

Hydrotechnical Inventory Definitions (taken from the BMIS user manual)

SCOUR/EROSION EVALUATION TAB

Susceptibility Category

Primary

Based on scour and erosion evaluations performed primarily by consulting engineers, a structure is assigned to one of five susceptibility categories.

- Category 1. Low Risk => The structure has no perceivable scour/erosion risks.
- Category 2. Moderately Susceptible => The structure has historical scour/erosion issues that are being effectively managed and/or the structure has some potential for minor bearing and approach fill instabilities.
- Category 3. Highly Susceptible => The structure has a high risk of protective measures failure and potential destabilization of abutment/pier foundations. However, there is little likelihood that the structure will collapse.
- Category 4. Critical Approaches => High risk of approach fill failure, but little likelihood the structure its self will collapse.
- Category 5. Critical Bridge Foundations => High risk of foundation failure and likelihood of structure collapse.

Scour/Erosion Evaluation Report(s) Date

Desirable

The date of a scour evaluation report.

Numeric, 8 characters in YYYY/MM/DD format

Scour/Erosion Evaluation Report(s) Description:

Desirable

The description of a scour evaluation report.

e.g.: "Bridge SER report"

Maximum 100 characters.

Scour/Erosion Evaluation Report(s)

A scour evaluation report. The user has the ability to add new reports or view current reports depending on their security level.

File attachment, PDF format.

*UNKNOWN FOUNDATIONS FLAG

Primary

Foundation details are unknown and therefore, foundations cannot be evaluated against the hydraulic hazards related to scour. Uncertainty exists with foundation structural elements that include bearing materials beneath spread footings, footing depth/elevation, pile penetration tip elevation (i.e. pile length), and presence/non-presence of supporting piles at a foundation.

Flag box

Current Condition Inspection Date

The date that the current condition inspection was completed on.

Numeric, 8 characters in YYYY/MM/DD format

DISPLAY ONLY, pulled from inspections.

Debris Risk

The potential or occurrence for debris to damage the structure or get entangled in the structure thus affecting the natural passage of water. Debris is any material including floating wood trash, suspended sediment or bed load, moved by a flowing stream. The inspector should look for any deposits of debris in the stream, on the banks, upstream of the structure, or on the structure.

DISPLAY ONLY, pulled from inspections.

Channel

The general condition of channel morphology, observable bed and bank conditions (lateral and vertical erosion or deposition) and structure layout that may directly or indirectly affect the stability of the structure.

DISPLAY ONLY, pulled from inspections.

Erosion Protection

The condition of engineered armoring (riprap, gabions, concrete, etc.) that has been placed to prevent erosion and the removal of foundation materials.

DISPLAY ONLY, pulled from inspections.

Substructure Scour

Scour is the removal of material from the riverbanks, streambed or fill slopes by the erosive action of water. The inspector should check for scour around piers, abutments and banks and consider the structure's foundation (i.e. depth of spread footings, piles, caps, bedrock, etc.). The substructure scour rating will reflect conditions that affect stability of the structure's foundations.

DISPLAY ONLY, pulled from inspections.

Scour Notes

Notes on additional scour issues that MoT bridge inspectors feel necessary to include.

DISPLAY ONLY, pulled from inspections.

Specialized Inspection Date

The date of any specialized inspections that pertain to a certain structure.

Numeric, 8 characters in YYYY/MM/DD format

DISPLAY ONLY, pulled from inspections.

Specialized Inspection Type

The type of any specialized inspections that pertain to a certain structure.

e.g. Diving Inspection, Hydrographic Survey.

DISPLAY ONLY, pulled from inspections.

HYDROTECHNICAL INVENTORY TAB

Hydrotechnical Design Report

An attachment of the hydrotechnical design report that can be viewed.
File attachment, PDF

Flood Events:

This will list information regarding flood events for a certain area that affected certain structures.
e.g.: videos, articles, photos, reports
Document Manager

Est. Inst. Flow Rate

Desirable

The Design Discharge is the Estimated Maximum Instantaneous Flow Rate for the indicated return period.

e.g.: “1234.123” (m³/s)

Numeric, Maximum value 99,999.999 m³/s

Average Waterway Velocity

Desirable

The average water velocity through the waterway opening for the Design Discharge.

e.g.: “54.456” (m/s)

Numeric, Maximum value 99.999 m/s

Return Period

Desirable

A measure of the probability of a design flood flow being equaled or exceeded in a given year (2, 10, 50, 100, or 200 years).

e.g.: “100” (years)

Design Discharge Water Elevation

Desirable

The designed water level associated with the Design Discharge.

e.g.: “965.123” (m)

Numeric, Maximum value 9,999.999 m

Design High Water Clearance

Desirable

The distance above the design discharge water elevation to the theoretical minimum soffit point on the bridge span, in meters (BMIS user manual). This is also known as freeboard and includes an allowance to pass debris and to account for uncertainty predicting design water levels.

e.g.: “25.645” (m)

Numeric, Maximum value 9,999.999 m

Minimum Bridge Soffit Elevation

Calculated Field

The minimum theoretical elevation of the lowest point of the undersurface of the superstructure of a bridge above the high water clearance. If the bridge height is controlled by the gradeline, not hydraulics, this should be the elevation of the lowest point of the soffit.

e.g.: "1234.123" (m)

Numeric, Maximum value 9,999.999 m

***ICE CONDITIONS PRESENT**

Desirable

A check box notifying whether or not there are ice conditions. It is accompanied by a note field that can document its thickness, strength, and any other related information.

Flag box

Drainage Basin / Drainage Area

Desirable

A drainage basin, or watershed, is "the area enclosed by a topographic divide such that surface runoff drains by gravity into a river, lake, or other water body" (WSC 2006). Drainage basins are often described as the area that contributes flow upstream of the mouth, or confluence, of a watercourse. A drainage basin can also be defined by the area upstream of a point where hydrometric (streamflow) data are measured, or upstream of a particular point of interest, such as a bridge.

e.g.: "23,123.456" (km²)

Numeric, Maximum value 999,999.999 km²

Channel Slope

Desirable

The channel slope is determined as the average elevation difference between the endpoints of the main channel divided by the channel length.

e.g.: "0.45612" (m/m)

Numeric, Maximum value 9.99999 m/m

Bankfull Width

Desirable

Bankfull width is the width of a stream channel at the point where over-bank flow begins during a flood event. In entrenched channels with disconnected or undeveloped floodplains, bankfull indicators may include: the top of deposited bedload (gravel bars), stain lines, the lower limit of perennial vegetation, moss or lichen, a change in slope or particle size on the stream bank and undercut banks.

e.g.: "123.456" (m)

Numeric, Maximum value 9,999.999 m

Bankfull Depth**Desirable**

The average vertical distance between the channel bed and the estimated water surface elevation required to completely fill the channel to a point above which water would enter the floodplain or intersect a terrace or hillslope. In cases where multiple channels exist; the bankfull depth is the average depth of all channels along the cross section.

e.g.: “54.342” (m)

Numeric, Maximum value 99.999 m

Historical High Water Clearance

The observed distance from an observed high water mark to the lowest soffit point on the bridge span, in meters (BMIS user manual). This value will be measured as a negative value if the water level exceeds the soffit point.

e.g.: “123.12” (m)

DISPLAY ONLY, pulled from feature proximity screen – ‘high water clearance’ field

Hydrotechnical Drawings

A link to unique hydrotechnical drawings that have been prepared for the structure.

File attachment, PDF format

Hydrotechnical Inventory Note**Optional**

Notes on additional hydrotechnical variables that MoT bridge inspectors feel necessary to include.

Maximum characters 2000.