

**To: All Engineering Directors
All Regional Directors
All HQ Directors: Operations, Planning and Major Projects
All District Managers Transportation
All Engineering & Technical Staff**

Subject: Design Exception Process

Purpose:

To outline the Design Exception Process related to MoTI Engineering design policies, standards and guidelines.

General:

Staff are expected to follow MoTI engineering and environmental design criteria, standards and guidelines as provided in MoTI Manuals, Technical Circulars and related documents (the **standards**) when carrying out engineering and environmental design work. From time to time it may not be possible or economically feasible to meet the **standards**. In those instances the following design exception processes for the applicable area of design work shall be followed.

Design Exception Process for Bridge and Structural Design:

The governing standards for bridge design in the Ministry are CSA S6-14: Canadian Highway Bridge Design Code (CHBDC) and the Ministry's Supplement to the CHBDC S6-14. The Supplement takes precedence over the Code.

Deviations from the requirements of the Supplement and the Code require approval of the Chief Engineer. The terms "Approval" and "Approved" are used in both the Supplement and the Code and where these terms are used it means that approval is required from the Chief Engineer. This requirement is defined in the Code and the Supplement.

Some clauses of the Supplement use the wording "... unless consented to by the Ministry...." When this wording is used, Ministry means the BC Ministry of Transportation and Infrastructure engineer who has the authority, responsibility and technical expertise to vary from the Supplement to S6-14 as allowed herein. The intent here is to give Ministry engineers the authority to accept certain variations as described in the Supplement. This process is defined in the Supplement.

Design exceptions requiring approval from the Chief Engineer are first submitted to the Director, Structural Engineering for input and support. Once accepted, the Director will submit the exception to the Chief Engineer. Requests for design exceptions should clearly identify the standard from which the exception being requested, cost impacts, risks and any proposed mitigation, options, schedule impacts, or other pertinent information.

Design Exception Process for Geometric Design:

For highway geometric design, the Ministry adheres to the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads as well as the BC Supplement to TAC Geometric Design Guide. The Supplement takes precedence over the TAC Guidelines.

For geometric design work, a design criteria sheet must be completed, which presents a comparison of: existing highway parameters; design criteria stipulated in the Guidelines; and proposed design criteria for the project. The proposed design criteria must then be accepted and signed off by the appropriate engineer, as noted on the design criteria sheet. Minor exceptions to the standards must be signed off by the Senior Engineering Manager, Highway Design Services. Major exceptions must be signed off by the Chief Engineer.

Application for an exception should be presented in the form of the design criteria sheet and should clearly explain the request, the rationale, and the potential implications or proposed mitigation i.e. which exception is being sought, why is it being sought, what is the impact on roadway users from a safety perspective, what are the financial impacts of the request, what is proposed to offset any potential negative effects of the requested exception, what other options have been explored.

The same procedure is to be followed for signing, pavement marking, traffic, highway safety and electrical designs.

Design Exception Process for Geotechnical, Materials and Pavement Design:

Geotechnical design related to bridges or structures including (but not limited to) retaining walls and foundations must follow the Ministry standard for bridge design which is the Canadian Highway Bridge Design Code (CHBDC S6-14) and the Ministry Supplement to the CHBDC S6-14. The Supplement takes precedence over the Code.

In general, deviations from the Supplement (and the Code) require approval of the Chief Engineer. The terms "Approval" and "Approved" are used in both the Supplement and the Code and where these terms are used it means that approval is required from the Chief Engineer. This is clearly defined in the Supplement.

However, there are some clauses of the Supplement that use the wording "... unless consented to by the Ministry...." When this wording is used, Ministry means the BC Ministry of Transportation and Infrastructure engineer who has the authority, responsibility and technical expertise to vary from the Supplement to S6-14 as allowed herein. The intent here is to give the local engineers the authority to approve certain exceptions as described in the Supplement. This is also clearly defined in the Supplement.

General design standards outlined at the beginning of this document, which are not related to bridges or structures, are also supplemented by the current version of the Geotechnical Design Criteria. Depending on the nature and complexity of proposed work, deviations from these standards require the approval of the Chief Engineer or the Director, Geotechnical Engineering in consultation with the Chief Engineer.

Design exceptions are to be submitted to the Director, Geotechnical Engineering for input and

support prior to submission to the Chief Engineer. Requests for design exceptions should clearly identify the standard or policy to be varied, as well as the cost impacts, risks and any proposed mitigation, options, schedule impacts, or any other pertinent information.

Design Exception Process for Electrical Design:

All electrical designs are completed using the following standards: Canadian Electrical Code, Electrical and Traffic Engineering Manual, Standard Specifications for Highway Construction, MUTCD Canada, IES RP-8, IES RP-22 and TAC Illumination of Isolated Rural Intersections.

Ministry electrical design standards are highly prescriptive and rarely require design exceptions.

Deviation from design standards may be considered for:

- Illumination levels for remote locations where power may not be available
- Ornamental lighting in rural municipalities
- New Traffic Control Devices installation for test or evaluation purposes
- Voltage level for special case
- Clear Zone treatment
- Other exceptional circumstances

Application for design exceptions should be in the form of a design criteria sheet. All exceptions or deviations shall be submitted to the Director, Electrical Engineering for input and support prior to submission to the Chief Engineer. Requests for design exceptions should clearly identify the standard or policy to be varied, as well as the cost impacts, risks and any proposed mitigation, options, schedule impacts, or any other pertinent information. Exceptions are Clear Zone treatments which require the approval of the Director, Highway Design and Survey.

Design Exception Process for Environmental Design:

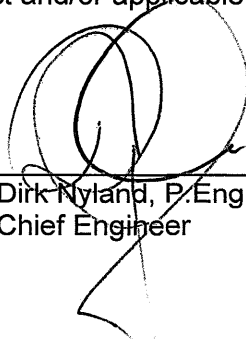
All environmental design works must meet MoTI engineering standards for the appropriate engineering discipline, and as applicable to any particular project. This includes, but is not limited to, specific structures and/or modifications to structures that may be utilized such as noise abatement walls, culverts, wildlife overpasses, wildlife fencing, and ungulate guards.

Exceptions to the applicable engineering design standard shall follow the procedure for that engineering discipline as described in this document. Note that hydrologic impacts in ditches/creeks/rivers or other water courses determined to be fish-bearing or environmentally sensitive are particularly sensitive to design exceptions. In many cases, exceptions from approved design standards will require approval from external permitting organizations, such as FLNRO or DFO.

The exception request shall detail the effect(s) or potential implications of the design exception on the project environmental requirements. These environmental requirements are as defined in Federal or Provincial environmental permits specific to the project and/or applicable environmental regulations, standards, or specified design criteria.

Contact:

Brent Case, P.Eng.
Manager Geotech Design & Foundations
Geotechnical Engineering Section, Engineering Services
Office: 250-565-6680



Dirk Nyland, P.Eng., IRP
Chief Engineer