

Annotation Guidelines

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Notes: Initial submission of guidelines

Note:

- The classification of corrosion and the creation of the annotation guidelines were based on the guidance outlined in the Bridge Inspector's Reference Manual (BIRM) (Ryan, Mann, & Chill, 2012), and the American Association of State Highway and Transportation Officials (AASHTO) code (AASHTO, 2018).
- To CITE this annotation guideline please use the reference of the journal article titled "*Development of Open-source Collaborative Structural Inspection Datasets*".
- All defect types with a condition better than "Fair" condition state 2 (CS2) are considered "Good" condition state 1 (CS1).
- Any unlabeled corrosion in below images are still annotated but are left unhighlighted in the Annotation column to help express the corresponding description.

AASHTO. (2018). *Manual for Bridge Element Inspection (1st Edition), with 2015 and 2018 Interim Revisions*. American Association of State Highway and Transportation Officials (AASHTO).

Ryan, T. W., Mann, J. E., & Chill, Z. M. (2012). *FHWA Bridge Inspector's Reference Manual (BIRM)* (Vol. 1). Retrieved from <https://www.fhwa.dot.gov/bridge/nbis/pubs/nhi12049.pdf>

Description	Original Image	Annotation
<p><u>“Good” Rating:</u> No visible corrosion / Minimal corrosion</p>		<p>No annotation</p>
<p><u>Peeling Paint:</u> Peeling paint is not annotated as corrosion</p>		<p>No annotation</p>
<p><u>Rulers:</u> Rulers that cover corrosion are not included in the annotation.</p> <p>Fair: Red</p> <p>Poor: Green</p> <p>Severe: Yellow</p>		

Debris: Visible debris around corroded steel is not included in the annotation

Fair: Red

Poor: Green

Severe: Yellow









Surface Corrosion:
Corroded portions of steel that do not appear to be disintegrating are annotated as "2 - Fair"





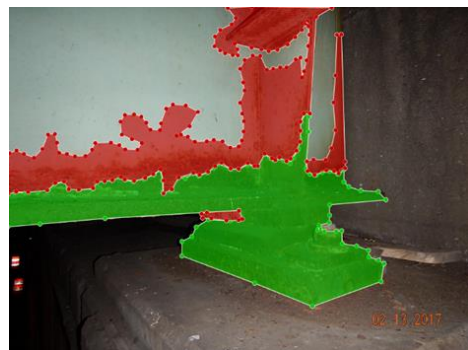
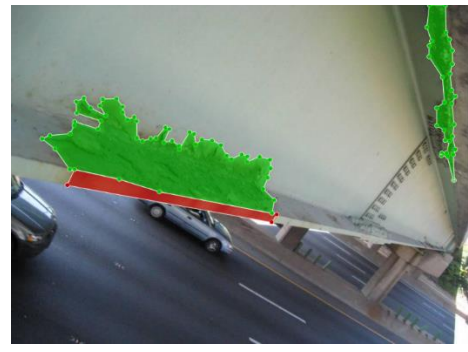
Fair: Red

Poor: Green

Severe: Yellow



		
<p><u>Exposed Steel:</u> Peeled paint that exposes and corrodes underlying steel is considered “2 - Fair”</p> <p>Fair: Red Poor: Green Severe: Yellow</p>		
<p><u>Freckled Rust/Sporadic Corrosion:</u> Corrosion that is clustered or scattered in a general region is annotated as a single mass or corrosion (typically “2 - Fair” but should be annotated on a case-by-case basis)</p> <p>Fair: Red</p>		

<p>Poor: Green</p> <p>Severe: Yellow</p>		
<p><u>“Poor” Rating:</u> Corrosion that appears as deeper-than-surface corrosion or beginning to disintegrate portions of steel is considered “3 - Poor” (includes Pack Rust)</p> <p>Fair: Red</p> <p>Poor: Green</p> <p>Severe: Yellow</p>	 	 

Streaked
Corrosion:

Corrosion that appears to be streaked or to discolor steel is annotated as 2 - Fair.

Fair: Red

Poor: Green

Severe: Yellow



“Severe” Rating:

Corrosion that seems to have disintegrated portions of steel and/or corrosion that seems to affect structural integrity of the bridge component is annotated as “4 - Severe”

Fair: Red

Poor: Green

Severe: Yellow



Section Loss:

Steel with complete section loss (holes or cavities) should be annotated as severe with surrounding areas annotated appropriately



Fair: Red

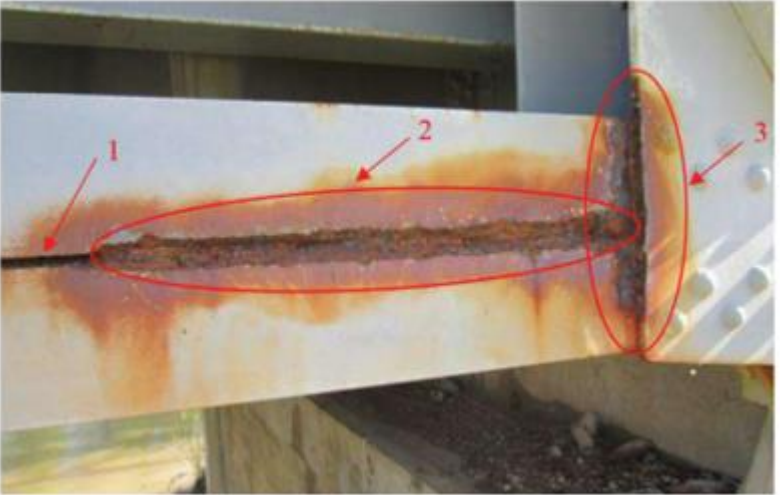

Poor: Green

Severe: Yellow



Sample AASHTO (AASHTO, 2018) Condition State Reference Images

Rating	Sample Image
Good CS-1	 <p>No corrosion present</p>
Fair CS-2	 <p>Freckled rust is present</p>

<p>Poor CS-3</p>	 <p>Pack-rust, section loss and corrosion (as indicated by circles)</p>
<p>Severe CS-4</p>	 <p>Multiple perforations, extreme section loss.</p>