

INDOT BRIDGE INSPECTION MANUAL

PART 7

WEARING SURFACES

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7-1.0 WEARING SURFACE RATINGS

All bridge decks and deck slab superstructures that have **independent, separately placed** overlays using materials that are either rigid Portland Cement concrete, semi-rigid epoxy (or similar approved), or bituminous materials shall have Item 58.01 (Wearing Surface) rated as outlined in Sections 7-1.02, 7-1.03, or 7-1.04 according to the actual type of wearing surface constructed.

All bridge decks and deck slab superstructures that have independent, separately placed overlays **shall not** have Item 108A coded 1 – Monolithic Concrete (concurrently placed with structural deck).

7-1.01 Structural Decks with Sacrificial Thicknesses Cast Monolithically

Bridge decks and deck slab superstructures without **independent, separately placed** wearing surfaces, overlays, or protective systems shall be rated according to the requirements specified in Item 58 of the Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges Manual and shall typically match the condition rating assigned for Item 58 (Deck).

Deck topside surfaces that have an upper surface exposed to traffic that consists of a **sacrificial thickness cast monolithically** during construction at the same time as the originally built structural deck may have an Item 58.01 wearing surface condition rating different from the condition rating assigned for Item 58 (Deck) under the following parameters.

1. Item 108A must be coded 1 – Monolithic Concrete (concurrently placed with structural deck).
2. The condition rating used for Item 58.01 shall use the same condition ratings and descriptions specified for Item 58 in the Coding Guide and shall be for observed deficiencies, such as abrasion/wear, scaling, shallow spalls/popouts, or Element Condition State 2 cracking that affects only the very top, sacrificial portion of the deck and **not exceeding 1-1/2"** in depth.
3. The mathematical difference between the Item 58 (Deck) and Item 58.01 (Wearing Surface) condition ratings **shall not exceed 1** rating value.
4. The condition rating assessed for Item 58.01 (Wearing Surface) **shall not be larger** than the condition rating assessed for Item 58 (Deck).
5. Conditions observed warranting either the deck or wearing surface to be assessed with a condition rating of 5 or less shall have that same condition rating assigned for both Item 58 (Deck) and Item 58.01 (Wearing Surface).

Otherwise, the following general condition ratings to be reported for BIAS Item 58.01 (Wearing Surface) for each type of **independently or separately placed** wearing surface material specified herein shall be used:

7-1.02 Rigid Portland Cement Concrete (PCC) Overlay Condition Ratings

The following general condition ratings shall be used in evaluating rigid Portland Concrete Cement (PCC) wearing surface overlays. Rigid PCC overlays shall include, **but not be limited to**, unmodified Class C concrete, latex modified, dense modified, microsilica modified, or similar approved modified PCC overlays.

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Condition Rating Guide for Rigid Portland Cement Concrete Overlays:

<u>Code</u>	<u>Description</u>
N	NOT APPLICABLE - Code N when Item 58 is also coded N.
9	EXCELLENT CONDITION – no significant defects.
8	VERY GOOD CONDITION – hairline cracking less than 0.012” nominal width and widely spaced. No surface spalls or patches are present, and no delamination is detected.
7	GOOD CONDITION - cracking less than 0.016” nominal width, widely spaced, and less than 5% delamination. No surface spalls or patches are present, and no delamination is detected.
6	SATISFACTORY CONDITION - cracking less than 0.020” nominal width and nominal on center spacing greater than 10 feet. No unpatched surface spalls are present. Patched areas less than 10% of total surface area are present and are all sound. Delamination less than 10% of total surface area is detected.
5	FAIR CONDITION - cracking greater than 0.020” and less than 0.040” nominal width and nominal on center spacing not greater than 10 feet. Few intermittent unpatched surface spalls or unsound patches less than 5% of the total surface area are present. Sound patched areas less than 20% of the total surface area are visible. Delamination less than 20% of the total surface area is detected.
4	POOR CONDITION – cracking greater than 0.040” nominal width and nominal on center crack spacing less than 10 feet. Delamination greater than 20% of the total surface area is detected. Unpatched or unsound patching, or spalled areas, are visible across less than 10% of the total surface area.
3	SERIOUS CONDITION - delamination greater than 20% of the total surface area is detected. Extensive severe and closely spaced cracking, unpatched or unsound patches, and spalled areas are visible across more than 10% of the total surface area and widespread. The wearing surface is no longer effective.

Condition ratings less than 3 shall not be coded.

7-1.03 Semi-Rigid Epoxy Overlay Condition Ratings

The following general condition ratings shall be used in evaluating a semi-rigid (epoxy, polyester, or similar approved material) wearing surface:

Condition Rating Guide for Semi-Rigid Epoxy Overlays

<u>Code</u>	<u>Description</u>
N	NOT APPLICABLE – Code N when Item 58 is also coded N.
9	EXCELLENT CONDITION – no visible defects or visible wearing of the friction surface aggregate.
8	VERY GOOD CONDITION – minor intermittent wearing of the friction surface aggregate across less than 5% total surface area within the travel lanes.
7	GOOD CONDITION – minor wearing, glazing, or polishing of the friction surface aggregate across less than 40% total surface area within the travel lanes.
6	SATISFACTORY CONDITION – deep wearing, glazing, or polishing of the friction surface aggregate across more than 40% total surface area. Less than 5% total surface area

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exhibiting areas of full thickness wearing down to bare deck, surface voids, or peeling. For this condition rating or lower, areas of full thickness material loss that are visible within 6" of bridge deck joints shall not be included within these condition rating parameters.

- 5 **FAIR CONDITION** – Greater than 5% and less than 10% total surface area exhibiting areas of full thickness wearing down to bare deck, surface voids, or peeling.
- 4 **POOR CONDITION** – Greater than 10% and less than 15% total surface area exhibiting areas of full thickness wearing down to bare deck, surface voids, or peeling.
- 3 **SERIOUS CONDITION** – Greater than 15% of the total surface area exhibiting areas of full thickness wearing down to bare deck, surface voids, or peeling. The wearing surface is no longer effective.

Condition ratings less than 3 shall not be coded.

7-1.04 Bituminous Overlay Condition Ratings

The following general condition ratings shall be used in evaluating a flexible bituminous material wearing surface. All bituminous material overlays on State or Tollway-owned bridges shall be placed on an agency approved waterproofing membrane system. All bituminous material overlays placed on State or Tollway owned bridges that do not have an agency approved waterproofing membrane system between the wearing surface and deck shall be rated 4.

<u>Code</u>	<u>Description</u>
N	NOT APPLICABLE – Code N when Item 58 is also coded N.
9	EXCELLENT CONDITION – no significant defects, cracks, spalls, or voids visible.
7	GOOD CONDITION – shallow wearing or rutting of the bituminous surface visible in the travel lanes. No wide cracks, spalls, or voids visible. All cracks present are sealed, and all spalls and voids are soundly patched.
5	FAIR CONDITION – moderate wearing or rutting of the bituminous surface visible across more than 30% of the travel lanes. No wide cracks, spalls, or voids visible. All cracks present are sealed, and all spalls and voids are soundly patched.
4	POOR CONDITION – moderate wearing or rutting of the bituminous surface visible across more than 30% of the travel lanes. Unsealed cracks and unpatched spalls or void visible across less than 10% of the total surface area.
3	SERIOUS CONDITION – widespread wearing or rutting of the bituminous surface visible across the travel lanes. Unsealed cracks and unpatched spalls or void visible across more than 10% of the total surface area. The wearing surface is no longer effective.

Only the condition ratings listed in this section shall be code