

Critical Findings

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What is a Critical Finding?

- A Critical Finding is either a structural or safety related deficiency that poses an apparent immediate threat to the safety of the motoring public and requires immediate action be taken to ensure public safety.
- So, what does this mean?

What is a Critical Finding?

- A Critical Finding is either a **structural or safety related deficiency** that poses an apparent immediate threat to the safety of the motoring public and requires immediate action be taken to ensure public safety.
- Such deficiencies include, but are not limited to, scour, damage, corrosion, section loss, settlement, cracking, deflection, distortion, loss of bearing, and any condition posing an imminent threat to public safety.

What is a Critical Finding?

- A Critical Finding is either a structural or safety related deficiency that poses an apparent immediate threat to the safety of the motoring public and **requires immediate action be taken to ensure public safety.**
 - Full or partial closure of any bridge,
 - A non-redundant steel tension member (NSTM) rated 3 or lower,
 - A deck, superstructure, substructure, or culvert component rated 2 or lower,
 - The channel condition or scour condition rated 2 or lower,
 - Immediate load restriction or posting,
 - Immediate repair work to a bridge, including shoring, to remain open

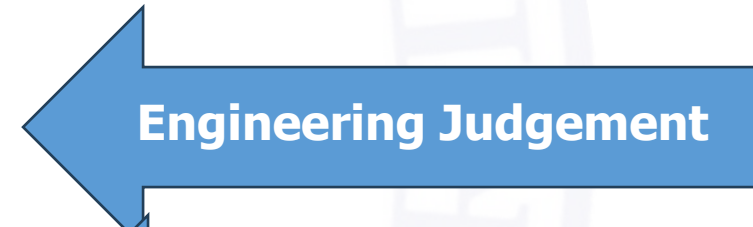
In Summary

- A Critical Finding must check these three boxes:

- Deficiency, AND



- Structural-related or Safety-related, AND



- Requires immediate action for public safety



Critical Finding Examples

- Open your phone and access Slido
- For each of the following examples, decide if the example rises to the level of Critical Finding
 - Pay attention to the photo AND the spoken description



#1 - Is this a Critical Finding?



Weathering steel beam bridge with a steel grid deck. Carries rural traffic over a waterway. Beam number 5 of 9 shown. Total separation between the top flange and the web over 90% the length of the beam. Adjacent beams show measurable section loss, but not as severe as this one.

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#1 - Is this a Critical Finding?

Yes ✓



No



Yes, Critical Finding. Structural deficiency requiring immediate action.

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#2 - Is this a Critical Finding?



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Photo taken at the nearest intersection South of the Bridge. Bridge is required to be posted for load at 12 Tons, and for Emergency Vehicles.



#2 - Is this a Critical Finding?

Yes



No



Yes, Critical Finding. Safety-related deficiency requiring immediate action.

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#3 - Is this a Critical Finding?



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8” diameter hole observed in the HMA approach pavement. Under the bridge at that location, loss of fill observed creating a void behind the abutment. Hole in approach pavement is on the shoulder not the travel lane.



#3 - Is this a Critical Finding?

Yes



No



Yes, Critical Finding. Safety-related deficiency. Risk of injury to motorists driving on unsupported flexible pavement.

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#4 - Is this a Critical Finding?



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Reinforced Concrete Slab bridge over a waterway. Uppermost section of 3-part bridge rail is missing over end 15' of structure. Deck-mounted rail attachments are in GOOD condition.

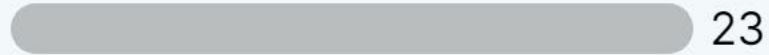


#4 - Is this a Critical Finding?

Yes



No



Yes, Critical Finding. Safety-related issue that requires immediate attention.

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#5 - Is this a Critical Finding?



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Two-barrel Corrugated Metal Pipe bridge carrying rural road. Left pipe is 30% blocked by drift, and the right pipe is 80% blocked by debris. No active scour was observed at the pipe inlets.



#5 - Is this a Critical Finding?

Yes



No



Not a Critical Finding. 50% or more blockage of waterway opening (less than 100%) results in a 3 rating for the Channel condition. Need a 2 rating to be Critical Finding.

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#6 - Is this a Critical Finding?



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Channel beam bridge with timber abutment caps. East abutment cap has crushed from 12" in depth at the ends to a minimum of 7" in depth in the middle of the structure. West abutment cap appears in GOOD condition. The bituminous wearing surface on the bridge is new and smooth without significant dips.



#6 - Is this a Critical Finding?

Yes



No



Yes, Critical Finding. Structural-related deficiency. No dip in the road might just mean that the road was paved since the deficiency occurred.

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#7 - Is this a Critical Finding?



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Single-Span steel truss bridge. Vehicle impact damaged one of the diagonal members. In the left photo, the damaged member is one panel to the left of midspan. Detail photo shows two broken rivets and a fracture in the diagonal member.



#7 - Is this a Critical Finding?

Yes



No



Yes, Critical Finding. Structure-related issue in NSTM.

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#8 - Is this a Critical Finding?



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Adjacent PCBB bridge. One new longitudinal crack observed in the exterior beam. Bridge is not currently required to be posted for load.



#8 - Is this a Critical Finding?

Yes



No



Not a Critical Finding. Not a deficiency that required immediate action.

Alternatively, if a load rating is performed and a P/S strand is removed to account for this crack and the removal of that strand flips this bridge over to needing posted where it didn't before, then the missing posting sign, not the crack, would trigger a Critical Finding.

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#9 - Is this a Critical Finding?



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Adjacent PCBB bridge on open pile piers. Steel piles are severely corroded at the pier caps with more than 50% section loss. Some holes observed completely through the steel. Bridge plans show shell piles are filled with reinforced concrete.



#9 - Is this a Critical Finding?

Yes



No

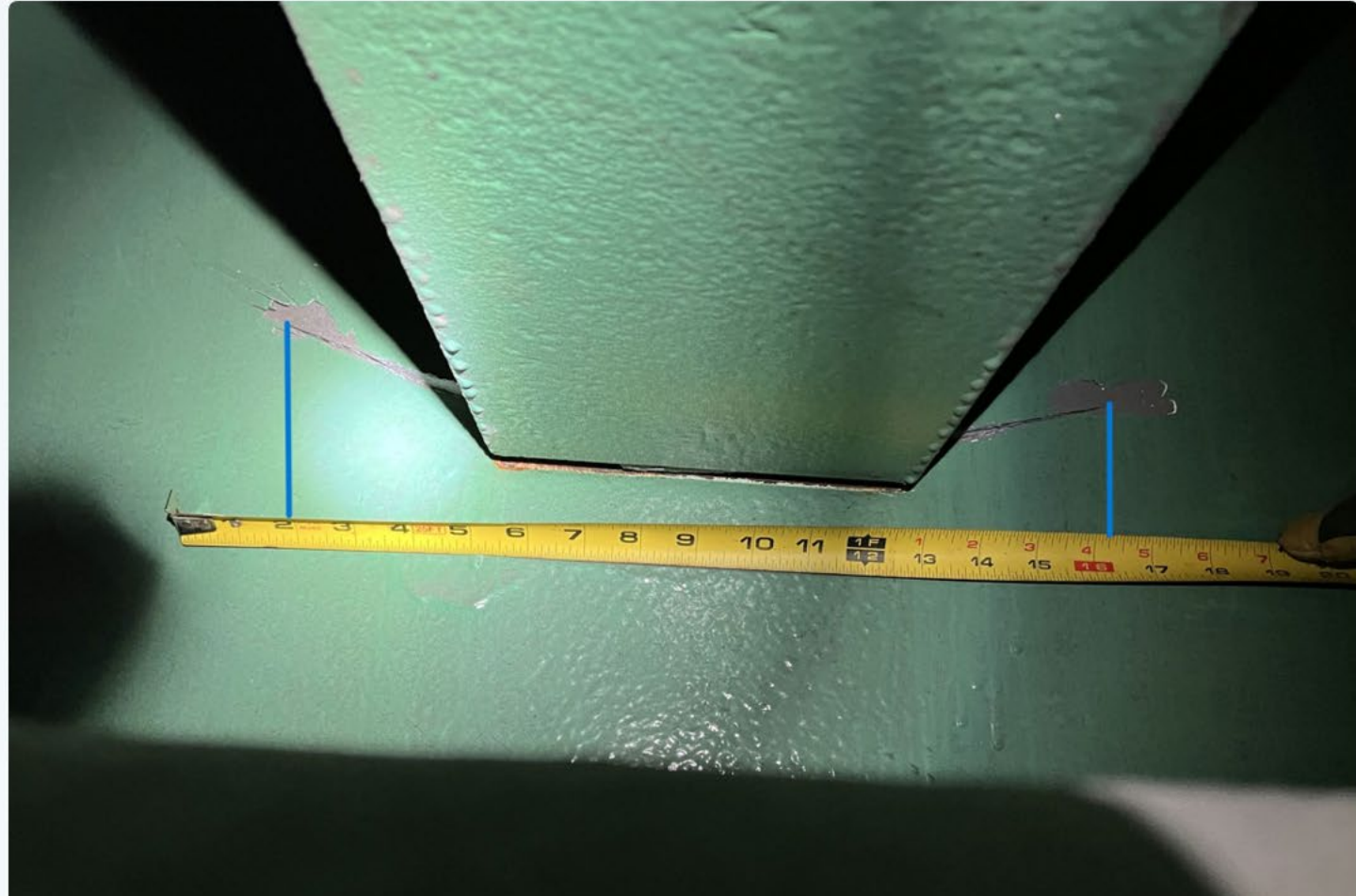


Not a Critical Finding. The reinforced concrete within the piles permits them to continue taking lateral load after the failure of the steel pipe. This is cause for replacement, but not a critical finding.

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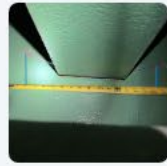


#10 - Is this a Critical Finding?



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Steel beam bridge with steel diaphragms. Vehicular impact to the exterior beam pushed the diaphragm into the web of the second interior beam cracking it. Bridge is not NSTM. No other beams were damaged by the vehicular impact.



#10 - Is this a Critical Finding?

Yes



No



Yes, Critical Finding. Structural deficiency with an unclear impact on the safety of the motoring public. Road should be closed and immediate analysis completed.

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#11 - Is this a Critical Finding?



Three-barrel corrugated metal pipe bridge. One of the three pipes shows significant deflection. Little to no corrosion observed in the pipe. Photos from the previous four routine inspections show a similar deflection.

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#11 - Is this a Critical Finding?

Yes



No



Not Critical finding. Condition not worsened over time. Check load rating to confirm.

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#12 - Is this a Critical Finding?



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Deteriorated bridge joint. Water infiltration is evident when looking from under the bridge. Joint failed full width with small patched and spalls.



#12 - Is this a Critical Finding?

Yes



No



Not Critical Finding. Maintenance item, but unless the condition of this joint is a safety hazard, this is not a critical finding.

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Final Thoughts

- This exercise is vastly different than field conditions:
 - Limited time to make a decision
 - Limited context
 - Some examples were tough decisions by design
 - Unable to confer with peers
- Even if the bridge looks bad or needs maintenance, it might not be a Critical Finding
 - Must check the three boxes discussed earlier:
 - Deficiency
 - Structural-Related or Safety-Related
 - Needs immediate action

Final Thoughts

- If you are unsure if a field condition qualifies as a Critical Finding,
 - Talk to your peers back at the office
 - Send a photo of the condition
 - Video Conference at the Site
- If you are still unsure, err on the safe side and file the Critical Finding.