Research Project 2022-05 NJDOT Corrosion Study on Steel Structural Members

September 26, 2022

Q & A

1. Which types of "steel infrastructure" are meant to be considered (bridges, culverts, sign and lighting structures, etc.)?
   This research study is open for any type of steel infrastructure. Thus, all types listed in the question can be considered.

2. If this study is intended to focus on bridges, should structural members from the substructure also be considered (or only superstructure)?
   Bridge substructure as well as bridge superstructure are to be considered.

3. Is NJDOT interested in assessing the performance of painted or galvanized steel members as a part of this study (or just bare steel) and, if so, are there sufficient specimens within each category?
   NJDOT is interested in assessing the performance of painted or galvanized steel members (if possible) as well as bare steel. At least for comparison purposes.

4. Does "new tools and technologies" refer to corrosion protection technologies or corrosion inspection technologies or both?
   "New tools and technologies" refer to corrosion protection technologies.

5. Are specific environments for specimen selection anticipated that correspond to corrosion zones (e.g., ISO 9223). Should different rural environments be considered that have different salt exposures?
   Yes (if possible).

6. What service-life does NJDOT typically desire or plan for (i.e. 50, 75, or 100 years); how is end-of-life defined?
   NJDOT desires the optimal service life. Selecting the desirable service life and defining the end of service life criteria are to be proposed by the researcher.
   It should be noted that work on following Phase of the project will not begin until the preceding phase deliverable is approved and the following Phase work plan is authorized by NJDOT.

7. Do maintenance records exist (e.g., cleaning, painting, maintenance of corrosion protection systems)?
   BOR will coordinate between the research team and the corresponding team within the NJDOT for such records if they exist.

8. Does NJDOT have historic inspection records containing section loss data available? Are they in a digital format?
   BOR will coordinate between the research team and the corresponding team within the NJDOT for such records if they exist.

9. Will NJDOT coordinate and obtain approval for the field testing and sampling of bridges owned by local agencies?
   No.

10. Will NJDOT pay for traffic control and costs related to access for testing/sampling (e.g., man lift)?
    NJDOT will not pay any cost that exceeds the contract.

Research Project 2022-05 NJDOT Corrosion Study on Steel Structural Members

September 14, 2022

Q & A

1. Does the corrosion study include corrosion of painted carbon steel and grades of weathering steel?
   It can be. Depending on their use in constructing steel structures

   a. Is galvanized steel to be included?
      Yes

   b. Does it include steel used in reinforced earth walls or only atmospherically exposed steel?
      Not only atmospherically exposed steel. For example, steel sheet pile wall can be included. However, it does not include steel used in reinforced earth walls.

2. Are the structures of interest limited to bridges or does it include other steel materials/configurations, such as guardrail materials, signage, etc.?
   It can include signage and guiderail along with bridge steel structures, culverts, steel sheet piles etc.

3. In Phase 2, is it NJ DoT's intent to perform tests on actual corroded steel members, or "coupons" cut from corroded members? The wording "samples should be taken from the structure" is a bit unclear.
   It can be both, depending on feasibility and accuracy.

4. Can NJDOT clarify what constitutes tests to determine a member's strength? Does this refer to:

   a. Mapping/prediction of magnitudes and form of corrosion that can be used by others (e.g., within FEA models) to determine "strength" impacts, and/or

   b. Mechanical testing of a basic nature (e.g., impacts on tensile, bend, and compression properties) and/or

   c. Testing of a complex nature (e.g., fatigue, shear, rotational strength impacts)?

   It can be all of a to c listed above; however, b and c give more accurate/reliable data or at least can be used as ground truth to calibrate any prediction model.

5. In the Phase 3 data analysis, is the expectation of the data model to predict the magnitude/forms of corrosion (e.g., metal loss) as a function of structure/location/service or is the model to result in a finished tool for the civil engineer.

   All proposed models framework will be carefully evaluated by the Department. The framework of the models is up to the proposer to propose.