to control sediment transport, including the measured chainages along the road and the corresponding actions. In this case, the prescription must clearly identify the fish streams and the timing windows for working in and about a stream.

Type 3 deactivation prescription: *The road is located on a mid-slope and traverses steep terrain and areas having a moderate to high likelihood of landslides. There may be visual indicators of road fill instability, surface soil erosion, and previous road fill washouts along the road.*

- This is a complex project, involving deactivation prescriptions for unstable terrain and the services of a Terrain Stability Professional. The deactivation prescription would include a 1:5000 scale map showing the locations of the actions corresponding to the chainages of field markings, a tabular summary (spreadsheet) to accompany and complement the map, and a detailed letter or report. The prescription should clearly identify the timing windows for working in and about streams. The prescription should also specify the need for any professional field reviews during the deactivation work.

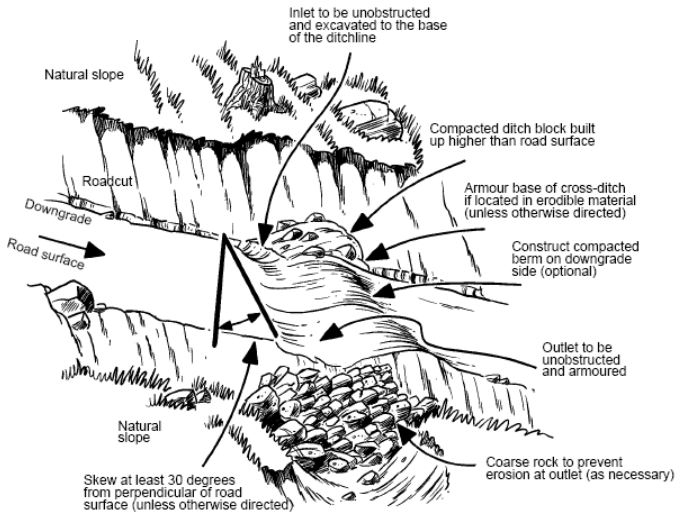
Deactivation Works

In accordance with the deactivation prescription, mandatory requirements for road deactivation include:

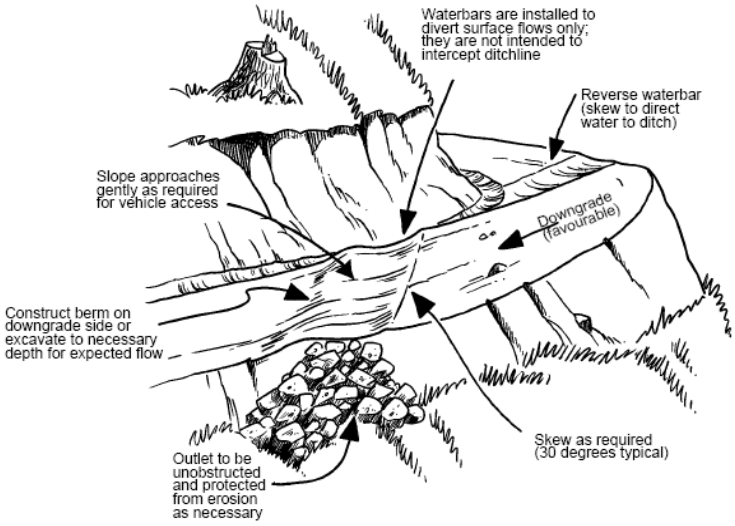
- removing all bridge and log culvert superstructures and all stream pipe, pipe-arch, and box culverts, and restoring channel and bank stability as required;
- removing bridge and log culvert substructures, if the failure of these substructures would have a material adverse effect on downstream property, forest resources, or other social and economic values;
- stabilizing the road prism or the clearing width of the road if stabilization (through water management, road fill pullback, and revegetation techniques) is necessary to reduce the likelihood of a material adverse effect on forest resources and other social and environmental values; and
- subject to District Manager exemption, barricading the road surface width in a clearly visible manner to prevent access by motor vehicles (other than all-terrain vehicle) using the installation of the most appropriate of the following barriers:
    - gate;
    - a soil or rock berm;
    - concrete blocks;
    - an excavation; and
    - other suitable barrier.

To assure drainage and stability, the following practices may be employed in the appropriate locations:

- constructing water bars along the road as shown below to intercept water on the road surface and convey it onto stable slopes below the road, in the following situations:
    - there is surface flow on the road grade (road scour)
    - relatively steep road grades
    - throughcut with steep grades, and surface erosion is expected
    - upgrade of a switchback to keep water off steep road grades at the switchback



and constructing cross ditches as shown below to back up cross drain and stream culverts, or to divert ditch water where there are insufficient cross drains and convey it onto stable slopes below the road:



- removal of stream culverts
- drains
- swales
- armoured fords

- insloping/outsloping road surfaces
- pullback of road or slope material

To control surface soil erosion and sediment transport, all exposed soils that will support vegetation must be seeded. This should be undertaken in the first growing season.

Warning signs must be erected during the period of road deactivation activities. Before the activities begin, hazard-warning signs should be installed at appropriate locations to warn potential users of the road of the hazards that can be expected on the whole road or at a particular location.

MOFR district, through its contracted specialist, will carry out any required deactivation work on those non-status roads required for access to the FFT project, using hired equipment on an hourly basis, using an FS21 Engineering Equipment Rental Agreement (see Appendix I attached). This equipment will be selected using MOFR's EES [http://apps28.for.gov.bc.ca/ees] list of available equipment, on the basis that the total equipment rental cost for any one road project will not exceed $50,000.

In keeping with government's objectives, the FFT program will encourage First Nations engagement in delivery of on the ground activities. Where qualified First Nation contractors are available and prices can be negotiated comparable to tendered contracts, MOFR district and the Recipient are to target 25% of their investment schedules to First Nations proponents, subject to their:

- meeting the eligibility requirements, and
- negotiation of competitive pricing for the hired equipment hourly rates.

APPENDIX I – SAMPLE DOCUMENTS

FFT ROAD INSPECTION REPORT

STANDARD EXEMPTION LETTER

FFT ROAD PRESCRIPTION

FS21 ENGINEERING EQUIPMENT RENTAL AGREEMENT

COMPLETION CERTIFICATE

APPENDIX I

FFT ROAD INSPECTION REPORT

Forest Region		*Forest District*
Date: Y M D	*FFT Project #*	*Road Identifier from Map*

GPS Co-ordinates at Start of Road:
GPS Co-ordinates at Termination of Road:

Inspection Items: mark with an X if applicable and note station(s)

X?	*Inspection Items*	*Station(s)*	*Remedial work required (if any):*	*Est. Cost*
	Structural Integrity:			
	Tension cracks			
	Cutslope failures			
	Fill slope failures			
	Slides or mass land movements			
	Shoulder slumps			
	Frost boils			
	Subgrade unable to support wheel loads			
	Washouts			
	Bridge exhibiting structural distress			
	Other (specify)			
	Road Surface:			
	Trees growing within road subrade			
	Existing waterbars and cross ditches			
	Insufficient road surface material			
	Potholes			
	Washboard			
	Rutting from vehicle wheels			
	Road surface erosion			
	Sediment transport from road prism			
	Other (specify)			
	Bridge Surface:			
	Waterway opening contains logs and debris			
	Running planks missing or damaged			
	Rails and curbs damaged			
	Drainage Systems:			
	Inadequate no./size of cross drain culverts			
	Culverts plugged			
	Culverts washed out			
	Culvert and/or ends damaged			
	Insufficient fill over culverts			
	Ditch line sloughing			
	Fish passage restricted			
	Other (specify)			
	Road Safety:			
	Sight distances inadequate			
	Dangerous trees			
	Traffic control signs			
	Other (specify)			
			TOTAL ESTIMATED COST	

APPENDIX I

STANDARD EXEMPTION LETTER

File:

Dear _____:

Under the authority granted the Minister in Section 22.1 (4) of the *Forest and Range Practices Act*, this will confirm your exemption from requiring either a Road Use Permit or a Special Use Permit for the duration of your use of the roads serving the _____ FFT area, as shown on the attached map.

The legislation provides that although you have been exempted from the permit(s) described above, you are responsible under the regulations for the maintenance of those roads that are non-status (not tenured) and those FSRs that are not currently maintained by an industrial user, for the duration of your use.

This exemption is granted subject to the following condition(s):

1. the exemption applies to your use of the roads when you are carrying out site preparation, danger tree falling as required by the Workers' Compensation Board of BC (WorkSafeBC), in Occupational Health and Safety Regulation (Sec. 26.11), planting or stand tending, including brushing and thinning; at other times, you are not responsible for road maintenance.
2. you must give any holder of a road permit or a road use permit (with maintenance responsibilities), at lease five clear days of notice of your commencing to use their road(s).
3. If required by the permit holders in (2) above, the exemption holder must pay for road use in accordance with section 22.3 of the *Forest and Range Practices Act*.
4. Where there are posted signs indicating a two-way radio system for use on a road maintained by another user, the posted radio frequency must be used in the prescribed manner. The Recipient must make arrangements with the road maintainer to obtain the necessary equipment or to use the frequency.

Yours truly,

District Manager
_____ Forest District

Attachment(s): see map

FFT ROAD PRESCRIPTION
(attach map of appropriate scale showing roads described below)

RECIPIENT: _____ FFT PROJECT: _____

Select one of the following activities:

☐ DEACTIVATION (includes removal of all bridges and culverts)
☐ STABILIZATION FOR WILDERNESS ROAD MAINTENANCE

ROAD ID	STATION		DITCHES	STABILITY/ EROSION	DRAINAGE	COMMENTS
	FROM	TO				

MOFR REPRESENTATIVE SIGNATURE:	DATE:

Ditches:
CO = clean out sediment
R = re-establish ditches

Stability/Erosion:
PB = pull back fill to inside cutbank
RV = revegetate erodible surfaces

Drainage:
W = waterbar
CD = cross ditch
RS = remove structures

APPENDIX I

BRITISH COLUMBIA
The Best Place on Earth

Ministry of Forests and Range

ENGINEERING EQUIPMENT RENTAL AGREEMENT

CONTROL NO.

THIS AGREEMENT made this _____ day of _____, _____

BETWEEN:

HER MAJESTY THE QUEEN in right of the Province of British Columbia, as represented by the Minister of Forests

_____
(Ministry Location)

_____
(Address)
(herein called the "Province")

FILE NO.: _____

EES CLIENT NO./IDENTIFIER _____

AND _____
(Name)

_____
(Business Address)

_____
(City, Province) (Postal Code)

_____
(Phone No.) (Cellular Phone No.)

_____
(Fax No.) W.C.B. Registration No.)
(herein called the "Contractor")

WHEREAS:

A. The Province requires the use of certain equipment from time to time for work on various projects.

B. The Contractor has agreed to rent to the Province on an "as and when" required basis, certain equipment on the terms and conditions contained herein.

Accordingly, the parties agree as follows:

1. Equipment and Rental Rate

(a) The Contractor will supply to the Province, when requested, the following equipment (the 'Equipment') at the all found rates [drawn or adapted from the current *Equipment Rental Rate Guide,* referred to as *the Blue Book* published by the B.C. Road Builders and Heavy Construction Association shown below. Use Schedule A when needed for additional equipment.

Make & Type of Machine	Serial No.	Year & Model	Rated Size & Capacity	*Attachments & Crew*	*Hourly Rate [$]*

(b) If the Province orders in writing any of the Equipment to be on standby, the Province will pay the applicable standby rate for the Equipment so indicated on Schedule A.

2. **Fuel, Lubricants, Maintenance, Parts and Repairs**

The Contractor shall, at the Contractor's expense, supply all fuel, lubricants and parts for the Equipment

and shall, at the Contractor's expense, carry out all necessary and appropriate maintenance and repairs to the Equipment.

3. Worksite and Point of Hire, Mobilization and Demobilization

(a) The Point of Hire shall be mutually agreed to between the Province and Contractor, and shown on the *Project Time Report (Daily)* FS472, or the *Project Time Report (Bi-Weekly)* FS472A.

(b) The equipment shall be used at a location (the Worksite) subsequently determined by the Province, and shown on the *Project Time Report (Daily)* FS472, or the *Project Time Report (Bi-Weekly)* FS472A.

(c) The Province shall determine the cost to be paid for mobilization and demobilization for each piece of equipment per project. The amount to be paid shall be shown on the *Project Time Report (Daily)* FS472, or the *Project Time Report (Bi-Weekly)* FS472A. The cost shall include the loading, transporting and unloading of equipment from the Point of Hire to the Worksite and return to the Point of Hire.

(d) The Contractor shall pay and agree to the cost of transporting the Operator and Crew to and from the Worksite.

4. **Supervision of Work and Worksite**

Any use of the Equipment at the Worksite shall be under the direction of an agent designated by the Province.

In signing this Agreement, the Contractor certifies that he/she understands the Additional Conditions appearing on the reverse of this form, and on any attachment hereto.

IN WITNESS WHEREOF the parties have executed this Agreement as of the day and year first above written.

PROVINCE	**CONTRACTOR**
SIGNED AND DELIVERED on behalf of the Province by an authorized representative of the Province	SIGNED AND DELIVERED by or on behalf of the Contractor (or by an authorized signatory of the Contractor, if a corporation)
(Authorized Representative/Spending Authority)	(Contractor or Authorized Signatory)

READ TERMS ON REVERSE SIDE

5. **Termination of Agreement**

(a) Unless otherwise agreed, the term of this Agreement shall end on March 31 of the year following the date this Agreement is signed.
(b) The Province may, at its sole discretion, terminate this Agreement upon 24 hours notice. Payment by the Province of all monies then due and owing to the Contractor for the use of the Equipment under this Agreement shall discharge the Province from any and all liability to the Contractor under this Agreement.

6. **No Obligation to Proceed**

(a) If the Province requests the Contractor to provide Equipment for a specific project, the Contractor shall have the right to elect whether or not to so proceed, and the Contractor shall not be liable for breach of this Agreement if the Contractor elects not to proceed.
(b) The Province shall not be obliged to request Equipment at any time, and the Province shall not be subject to any liability for breach of this Agreement if the Province decides not to do so.

7. **Payment of Invoices**

(a) Contractor shall submit written invoices in a form acceptable to the Province on a monthly basis or at other times as designated by the Province.
(b) Invoices shall be based on the actual hours the Equipment is operated, plus an amount for mobilization and demobilization, plus standby time where applicable, as recorded on Daily Time Reports initialled by the Contractor's operator and certified correct by the Province, multiplied by the applicable rates and subject to any deductions as may be otherwise provided in this Agreement.
(c) Under no circumstances shall the Province be obliged to pay charges in excess of $100,000 under this Agreement.
(d) Subject to performance and observance by the Contractor of the conditions set forth in this Agreement, the Province shall pay the amount of monies due to the Contractor in accordance with the Province's payment practices and the *Financial Administration Act*.
(e) Interest less than $5.00 will not be paid. No interest will be paid unless and until an account is overdue by at least 61 days. The overdue period shall be calculated from the date the Province approves payment or the date the invoice is received (whichever is the later) to the date the cheque is printed by the Ministry of Finance.

8. **Contractor's Indemnification and Insurance**

(a) The Contractor shall indemnify and save harmless the Province, its employees and agents, from and against any and all losses, claims, damages, actions, causes of action, costs and expenses that the Province may sustain, incur, suffer or be put to at any time either before or after the expiration or termination of this Agreement, where the same or any of them are based upon, arise out of or occur, directly or indirectly, by reason of any act or omission of the Contractor or of any agent, employee, officer, director or subcontractor of the Contractor pursuant to this Agreement, excepting always liability arising out of the independent negligent acts of the Province.
(b) All Equipment hired by the Province must be insured by the Contractor against loss or damage.
(c) The Province shall not be responsible for loss or damage occurring to the Equipment, regardless of how, when or where the damage occurs and, in signing this Agreement, the Contractor relieves the Province and its employees from any and all responsibility for such loss or damage.
(d) The Contractor, in the event of any loss or damage, shall take reasonable steps to prevent further loss, including removal of the Equipment.
(e) The Contractor shall provide, maintain and pay for Comprehensive General Liability insurance protecting the Province and the Contractor from and against any and all claims which may arise out of the Contractor's operation and handling of the Equipment during the rental period:
    (i) The amount of such insurance shall be not less than $2,000,000 inclusive of any one occurrence.
    (ii) The Contractor shall provide the Province with evidence of such insurance prior to the commencement of Work under this Agreement, and such evidence shall be in the form of a completed Province of British Columbia Certificate of Insurance.

9. **Miscellaneous**

(a) The Province certifies that the Equipment, Materials and associated accessories and Crew are for the use of and are being acquired by the Province with Crown funds, and are therefore not subject to the Goods and Services Tax.
(b) The Contractor shall do the following:
    (i) At its own expense, obtain Workers' Compensation Board compensation coverage for itself, all workers and any shareholders, directors, partners or other individuals employed or engaged as a result of this Agreement,
    (ii) Comply with all the requirements of the *Workers' Compensation Act* and Regulations, and pay all assessments and levies made thereunder, and
    (iii) Upon request by the Province, provide proof of such compliance.
(c) The Contractor shall, in connection with this Agreement:
    (i) Establish and maintain accurate books of account and records (including supporting documents) to the satisfaction of the Province, and when requested, permit the Province, at any time during normal business hours, to copy and audit any one or more of the books or account or records (including supporting documents), and
    (ii) Permit the Province, at all reasonable times, to inspect and copy any findings, data, specifications, drawings, working papers, reports, documents and material, whether complete or otherwise, that have been produced, received or acquired by the Contractor as a result of this Agreement.
(d) By mutual agreement of the parties, this Agreement may be amended in writing.

10. **Drilling and Blasting Requirements**

(a) A blaster must be licenced with the appropriate class, under the Workers' Compensation Board, to carry out the work. The Contractor must produce evidence of the licence upon request of the Province.
(b) The drilling equipment associated with this Work is hired at the rental rate shown in clause 1, which shall include driller/licensed blaster, a helper, support vehicles, drill steel, bits, grinders, blasting agent loading attachment as required, powder magazine and/or day box, blasting mats, signs, warning signal horns, tools, blasting machine and miscellaneous items required in the loading and blasting phase of the Work.
    (i) The full rate shown in clause 1 will be paid for the hours that the Equipment and Crew are drilling and positioning, and when loading a blasting agent using the compressor;
    (ii) One-half of the full rate will be paid for the hours loading explosives which do not require the compressor, and/or when the Crew and drilling equipment are required by the Supervisor to remain on-site but are not able to work.
(c) The Contractor shall promptly remove all unused, damaged or deteriorated explosives or detonating devices, and shall remove any undetonated explosives upon completion of the Work.
(d) A blasting log recording the loading details, including a diagram of the blast pattern, and post-site examination must be available upon request at the blast site. Upon completion of the project, the blasting log, if requested, will be given to the Province.
(e) The Contractor shall ensure that all Equipment and operations comply with the *Motor Vehicle Act*, the *Motor Carrier Act* and all other applicable Federal Acts, including the *Explosive Act (Canada)* and all Regulations pursuant to these Acts.
(f) The Contractor shall:
    (i) Provide all explosives and detonators at cost plus 10%. The cost shall include PST, but not GST, and
    (ii) Submit to the Ministry copies of the supplier's invoice(s) for the explosive materials actually used on the project, to verify the Contractor's costs.
(g) The Contractor shall use only rock-drilling and blasting techniques which minimize disturbance to forest resources and existing improvements, minimize fly rock and reduce the potential for landslides or slope instability.

Ministry of Forests and Range

Attachment to the Rental Agreement dated_____

Control No.:_____
File No.:_____
Project No.:_____

SCHEDULE A

☐ Equipment added during the term of this agreement. Date _____

☐ Equipment required to be on standby. Date _____

Make and Type of Machine	Serial No.	Year and Model	Rated Size & Capacity	Attachments and Crew	Hourly Rate [$]	Standby Rate [$/hr.]

PROVINCE	CONTRACTOR
SIGNED on behalf of the Province	SIGNED on behalf of the Contractor
(Authorized Representative/Spending Authority)	(Contractor or Authorized Signatory)

PROCEDURES FOR COMPLETING AND USING THE EQUIPMENT RENTAL AGREEMENT

FS 21 Engineering Equipment Rental Agreement

- The FS21 may be used for one or more pieces of equipment owned by a particular supplier.
- The EES Client Number/Identifier field refers to existing MOFR Client Number or Key Identifier assigned in the BC Bid System.
- The equipment is listed in Clause 1(a) on the front page of the FS21 and on Schedule A if additional space is needed.
- Rates must be negotiated for each project and for each piece of equipment, using as a guideline the rates set out in the annual *Equipment Rental Rate Guide,* referred to as *the Blue Book* published by the B.C. Road Builders and Heavy Construction Association.
- If during a project, the Province requires a piece of equipment to be on standby, a new Schedule A is used to list the equipment and show the agreed-to standby rate ($/hr). The Schedule A is dated, signed by both parties, and attached to the FS21.
- If during the life (term) of the FS21, a particular supplier wishes to add additional pieces of equipment to the list already provided and shown in clause 1(a), the additional equipment may be added to Schedule A.
- **The Worksite, Point of Hire, cost of Mobilization, and Demobilization, referred to in clause 3, are shown on the time cards. See Time Cards FS472 and FS472A for more details.**
- Clause 5 deals with termination of the agreement.
- Clause 6 simply describes that just because an agreement is signed, there is no obligation, by either party, to use the equipment listed in the agreement.
- Clause 10 describes payment for drilling and blasting operations and payment of explosive materials.

APPENDIX I

FORESTS FOR TOMORROW (FFT) ACCESS COMPLETION CERTIFICATE

RECIPIENT NAME	FILE NO.
FFT PROJECT NAME AND LOCATION	PROJECT NO.
RECIPIENT'S ADDRESS	
DESCRIPTION OF ROAD WORK (CHECK APPLICABLE BOXES) ☐ ROUTINE SURFACE MAINTENANCE ☐ ROAD FINAL SURFACE TREATMENT	MINISTRY COST ESTIMATE FOR ROAD WORK (TO BE COMPLETED ONLY ON MOFR COPY OF THIS CERTIFICATE)
This is to certify that, as of _____, 20____, the work has been carried out to the Province's satisfaction in accordance with the FFT Access Procedures.	
DATED THE _____ DAY OF _____, 20_____.	MINISTRY REPRESENTATIVE'S SIGNATURE

1 COPY TO RECIPIENT; 1 COPY TO MOFR DISTRICT (INCLUDING COST ESTIMATE)