

Regulatory Guide Periodic Review

Regulatory Guide Number: 1.199, Revision 0

Office/Division/Branch: RES/DE/SGSEB

Title: ANCHORING COMPONENTS AND STRUCTURAL SUPPORTS
IN CONCRETE

Technical Lead: Marcos Rolon and Christopher Jones

Staff Action Determined: Revise

1. What are the known technical or regulatory issues with the current version of the RG?

Regulatory Guide (RG) 1.199, "Anchoring Components and Structural Supports in Concrete", issued in November 2003, provides guidance to licensees and applicants on methods acceptable to the NRC staff for complying with the NRC's regulations in the design, evaluation, and quality assurance of anchors (steel embedments) used for component and structural supports in concrete structures. This Regulatory Guide 1.199 endorses, in part, American Concrete Institute (ACI) Appendix B to ACI 349-01, ACI 355.2-01 (2001) and American Society for Testing Materials (ASTM) E488-96 "Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements," (1996). However, the most recent versions for these standards are ACI 349-13 (2013), ACI 355.2-07 (2007), and ASTM E488-10. Some major changes have been incorporated in ACI 349-10, including changes of reduction factors and load combinations. Moreover, additional information has been presented in the updated versions of ACI 355.2-07, and ASTM E488-10. Therefore, the NRC staff considers that RG 1.199 should be revised to in light of the revised standards.

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

There are no large power reactor license applications anticipated in the near future (next 3 to 5 years). Thus, there is no immediate need for revising the guide at this time to address their licensing. For small modular reactors, one application is anticipated in the next two years.

However, there may be an impact in the reviews of future plant design changes and/or modifications relative to seismic Class 1 structures, systems, and components (SSCs) (e.g., seismic storage structures for post-Fukushima response equipment).

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contract resources?

NRC staff requires approximately 0.4 FTE to complete a full revision of Regulatory Guide 1.199.

4. **Based on the answers to the questions above, what is the staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?**

Revise R.G. 1.199 in light of the revised standards.

5. **If a RG should be revised, provide a conceptual plan and timeframe to accomplish this.**

1. Identify the portions of RG 1.199 requiring attention.
2. Review changes in the revised standards.
3. Identify dependencies between any items both within the RG itself as well as between other RGs (e.g. RG 1.142).
4. Determine which technical problems have already been addressed in other RGs.
5. For technical problems that remain unaddressed, perform necessary literature review or calculations to satisfy the problem.
6. Review the revised RG to ensure agency standards are met.
7. Transmit to the Regulatory Guidance and Generic Issues Branch in the Office of Nuclear Regulatory Research for processing by approximately October 2015.

References:

American Concrete Institute (ACI) 349-01 and 349R-01, "Code Requirements for Nuclear Safety Related Concrete Structures," with Appendix B, "Anchoring to Concrete," and Commentary (ACI 349R-01), American Concrete Institute, Farmington Hills, Michigan, 2001.

ACI 349-97, "Code Requirements for Nuclear Safety Related Concrete Structures," with Appendix B, "Steel Embedments," American Concrete Institute, Farmington Hills, Michigan, 1997.

ACI 355.2-01/ACI 355.2R-01, "Evaluating the Performance of Post-Installed Mechanical Anchors in Concrete" (ACI 355.2-01) and "Commentary" (ACI 355.2R-01), American Concrete Institute, Farmington Hills, MI, 2001.

American Society for Testing and Materials (ASTM) E 488-96, "Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements," American Society for Testing and Materials, West Conshohocken, PA, 1996.

NOTE: This review was conducted in April 2015 and reflects the staff's plans as of that date. These plans are tentative and are subject to change.