

# 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 reference the citation provided through SAGE journals for the article "*Structural Inspection Datasets: A Contribution*".
- 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>

Condition State 2





Condition State 3

Corrosion (1000)



Condition State 4



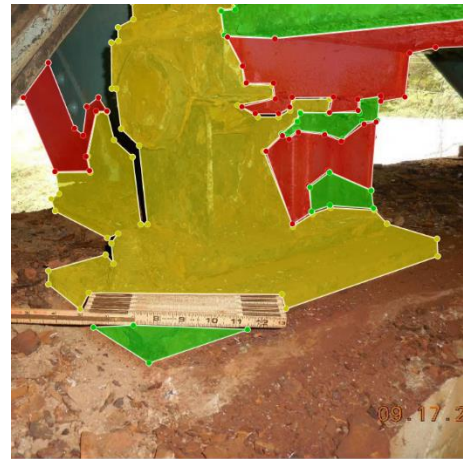
Description	Original Image	Annotation
<p><b><u>“Good” Rating:</u></b> No visible corrosion / Minimal corrosion</p>		<p><b>No annotation</b></p>
<p><b><u>Peeling Paint:</u></b> Peeling paint is not annotated as corrosion</p>		<p><b>No annotation</b></p>

**Rulers:** Rulers that cover corrosion are not included in the annotation.

Fair: Red

Poor: Green

Severe: Yellow



**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



**Exposed Steel:**

Peeled paint that exposes and corrodes underlying steel is considered “2 - Fair”

Fair: Red

Poor: Green

Severe: Yellow



**Freckled  
Rust/Sporadic  
Corrosion:**

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)

Fair: Red

Poor: Green

Severe: Yellow



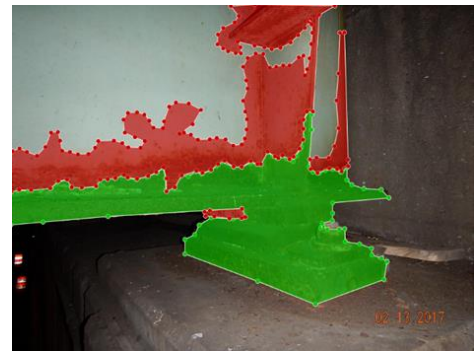
**“Poor” Rating:**

Corrosion that appears as deeper-than-surface corrosion or beginning to disintegrate portions of steel is considered “3 - Poor” (includes Pack Rust)

Fair: Red

Poor: Green

Severe: Yellow





**Streaked**  
**Corrosion:**

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

Fair: Red

Poor: Green

Severe: Yellow



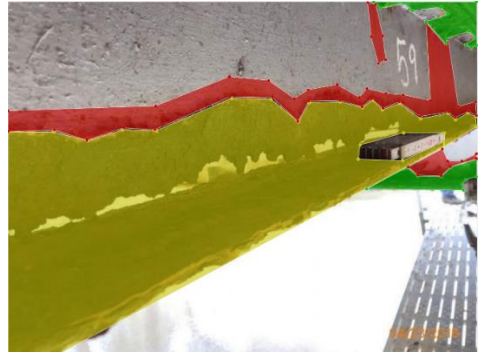
**“Severe” Rating:**

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:**

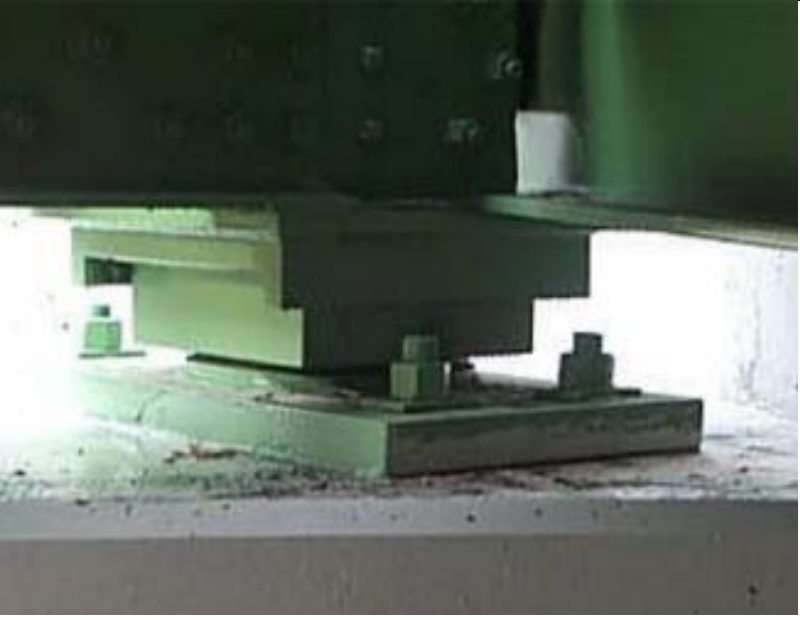

Steel with complete section loss (holes or cavities) should be annotated as severe with surrounding areas annotated appropriately

Fair: Red

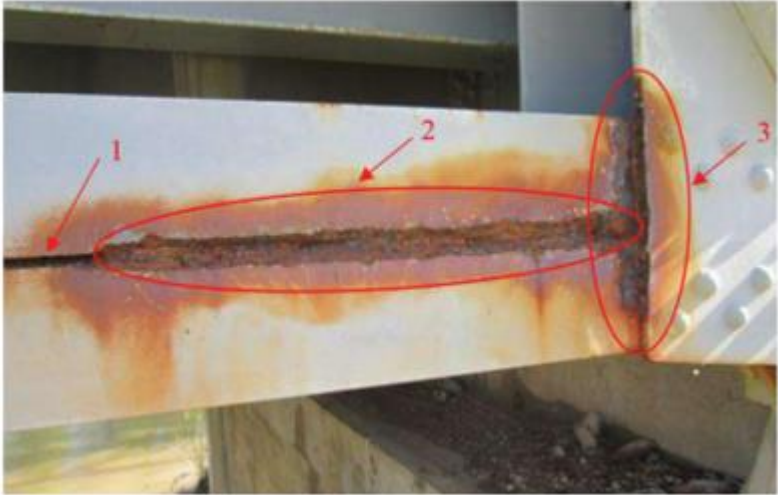

Poor: Green

Severe: Yellow



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>