We found six steep road sections that created a risk to the environment and were not safe for public use. How did that happen? In five cases, there was no specialist involved in the road design or construction — no professional plans or advice on addressing the risk. As a result, the roads were built using conventional construction techniques and the outcome was not acceptable. In the sixth case, a professional was brought in and a plan was prepared, but the licensee chose not to follow it.

The government and public rely on qualified professionals to provide the planning, direction, and oversight so that the risk of steep road sections is addressed. As a result, the roads were built using conventional construction techniques — no professional plans or advice on addressing the risk.

Some of the problems found by the Board investigation that either directly or indirectly affect the individual practitioner were:

- Lack of identification of potential hazards by professionals;
- Poor presentation of hazards to operators;
- Lack of professional input;
- Failures to follow the plan;
- Lack of adequate road construction follow-up inspections;
- Inconsistency between geometric road designs and field markings; and
- Failure to identify a coordinating registered professional (CRP).

Members need to ensure the geometric road designs clearly identify the hazards and risks associated with the construction/deactivation and contain the necessary information for safe and stable construction/deactivation operations. Ask yourself:

- Can the operator understand and follow the plans?
- Does the road design clearly identify the intended road use objectives?
- Have the critical sections been clearly identified in the field and are follow up inspections being undertaken and documented?
- Are qualified registered professionals being used where required?

It is also necessary to understand what triggers the need for retaining a specialist for the various components of a road to be constructed on steep slopes.

Before the implementation of FRPA, the existence of one of three terrain indicators: 1) unstable or potentially unstable terrain as indicated on terrain mapping; 2) indicators of unstable terrain in the field; and 3) slopes greater than 60 per cent, triggered the requirement for a terrain assessment, which in turn provided guidance or recommendations for safe construction practices.

Under the current legislation, deciding if a terrain assessment is necessary falls to the CRP. It’s a necessary step, regardless of whether or not it’s a legal requirement, which means the CRP needs to make that decision, apply diligence to the work, document the rationale behind the decision, and be accountable for it.

Our investigation also found 10 road segments on steep slopes that were very well constructed. In all 10 cases, the members involved followed the guidelines, clearly understood their roles and responsibilities, and brought in specialists to provide guidance where appropriate. That should be the standard for this type of work.

If you are involved in a steep road construction or deactivation project and you are not sure what needs to be done to get it right, contact your professional association.

The Forest Practices Board is BC’s independent watchdog for sound forest and range practices, reporting its findings and recommendations directly to the public and government.

Garth Lord, P.Eng, has over 35 years of experience, including over 20 years with the BC Forest Practices Board as lead auditor, roads and structures. Garth joined the Board staff as a manager of audits and investigations in 2013. He is a professional engineer registered with Engineers and Geoscientists of British Columbia and has a Bachelor of Science from the University of New Brunswick.

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The government and public rely on qualified professionals to provide the planning, direction, and oversight so that the government and tenure holders can achieve a safe work place and good results on the land. A coordinating registered professional (CRP) needs to ensure they have the skillset to undertake a road construction/deactivation project on complex terrain. While the Forest and Range Practices Act (FRPA) is relatively silent on public safety, the associations’ guidelines identify obligations to provide for worker and public user safety and to protect the environment.

Members undertaking the role of a CRP should be aware of these guidelines and the roles and responsibilities involved.

In September 2017, the Forest Practices Board released a report on road construction in steep terrain. The Board examined 26 road segments across BC that were constructed in steep terrain (greater than 60 per cent slope). While the investigation found that some road segments were well built, it also found that professional foresters and engineers are not always following the Guidelines for Professional Services in the Forest Sector - Forest Roads, prepared by the Joint Practices Board of the ABCFP and the Engineers and Geoscientists of BC. The Board's report was followed by a joint press release from the two associations who will look into the professional practice issues identified by the investigation.

But what does this mean for you, the forest professional? How do you make sure you are doing the right thing when working on road construction projects in steep or complex terrain?

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The Watchdog's view

By Garth Lord, P.Eng

Road Construction on Steep Slopes – Getting it Right