



Structures Engineering Instructions (SEI)

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Approved: Wm. Michael Hedges **Date:** 3/15/12
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Subject: Reinforcing Steel Use and Selection Policy

Administrative Information:

Effective Date: This SEI shall be considered effective for the Structures Section from the date of approval.

Superseded SEI: None.

Exceptions: Exceptions must be approved by the Program Manager.

Disposition of SEI Content: The technical information transmitted by this SEI will be incorporated into the next revision of the Structures Manual.

Purpose:

Research done by various states, such as Virginia and Florida, have indicated that a shift from current reinforcing steel practice is required to ensure that structures achieve the intended design life.

Technical Information:

The Materials and Research Section recently completed an accelerated corrosion study on a wide variety of reinforcing steel bars. The results of that study indicate that the various reinforcing steels available to us for use can be broken down into three different levels of corrosion resistance which is summarized below:

Level I (Limited Corrosion Resistance) – Plain, Low Alloy, and Epoxy Coated Reinforcing Steel

Level II (Improved Corrosion Resistance) – Stainless Clad and Dual-Coated Reinforcing Steel

Level III (Exceptional Corrosion Resistance) – Solid Stainless Reinforcing Steel

The following is a description of where each level of reinforcing steel is appropriate.

The reinforcing steel type used in a component should match the existing steel used in that component for a partial replacement or widening project.

Level I – Level I reinforcing steel shall be used in all locations not designated as requiring Level II or Level III corrosion protection.

The following locations shall utilize reinforcing steel with Level II or Level III corrosion protection:

- bridge superstructure concrete, including decks, slabs, curbs and railing;
- back walls and curtain walls above the bridge seat;
- piers caps; and
- tunnels or substructures in a tunnel-like environment likely to be exposed to salt water or salt spray from plowing operations.

Level III – Level III reinforcing steel shall be utilized in those locations listed above for any of the following scenarios:

- Interstate structures,
- NHS structures, and
- Site where extended service life is desirable due to the high cost and/or difficulty of bridge maintenance or construction.

Level II – Level II reinforcing steel shall be utilized in those locations listed above where Level III reinforcing steel is not warranted, i.e. non-NHS State and Town highway structures.

Level I (Epoxy Coated) – Epoxy coated reinforcing steel may be substituted for Level II or III reinforcing steel in those locations listed above for either of the following scenarios:

- An unpaved road with an ADT ≤ 400 ; or
- Components having a reduced design life. For example, a deck replacement on existing beams or substructure, where the intended design life is 30 years or less.

The following guidance should be considered when detailing reinforcing steel.

Coated reinforcing steel is difficult to effectively repair in the field and stainless steel is difficult to cut in the field. Thus, the designer should try to limit the number of reinforcing bars detailed to be cut-to-fit in the field.

Implementation:

The content of this SEI will be implemented immediately on all projects that have not progressed beyond the pre-contract phase.

Transmitted Materials:

None.