



**Minnesota Department of Transportation**  
**Approved Anchorage Program**  
**May 5, 2021**

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

For concrete anchorage to be approved by MnDOT, a Manufacturer must demonstrate an ability to manufacture concrete anchorage meeting the requirements of ASTM E488. 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. Miscellaneous - For miscellaneous anchorage requiring a pullout strength of 5000 pounds of force.
2. Project specific - For high strength anchorages requiring specific pullout and shear strength as designed for a specific project.

**B. Testing**

1. Miscellaneous Testing:
  - a. 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.
  - b. The supplier then must demonstrate the chosen anchorage system at a certified independent testing laboratory in the Saint Paul/Minneapolis area. The demonstration shall include installation and a pullout test (ASTM E488). Contact a MnDOT Concrete Office representative prior to installation and pullout testing. The laboratory pullout test will be conducted on 3G52A concrete using Class A aggregate with an ASTM #67 gradation. The concrete shall meet the requirements of MnDOT 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.
2. Specific Project Testing:
  - a. 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.

- b. 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 E488) 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. Environmental Acceptance

The product will be evaluated by the MnDOT Office of Environmental Services using the Hazardous Evaluation Process (HEP) to determine any potential impacts that could result from use of the product. See the attached HEP for information that must be submitted before the product will be evaluated.

D. Reference Material

Initial submittal package shall include:

- Manufacturer contact name, address, phone number and email address
- Completed Hazardous Evaluation Process (HEP)
- Product Data Sheet
- See B.1.a. or B.2.a. above.

Final submittal package shall include:

- See B.1.b. or B.2.b. above.

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 MnDOT specifications, the product may be removed from the approved product list. Please also note that it is the manufacturers responsibility to immediately notify MnDOT 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 MnDOT Approved/Qualified Products website at:

<http://www.dot.state.mn.us/products/concrete/concreteanchorages.html>

Reference materials, test data and certification shall be sent to:

Minnesota Department of Transportation  
Attention: MnDOT Concrete Engineering Unit  
Office of Materials and Road Research  
1400 Gervais Avenue  
Maplewood, MN 55109

**MnDOT Office of Environmental Services  
Hazardous Evaluation Process**

The MnDOT Office of Environmental Stewardship developed the Hazard Evaluation Process (HEP) as a tool to determine potential environmental impacts that could result from use of a product, and consequently, if the product is acceptable for use on MnDOT infrastructure. The following information must be submitted by the vendor for MnDOT to complete the HEP:

1. Vendor information
  - a. Name of Company
  - b. Address
  - c. Technical Contact Name and Telephone Number
  - d. Application Date
  - e. Product Trade Name
  - f. Product Chemical Name
  - g. Product Data Sheet
  
2. Provide Material Safety Data Sheets for all chemicals in the product material. Chemical component identifications must include Chemical Abstracts Service (CAS) registry numbers.
  
3. Metals analysis to include the eight RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) plus copper and zinc. Metals should be analyzed by EPA method 6010 or 6020 on the product as purchased. Total metal concentrations should be reported as mg/L in the final product. The lab report should include Quality Assurance sample results of laboratory blanks, duplicates, and spike recoveries.

Questions regarding the MnDOT Hazard Evaluation Process can be sent to:  
[laura.lyle@state.mn.us](mailto:laura.lyle@state.mn.us) or call 651-366-3608.