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15.1 Scope

The scope of the investigation and rehabilitation of existing structures shall be defined or consented to by the Ministry.

Members evaluated in accordance with Section 14 that have adequate live load capacity do not need to be rehabilitated.

15.3 General requirements

15.3.8 Seismic Upgrading

Delete and replace with the following:

Seismic upgrading of the bridge shall be carried out in accordance with the Ministry's Supplement to CHBDC-S6-14 Section 4.

15.4 Special Considerations

Add the following:

- (u) Constraint induced fracture and fatigue
- (v) Rehabilitation to restore resistance compared to upgrading to current code requirements

15.6 Rehabilitation loads and load factors

15.6.1 Loads

15.6.1.3 Rehabilitation design live loads

15.6.1.3.2 Normal traffic

Delete the first paragraph and replace with:

The BCL-625 loading specified in the Ministry's Supplement to CHBDC-S6-14 Clause 3.8.3.1.2 shall be used for the rehabilitation design of bridges that are to carry unrestricted normal traffic after rehabilitation.

15.8 Resistance**15.8.1 Existing members****15.8.1.1 General**

Delete the first sentence and replace with the following:

The factored resistances of existing members, including existing members strengthened with new material, shall be determined in accordance with Clauses 14.14.1 and 14.14.2., except for steel in tension on the net section. For steel in tension on the net section, resistances shall be calculated in accordance with Clauses 10.8.2(b) and 10.8.2(c) and without applying the resistance adjustment factor from Table 14.15.

Commentary for steel in tension on the net section: *The axial tensile resistances for effective net sectional areas, A_{ne} and A'_{ne} , specified in Clause 10.8.2(b) and (c) contain a 0.85 reduction factor to account for the reduced warning of failure that may be provided if fracture occurs on the net section prior to yielding of the component on the gross section. The provisions of Clause 14.12.3 address the same issue by effectively increasing the factored loadings on components that provide little or no warning of failure.*

The intent of both these provisions was to individually provide an additional margin of safety against this type of failure. Applying both of these provisions for evaluations results in the component being penalized twice for the same behavior. To remove this double penalty, a new resistance adjustment factor has been developed to remove the reduction in the component resistance while maintaining the increased factored loadings. The new resistance adjustment factor is specified under Clause 14.14.2.

For rehabilitation, load factors from Clause 3 are specified rather than the load factors from Clause 14, therefore the resistance adjustment factor specified under Clause 14.14.2 does not apply.