



Minnesota Department of Transportation  
Approved Anchorage Program  
May 12, 2008

The Minnesota Department of Transportation (Mn/DOT) will only accept concrete anchorage from the Mn/DOT Approved Products List. This applies to all concrete anchorage sold to contractors for use on Mn/DOT projects. **Adhesive anchors will not be allowed in sustained tensile-load (hanging from a ceiling) overhead application.**

For concrete anchorage to be approved by Mn/DOT, a Manufacturer must demonstrate an ability to manufacture concrete anchorage meeting the requirements of ASTM E 488-96. Epoxies must meet ASTM C881 for the type, grade, and class of material needed to meet the conditions at the time of placement.

The Manufacturer must comply with the following:

A. Approval

There are two separate approval processes for concrete anchorage:

- 1) For miscellaneous anchorage requiring a pullout strength of 5000 pounds of force.
- 2) For high strength anchorages requiring specific pullout and shear strength as designed for a specific project.

B. Testing

Miscellaneous testing

The supplier must provide test results from an independent laboratory for pullout and shear strengths of several different anchor and/or rebar diameters and embedment lengths. These results will then be evaluated and a minimum size anchor will be chosen for further evaluation. The supplier then must demonstrate the anchorage system at a certified independent testing laboratory in the Saint Paul/Minneapolis area. The demonstration should include installation and a pullout test (ASTM E 488) done in the presence of State project personnel and/or a Concrete Office representative. The laboratory pullout test will be conducted on 3Y43A concrete using Class A aggregate with a CA-50 gradation. The concrete shall meet the requirements of Mn/DOT Specification 2461 and shall be cured 28 days at the time of the test. The anchorage system will be required to meet a minimum of 5000 pounds force of pullout strength based on an average of five separate tests, with no test deviating from the average by more than 15%. This demonstration will be at no cost to the State.

## Specific Project Testing

The supplier must provide test results from an independent laboratory for pullout and shear strengths of several different anchor and/or rebar diameters and embedment lengths. These results will then be evaluated to determine if the proposed anchorage system meets the specific project requirements. The supplier then must demonstrate the anchorage system at the first site of field installation, prior to actual use in the project. The demonstration should include installation and a pullout test (ASTM E 488) conducted in the presence of State project personnel and/or a Concrete Office representative. The anchorage system will be required to meet or exceed the design pullout and shear strengths required by the specific project proposal and/or plan. This demonstration will be at no cost to the State.

### C. Reference Material

Manufacturer shall submit a specification data sheet.

### D. Material

Federal aid projects require that the regulation, U.S. Code of Federal Regulations 23CFR635.410, the "Buy American Steel Regulation", be followed. This is outlined in Special Provision (1601) SOURCE OF SUPPLY AND QUALITY, see special provisions: <http://www.dot.state.mn.us/pre-letting/prov/pdf/sp2005.pdf>

### E. Field Acceptance

If the above criteria are met successfully, the anchorage will be given tentative approval, contingent upon satisfactory performance in the field. This approval will be for the anchorage diameter and embedment equal to or greater than that which passed.

### F. Non-Compliance

If future samples of these materials do not meet Mn/DOT specifications, the product may be removed from the approved product list.

Please also note that it is the manufacturer's responsibility to immediately notify Mn/DOT if any product is changed or modified, or if the product is no longer being produced.

The list of approved products may be found on the Mn/DOT Concrete website at <http://www.dot.state.mn.us/products/index.html>

Reference materials and certification shall be sent to:

Minnesota DOT Attention:

Mn/DOT Concrete Engineering Unit

1400 Gervais Ave.

Maplewood MN 55109 Tel. (651) 366-5575 Fax (651) 366-5530