

**ACCEPTANCE CRITERIA FOR TEMPORARY TIE-BACK ANCHORS OF
MULTI-STRAND PRE-STRESSING STEEL & WEDGE PLATE**

1. Static Tension test to at least 95-percent of the specified ultimate tensile strength of the multi-strand pre-stressing steel used for temporary tie-back shoring system. Further that the bending stress in the plate induced by the pull of the pre-stressing steel shall not exceed the yield point of the material or causing visible distortion of the anchorage.
2. A minimum of three specimens shall be tested for each type of the wedge plate system. Two to three test per each wedge plate type depends on the configuration of the wedge plate.
3. All structural test shall be done in a test lab approved by City of Los Angeles Department of Building and Safety. A list of the approved test labs is located on LADBS web site @ “www.ladbs.org.”
4. The installation of the temporary tie-back shoring system shall comply with the attached “Requirements for Temporary Tie-back Earth Anchors.”

a:L202

REQUIREMENTS FOR TEMPORARY TIEBACK EARTH ANCHORS

Tieback earth anchors may be used for lateral support of excavation walls for periods up to two years, provided:

1. Soil Investigation Report

Plans for each proposed installation are accompanied by a foundation analysis prepared by an agency acceptable to the Department. The report shall be approved by the Department and shall include recommended soils engineering criteria which will enable the shoring design engineer to determine the size, depth, location and capacity of the earth anchors and the contractor to select a satisfactory method of installation. The shoring plans shall comply with all the approved recommendations of the foundation engineer's report. Where applicable, an engineering geologist report shall be included with the soils report.

2. Drilled Anchor Holes

- a. The Registered Deputy Building Inspector shall verify that the size, depth and location of each drilled hole complies with the approved plans. A log of depth readings for each drilled hole shall be available for the Building Department Inspector. This shall not waive the required inspection by the Building Department Inspector.
- b. Prior to pouring concrete or grout in the drilled holes, the foundation engineer shall post written certification at the job site for the City Building Inspector and the Contractor stating that the soil conditions encountered in each drilled hole is in conformity with the conditions included in his report. No concrete or grout shall be poured until the City Building Inspector also has inspected and approved the anchor excavation and installation.

3. Installation of Concrete Anchors

- a. Concrete or grout shall be placed in the anchor holes through a hose adequately attached to the anchor rod or a rigid tube or by other methods approved by the Department.
- b. Concrete shall be placed only in dry holes except that where groundwater is present and it is determined that it is not feasible to pump the water from the holes, concrete may be placed underwater, subject to Department approval, provided the foundation engineer recommends that such placement would result in a satisfactory installation. The concrete shall be placed by pumping through a rigid pipe extending to the bottom of the holes.

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- c. A registered concrete Deputy Building Inspector is required to verify that the concrete or grout mix requirements, the rod location within the anchor holes, and the placement of the structural concrete for the anchors are in accordance with the approved plans.
 - d. Prior to testing the anchors, the foundation engineer shall ascertain that the structural concrete does not extend into the assumed failure wedge. No concrete shall be placed in that portion of the anchor hole that extends into the failure wedge until the testing of the anchors is completed.
 - e. A monitoring system shall be provided in accordance with the approved recommendations of the foundation engineer.
 - f. Provisions shall be made for corrective retensioning should significant slippage occur.
4. Testing of Anchors.
- a. Each anchor shall be satisfactorily tested in a minimum of 150% of the design load. The anchor rod including rod stretch shall not move more than 12" total during application of the test load from 0% to 150%. At 150% test load the anchor movement shall not exceed 0.1 inch during a 15 minute test period.
 - b. Unless otherwise approved by the Department on the recommendation of the Foundation Engineer, 10% of the anchors shall be tested to 200% of the design load. In addition, a representative sample of these tie-back anchors shall be tested for a time period of 24 hours. The Foundation Engineer shall specify the number and location of these anchors in an addendum report which is to be submitted to and approved by the Department prior to issuance.
 - c. Certification from an approved testing laboratory is required for the calibration of the anchor loading devices at the start of each job and at 30 day intervals thereafter.
 - d. No test shall be performed until the concrete has attained at least 100% of its assumed design ultimate compressive strength, f'_c .
 - e. The Foundation Engineer shall inspect and approve the testing of all anchors. He shall keep a report of all test loads and total anchor movements and certify to their accuracy. This record shall be kept on the job site and shall be available for inspection by the Building Inspector.

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- f. Upon completion of the anchor installation and testing the Foundation Engineer shall submit a report to the Department stating that the installation and testing of all anchors is in conformance with the recommendations of the foundation report and any supplements.
 - g. For excavations adjacent to a public way or public structure, the deflection limits of the soldier piles will be established by the Public Works Department, Structural Engineering Division, during its review of the shoring design.
 - h. Anchors failing the test criteria shall be disapproved except that reduced capacities may be assigned to such anchors upon recommendation of the foundation engineer and approval by the Department.
5. Anchor Material
- A. The anchor material is manufactured of mild steel or high tensile steel. For steel with an f_y greater than 36,000 psi, the manufacturer shall furnish certification to the Department of the properties of such material.
 - B. At design load, the stress in the rod or tendon shall not exceed 60% of the specified yield strength of the rod or tendon material. Anchors which are designated for testing to 200% design load shall have an area of steel sufficient to keep the stress at test load equal to or less than the specified yield strength of the material.
 - C. Both the rod and the nut are to be free of mill scale.
6. Protection of Material
- a. For installations of duration up to six months, the steel shall be coated with approved corrosion resistant protective covering and wrapped with two layers of asphaltic-impregnated reinforced Kraft paper except for the bonding length.
 - b. For installations of duration up to one year, the rods shall be first wrapped with approved corrosion resistive protective covering of 8 mil minimum thickness and then coated and wrapped as specified in “a” above except for the bonding length.

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- c. For installations where the anchor will remain in place for longer than one year but less than two years, the rods shall be protected by a minimum cover of 3" of concrete.
- d. Satisfactory methods of protection, other than those specified in a., b., and c above, may be used subject to Department approval.
- e. Where groundwater is encountered in the tie back anchors connection:
 - 1. A person qualified in metallurgy shall furnish a statement that soils, the groundwater, and the metals are compatible with the proposed treatment for the connection.
 - 2. The corrosion resistant treatment for the connections shall be applied under the supervision of a person qualified in metallurgy.

H:ers/Temp Tieback Anchors