

Research RFP 2016-09
Detection of Damage Precursors in Steel Components for Life-Cycle Assessment

"Research Objective 1: Develop a large-area damage detection method to measure large and small size defects as well as related damage growth rate in steel, which is not detectable through visual inspection

Q1. Are any particular type of defects of greater interest?

Ans: We are interested in poor fatigue details, including framing details with small gaps that are susceptible to fatigue as a results to out-of-plane bending. We are also interested in poor welding details that lead to fatigue cracking.

Q2. What is the definition of "large-area damage"? Does this refer to an entire bridge or a region in the vicinity of connection or point of interest?

Ans: Large-area damage refers to the entire bridge where defects mentioned in Q1(above) exist.

Q3. Can you provide some examples of large and small size defects? For example, in the case of cracks, what is the lower limit on crack width and length that is of interest?

Ans: We are basically referring to crack sizes that are not detectable through visual inspection.

Q4. Does the phrase "which is not detectable through visual inspection" refer to "damage growth rate in steel" or is this a general statement about the types of defects that are of interest (e.g. those that cannot be detected reliably through visual inspection)?

Ans: The phrase implies the type of defects that cannot be detected reliably through visual inspection.

Research Objective 2: Develop reliable life-cycle and cost assessment methodology

Q5. Should life-cycle costs include benefit/cost of various technologies?

Ans: We are not interested in the benefit/cost of technology. We are looking for practical technologies that can reliably identify defects that cannot be detected through visual inspection and the approximate remaining fatigue life of those details.

Q6. What is the anticipated breakdown of effort between Research Objectives 1 and 2?"

Ans: Both efforts are equally important as one relates to detection and the other relates to behavior and remaining life. Both objectives will allow the Department to properly address these details in our inspection and rehabilitation programs.