

SECTION 16

POST INSTALLED ANCHORS and DOWELS

OBJECTIVE

Post installed anchors and dowels involve those systems installed typically into concrete or masonry after it is hardened. Most of these anchor systems require drilling or coring to accomplish the installation. Many of these systems specify special inspection and/or testing to qualify them for certain load capacity.

Anchor installation inspection occurs during the installation process to verify the required procedures were followed. Anchor proof load testing occurs after the installation and may be specified for tension (pull-out) or torque (with wrench). Project requirements may require installation inspection or proof load testing and some may require both.

The Statement of Special Inspections, prepared by the responsible design professional, will define the special inspection task(s) required. Qualified special inspectors who diligently perform the duties listed below while under the direct supervision of the materials engineering laboratory can best achieve this objective.

OBSERVATION DUTIES FOR ANCHOR/DOWEL INSTALLATION

A. Documents

1. Review the approved plans, specifications, and other appropriate project documents.
2. Review applicable sections of referenced codes and standards, particularly the product manufacturers specifications and, if available, the ICC Evaluation Service (ES) Reports.

B. Materials

1. Verify brand or manufacturer of anchor.
2. Verify brand or manufacturer of epoxy or grout.
3. Verify the expiration dates on epoxies

C. Sampling of Materials

1. If required sample the materials in accordance with specified standards required.
2. Refer to the material engineering laboratory for direction in sampling procedures and specimen.

D. Observations Procedures

1. Identify the substrate as standard concrete, lightweight concrete, CMU, or brick.
2. Report the design strength of the concrete and age if known.
3. Report the orientation of the hole.
4. Check the anchor for size (diameter) and length
5. Check the epoxy for approved use
6. Check epoxy is proper for application
7. Verify drill or core size meets manufacture specs
8. Check diameter of hole and depth of holes
9. Check cleanliness of hole
10. Check holes spacing for compliance to specifications
11. Check holes after placement of inserts to verify fullness of epoxy contact.
12. Record ambient temperature and note if outside of specified range.

OBSERVATION DUTIES FOR PROOF LOAD TESTING OF INSTALLED ANCHORS/DOWELS

A. Documents

1. Review the approved plans, specifications, and other appropriate project documents.
2. Verify the type of test load that is required (tension or torque).
3. Verify the frequency of tests that are required.
4. Verify the test load value is specified and approved as required. The special inspector is not authorized to determine the test value if it is not specified.
5. Review applicable sections of referenced codes and standards, particularly the production manufacturers specifications and, if available, the ICC Evaluation Service (ES) Reports.

B. Materials

1. Record the type of anchor system and epoxy reported as being used, and identify to source of this information. The anchor system cannot be verified unless the installation was witnessed.

C. Observations Procedures

1. Record the proof load equipment being used: rams, gauges, torque wrenches.
2. Verify the proof load equipment has been calibrated and record expiration date if available.
3. Identify any proof loading fixtures being used (load frames) and how they were set up.
4. Describe the anchor type, make, and model reported including diameter and length.
5. Record the testing location within the structure.
6. Record the proposed use of the anchor.
7. Record the quantity of anchors tested (passed and failed).
8. Record the quantity of anchors that were retested (passed and failed).
9. Record the percent anchor tested within that particular location of the structure.
10. Anchors which fail need to include remarks indicating what is being done about them in the future.
11. Record how the tested anchors were marked (pass-green, fail-red) or not.
12. Identify who was notified of the results of the testing.
13. Identify where the specified test loads were obtained.

D. Reports

1. Submit written progress reports describing the tests and observations made and showing the action taken to correct nonconforming work. Itemize any changes authorized by architect/engineer. Report all uncorrected deviations from plans or specifications.