

4.2 Structure Design & Construction Professional Responsibilities & Considerations

4.2.1 General

The *Guidelines for Professional Services in the Forest Sector - Crossings V. 2* (the Guidelines) are intended to establish standards of practice for forest road crossings that members should meet to fulfill professional obligations, including the duty to protect the safety, health and welfare of the public and the environment. Failure to meet the intent of these guidelines could be evidence of unprofessional conduct and may give rise to disciplinary proceedings by the ABCFP or the APEGBC. Delivery of professional services for a crossing can involve the practice of professional forestry and professional engineering.

Consistent with the Guidelines, for any forest road crossings, a CRP **must** take responsibility for planning and coordinating all the professional services for the project, including the design, field reviews, as built/record drawings and Road Project Assurance Statement. As well, this manual applies the same rationale to determining professional practices and responsibilities for the design and construction of retaining structures greater than 1.5 m high. The CRP must direct those activities with sufficient oversight and supervision such that he/she can take overall responsibility and accountability for the crossing or retaining structure.

As to who can be a CRP or a POR for bridges:

- for those bridges that meet the tests provided in the Guidelines for **simple** crossings, the CRP or POR may be either a forest professional or a professional engineer;
- for those bridges that meet the tests provided in the Guidelines for complex crossings, the CRP or POR must be a professional engineer.

A professional engineer or a forest professional in a structure project may be involved in some or all of the following:

- project organization and assignment of responsibilities;
- planning and design;
- general considerations;
- hydrology and hydraulics;
- plans and supporting documents;

- approaches and alignment;
- foundations and substructures;
- superstructures;
- materials fabrication and construction field reviews; and
- Structure Project Assurance Statement (see Appendix 8.2).

For forest road crossings and retaining structures greater than 1.5 m high, often the major volume of work applied to such projects is the structural design, materials and construction field reviews and resulting conformance assurances. For such cases, the work would normally be carried out by or on behalf of a specialist professional, identified as the Professional of Record (POR). A POR's responsibilities may include:

- preparation of the general arrangement and construction drawings;
- completion of materials fabrication field reviews; and
- completion of the POR Construction Assurance Statement (see Appendix 8.3), including preparation of as built/record drawings, where the POR is not also the CRP;
- completion of the Structure Project Assurance Statement, including preparation of as built/record drawings, where the POR is also the CRP.

The CRP may or may not also be the POR for the project. Every project requires a CRP, but not necessarily a POR. Those items not carried out by the POR are done by the CRP, and the CRP signs off that the completed structure has adequately addressed any other resource issues that were identified at the outset of the project.

A project may require the use of one or more specialists. The specialist will obtain relevant project information from the CRP or the POR, and carry out the specific duties and tasks that have been assigned to the specialist by the CRP or the POR.

4.2.2 CRP Skill Sets for Crossings

Some proficiency is required in all facets of a simple crossing project, including:

- layout
- site data collection
- site plan
- hydrology/hydraulics
- determining span length
- selecting substructure type

For simple bridge crossings, a CRP must have appropriate training in subjects such as:

- crossing structure design;

- forest road design;
- terrain analysis;
- soil strength and other soil properties;
- stream flood hydrology and hydraulics; and
- route and site surveying.

For CRPs having limited university/technical school level academic equivalents for the above subjects, but having successfully completed applicable courses and seminars, ensure that the Understanding and Familiarity applies, and that the Experience is particularly applicable and complete.

A CRP needs to be generally familiar with guidebooks and professional guidelines applicable to:

- fish stream identification;
- fish stream crossings;
- forest road engineering;
- terrain stability management and assessment;
- riparian management; and
- other relevant manuals.

A CRP also needs to be familiar with the following items on a region or area-specific basis:

- methods of bridge construction;
- common road construction practices;
- factors affecting workability/stability/performance of fills and cut slopes;
- relevant regulatory requirements for bridge design and construction;
- assessing environmental impacts; and
- worker and bridge user safety.

A CRP should have sufficient bridge project experience, derived from several projects a year spread over a period of at least three years, such that the experience would include:

- working under the supervision or mentorship of a Professional Engineer seasoned in this area of practice;
- a range of ground conditions and design complexity; and
- time spent with bridge foremen and machine operators carrying out bridge construction and maintenance.

The CRP's work experience and responsibilities during that period should be a combination of **all** of the following:

- planning;
- field layout of bridges;
- bridge site data collection and site plan preparation;
- general bridge design, and coordination of specialist design components;
- bridge construction; and
- bridge use and maintenance.