

Compare HydInfra Ratings to NBIS 9 point rating scale

Matching [HydInfra ratings](#) to [NBIS](#) is inexact. HydInfra criteria are different from the NBIS codes. For example, deformation in steel pipes HydInfra Condition 3 criteria says “Deformation, deflection or distortion visible, up to 10% of diameter “, which roughly matches NBIS Code 5: “Metal culverts have significant distortion and deflection in one section.”

Most importantly, HydInfra rates any loss of fill under the roadway as condition 4 (very poor). NBIS mid-scale code 4 similarly describes “opened construction joint permitting loss of backfill”.

HydInfra = NBIS

0 = unknown

1 = NBIS 9, 8

2 = NBIS 7

3 = NBIS 6, 5

4 = NBIS 4, 3, 2, 1

NBIS 0 has no equivalent in HydInfra

Item 62 - Culverts

1 digit

This item evaluates the alignment, settlement, joints, structural condition, scour, and other items associated with culverts. The rating code is intended to be an overall condition evaluation of the culvert. Integral wingwalls to the first construction or expansion joint shall be included in the evaluation. For a detailed discussion regarding the inspection and rating of culverts, consult Report No. FHWA-IP-86-2, Culvert Inspection Manual, July 1986.

Item 58 - Deck, Item 59 - Superstructure, and Item 60 - Substructure shall be coded N for all culverts.

Rate and code the condition in accordance with the previously described general condition ratings and the following descriptive codes:

<u>Code</u>	<u>Description</u>
N	Not applicable. Use if structure is not a culvert.
9	No deficiencies.
8	No noticeable or noteworthy deficiencies which affect the condition of the culvert. Insignificant scrape marks caused by drift.
7	Shrinkage cracks, light scaling, and insignificant spalling which does not expose reinforcing steel. Insignificant damage caused by drift with no misalignment and not requiring corrective action. Some minor scouring has occurred near curtain walls, wingwalls, or pipes. Metal culverts have a smooth symmetrical curvature with superficial corrosion and no pitting.
6	Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, non-symmetrical shape, significant corrosion or moderate pitting.
5	Moderate to major deterioration or disintegration, extensive cracking and leaching, or spalls on concrete or masonry walls and slabs. Minor settlement or misalignment. Noticeable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection in one section, significant corrosion or deep pitting.
4	Large spalls, heavy scaling, wide cracks, considerable efflorescence, or opened construction joint permitting loss of backfill. Considerable settlement or misalignment. Considerable scouring or erosion at curtain walls, wingwalls or pipes. Metal culverts have significant distortion and deflection throughout, extensive corrosion or deep pitting.

(codes continued on the next page)

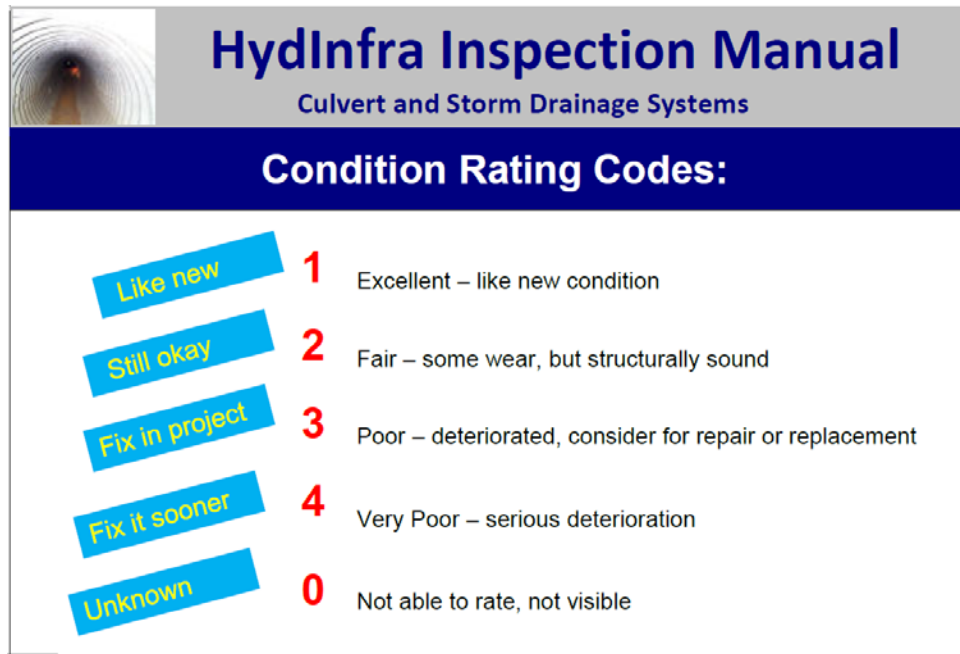
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3	Any condition described in Code 4 but which is excessive in scope. Severe movement or differential settlement of the segments, or loss of fill. Holes may exist in walls or slabs. Integral wingwalls nearly severed from culvert. Severe scour or erosion at curtain walls, wingwalls or pipes. Metal culverts have extreme distortion and deflection in one section, extensive corrosion, or deep pitting with scattered perforations.
2	Integral wingwalls collapsed, severe settlement of roadway due to loss of fill. Section of culvert may have failed and can no longer support embankment. Complete undermining at curtain walls and pipes. Corrective action required to maintain traffic. Metal culverts have extreme distortion and deflection throughout with extensive perforations due to corrosion.
1	Bridge closed. Corrective action may put back in light service.
0	Bridge closed. Replacement necessary.

References for comparing HydInfra Ratings to NBIS:

1) HydInfra Condition Ratings:

[HydInfra Culvert and Storm Drainage System Inspection Manual](#) (PDF)



2) NBIS ratings:

Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges – Report No. FHWA-PD-96-001, page 41 and 42 (pdf pages 52-53) <http://www.fhwa.dot.gov/bridge/mtguide.pdf>

3) Inspection of MnDOT culverts larger than 10-foot span:

FHWA Bridge Inspector's Reference Manual Chapter 14,
<http://www.dot.state.mn.us/bridge/pdf/insp/birm/birmchapt14-inspofculverts.pdf>