

# Self-Screening Registration Criteria

## **P12: Terrain Stability Assessments for Forest Roads**

### **Mandatory Knowledge Requirements**

The Ministry of Forests and Range will only contract with qualified professional engineers (PEngs) or professional geoscientists (PGeos) to carry out terrain stability assessments of new or existing Forest Service roads related to road route planning, construction, maintenance, and deactivation activities. Professionals providing this service must:

1. be members in good standing with the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC);
2. have thorough knowledge about: geomorphology, forest hydrology, airphoto interpretation, and soil mechanics; forest road route planning, and forest road construction, maintenance, and deactivation techniques; best management practices for soil erosion and sediment control; geologic hazard and risk identification and analysis; landslide avoidance; mitigation and remediation; adverse gully processes and fan destabilization processes; slope stability analysis; and harvesting and silviculture methods;
3. have considerable recognized specialization in terrain stability assessments;
4. be thoroughly familiar with the “Guidelines for Terrain Stability Assessments in the Forest Sector” (APEGBC 2003) available at <http://www.apeg.bc.ca/library/practiceguidelines.html>;
5. be thoroughly familiar with Provincial legislation such as the *Forest Practices Code of British Columbia Act*, *Forest and Range Practices Act*, and *Water Act*, and associated regulations under those acts, including the Water Regulation, Forest Road Regulation, and the Forest Planning and Practices Regulation, among other legislation relevant to specific projects in forest road route planning, construction, maintenance and deactivation;
6. have a comprehensive working knowledge and understanding of the principles and best management practices provided in the following government publications, among others as required:
  - Forest Practices Code of BC Mapping and Assessing Terrain Stability Guidebook (August 1999)
  - Forest Practices Code of BC Gully Assessment Procedure (February 2001)
  - Best Management Practices Handbook: Hillslope Restoration in British Columbia (November 2001)
  - Forest Practices Code of BC Forest Road Engineering Guidebook (June 2002)
  - Forest Practices Code of BC Fish-stream Crossing Guidebook (March 2002)
  - Forest Practices Code of BC Riparian Management Area Guidebook
  - Forest Practices Code of BC Fish-stream Identification Guidebook
7. have a comprehensive working knowledge and understanding of the principles, best management practices, and standards (as applicable) provided in the following publications:

- “Using Teamwork to Maximize Efficiency in Terrain Stability Field Assessments”  
<http://www.degifs.com/pdf/Using%20Teamwork%20to%20Maximize%20Efficiency%20in%20Terrain%20Stability%20Field%20Assessments.pdf>
  - “What does it take to be a qualified registered professional? Example of terrain stability field assessments” <http://www.degifs.com/pdf/TSFA%20skill%20set%20-%20JPB.pdf>
  - Jacob, M. and O. Hungr (eds). 2005. Debris-flow Hazards and Related Phenomena. Springer, Chichester, UK: In association with Praxis Pub.
  - Fell, R., K.K.S. Ho, S. Lacasse, and E. Leroi. 2005. A framework of landslide risk assessment and management – State of the Art Paper. In *Landslide Risk Management: Proceedings of the International Conference on Landslide Risk Management*, Vancouver, Canada, 31 May – 3 June, 2005. Hungr, O., R. Fell, R. Couture, and E. Eberhardt (eds). A.A. Balkema Publishers, Great Britain.
  - IUGS Working Group on Landslides, Committee on Risk Assessment. 1997. Quantitative risk assessment for slopes and landslides – the state of the art. In *Landslide Risk Assessment: Proceedings of the International Workshop on Landslide Risk Assessment*, Honolulu, Hawaii, February 19-21, 1997. Edited by Cruden, D.M. and Fell, R. A.A. Balkema Publishers. Netherlands.
  - Australian Geomatics Society Sub-committee on Landslide Risk Management. 2000. *Landslide Risk Management Concepts and Guidelines*.
  - Wise, M.P., G.D. Moore and D.F. VanDine (eds). 2004. *Landslide risk case studies in forest development planning and operations*. B.C. Min. For., Res. Br., Victoria, B.C. Land Manage. Handb. No. 56. Web site:  
<http://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh56.htm>
8. in the case of projects that come under the control and administration of BC Timber Sales (BCTS), obtain BCTS Environmental Management System (EMS) Level 3 training prior to commencing work on any BCTS Worksite.

## **Mandatory Experience Requirements**

All registered professionals providing terrain stability assessments for Forest Service roads require a minimum of 5 years of demonstrated relevant professional experience in forestry or related resource industries in British Columbia. Registered professionals must have specific work experience in the following terrain stability assessment activities for forest roads:

1. Fieldwork as necessary for:
  - assessment of terrain stability for proposed or existing road routes
  - characterization of existing landslide hazards (terrain and terrain stability conditions) in areas within, adjacent to or connected to the road corridor
  - evaluation of the potential for existing effects of the road on terrain stability
  - determination of landslide hazards and potential or existing effects of the road on identified elements at risk of damage or loss, and recommendations for site-specific actions to reduce and/or manage the landslide and erosion hazards and risk resulting from the development.
2. For new roads, site-specific recommendations for alternative road locations, construction techniques, drainage layout and installation, inspection frequency, and expected requirements

for road maintenance and deactivation based on predictions of response of the terrain to development.

3. For existing roads, site-specific recommendations for modifications to roads, upgrading/modification of the drainage installation, changes to inspection procedures and/or frequency, and road maintenance and deactivation.
4. Preparation of detailed reports, drawings, specifications and cost estimates related to road planning and works.
5. Field reviews during road construction, maintenance and deactivation works to provide quality assurance and confirmation of conformance to design, including:
  - field monitoring of construction activities during critical phases
  - reviewing and interpreting design and shop drawings
  - assessing actual field conditions for consistency with design assumptions and recognized “changed conditions”
  - assessing alternatives, and providing revisions to designs for “changed conditions”
  - preparing as-built drawings, and providing statements of construction conformance.