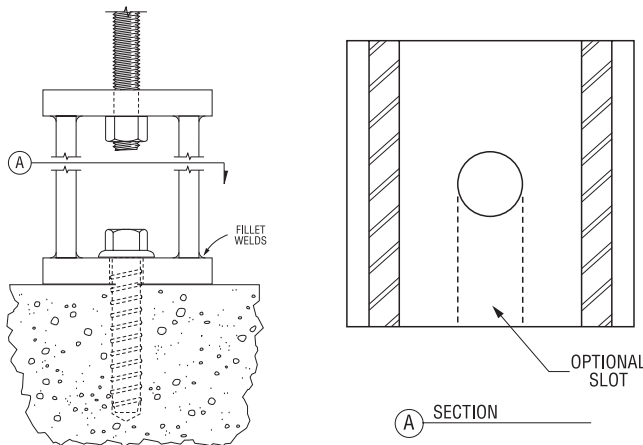


INSPECTION GUIDELINES FOR TITEN HD® ANCHORS

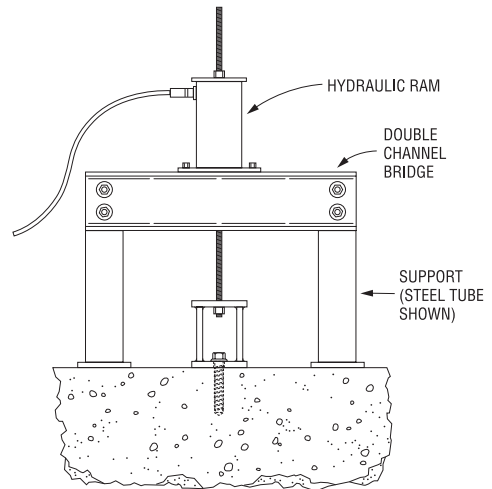
Titen HD® anchors are installed into hardened concrete by drilling a hole and torquing the anchor in with a wrench. During torquing, the anchor's serrated teeth self-tap internal threads into the walls of the concrete hole. The interlock between the anchor's threads, and the hole's internal threads provide the anchor's resistance to tension loads.

Some project specifications require that installed anchors be tension-tested to verify proper installation and capacity in project-specific base materials. Test labs and inspectors are quite familiar with the process for tension-testing wedge anchors and adhesive anchors. These types of anchors have exposed threaded ends and are coupled to directly with a pulling rod during a field tension test. Titen HD anchors do not have an exposed threaded end, thus a pulling fixture must be used to overcome this difference. Two types of pulling fixtures can be employed:

- **Unslotted Pulling Fixtures:** If a the bottom plate of the pulling fixture is unslotted, the anchor must be completely extracted from the hole so it can be rethreaded through the pulling fixture into the base material. Rethreading the anchor into the same hole will not reduce the load capacity of the anchor if the original threads that were cut into the concrete by the anchor are followed. Thus, it is highly recommended that the anchor be re-started by hand until the head of the anchor makes contact with the permanent fixture. Starting the fastener by hand will prevent cross-threading and possible capacity reductions.
- **Slotted Pulling Fixtures:** Use of a pulling fixture with a slotted bottom plate is ideal. This allows anchors to be tested more quickly since the Titen HD anchor need only be backed out enough to slide the pulling fixture plate under the head of the anchor. However, the pulling fixture's bottom plate must usually be thicker to provide sufficient strength during the test.



Note: Torque-testing of anchors is not considered to be a suitable method of verifying anchor tension capacity since the torque-to-tension relationship of concrete anchors varies depending on installation and base material conditions.



Regardless of which type of fixture is used, the engineer and inspector must pay special attention to the anchor's embedment depth during testing. For example, if one wishes to test a Titen HD anchor that is installed through a 2x4 wood plate that cannot be removed during testing, the anchor must be backed out enough to accommodate the thickness of the pulling fixture. This reduces the original embedment depth by the thickness of the pulling fixture and will reduce the capacity of the anchor in the as-tested condition when compared to the installed condition. The test load should be based on the anchor embedment depth in the as-tested condition.

The magnitude of the test load is to be determined by the project's Engineer of Record. It should be large enough to establish confidence in the anchorage without inducing permanent deformation into the anchor or failing it. A load of 1.5 to 2.0 times the static design load is often used as a starting point and then reduced if necessary to prevent yielding (permanent deformation) of the anchor. It is recommended that test loads be no more than the lesser of 2.0 times the static design service load or 80% of the anchor's steel yield strength. The Titen HD anchor yield occurs at a stress of about 120,000 psi.

This technical bulletin is effective until June 30, 2012, and reflects information available as of April 1, 2008. This information is updated periodically and should not be relied upon after June 30, 2012; contact Simpson Strong-Tie for current information and limited warranty or see www.simpsonanchors.com.

Home Office
5956 W. Las Positas Blvd.
Pleasanton, CA 94588
FAX: 925/847-1603

Southwest U.S.A.
260 N. Palm Street
Brea, CA 92821
FAX: 714/871-9167

Southeast U.S.A.
2221 Country Lane
McKinney, TX 75069
FAX: 972/542-5379

Western Canada
11476 Kingston St.
Maple Ridge, BC V2X 0Y5
FAX: 604/465-0297

Northwest U.S.A.
5151 S. Airport Way
Stockton, CA 95206
FAX: 209/234-3868

Northeast U.S.A.
2600 International Street
Columbus, OH 43228
FAX: 614/876-0636

Eastern Canada
5 Kenview Blvd.
Brampton, ON L6T 5G5
FAX: 905/458-7274

Warehouses & Manufacturing:
Eagan, MN; Enfield, CT; Gallatin, TN;
High Point, NC; Jacksonville, FL; Jessup, MD;
Kent, WA; Langley, BC; Ontario, CA

800-999-5099
www.simpsonanchors.com

© 2008 Simpson Strong-Tie Company Inc.
Printed in the U.S.A.

T-SAS-THDINSP08 4/08 exp. 6/12