SELECTING ANCHORING PRODUCTS

ALL REINFORCING AND ANCHORS
Proof load testing may be done when any of the following concerns arise:
1. The quality of the installation may not be adequate.
2. The available concrete thickness is not adequate to provide unconfined pullout strength equal to the yield of the anchor.
3. The condition of the concrete is deteriorated, spalled, or cracked.
4. The load requirements for pullout (not shear) are structurally critical.

The following information will be provided on the plans, or in the specifications:
1. Anchor size
2. Anchor spacing and layout
3. Anchor type
4. Unconfined pullout requirement
5. Minimum anchor embedment depth

If this information is not in the contract documents, contact the Bridge Program for this information.

TYPE 2 AND TYPE 3 REINFORCING STEEL < M24 (#8), ANCHORS < M24 (1")
Any product on the Qualified Products List may be used as long as there is adequate embedment to develop the specified unconfined pullout. The actual depth required varies between products but may not be less than the minimum depth information specified on the plans.

The minimum anchor embedment provided in the contract document is based on the depth required to prevent failure of the existing concrete, not the requirements of the anchoring material. Minimum embedment specified is usually based on the assumption that the existing concrete strength is < 3000 psi, and that there is less than 1/2" of deteriorated concrete on the surface. If the concrete appears to be soft, poor, or there is significantly more than 1/2" of deteriorated concrete, check with the Bridge Program to make sure the conditions are accounted for.

TYPE I REINFORCING STEEL > M24 (#9), ANCHORS > M24 (1")
Anchoring material shall be selected from the Qualified Products List and approved by Transportation Research and the Bridge Program. 1 mm = 0.04 inch 1 kN = .225 K

References:
MaineDOT’s Standard Specifications, November 2014 Edition:
SECTION 503: REINFORCING STEEL - 503.06 Placing & Fastening
When specified on the Plans, reinforcing steel shall be anchored into drilled holes. The anchoring material shall be one of the products listed on the Maine Department of Transportation’s Qualified Products List, Type 3 Anchoring Materials. Installation shall be in accordance with the manufacturer’s published recommendations. Minimum embedment lengths of reinforcing bars shall comply with the manufacturer’s published recommendations for the anchoring material selected.

Section 504: BRIDGE STEEL ERECTION - 504.42 Bearings and Anchorages
If the anchor rods are set in drilled holes, use an anchoring material from the MDOT Qualified Products List. Anchor rods shall be capable of developing unconfined pullout strength of 30 Kips and 70 Kips for 1 inch and 1½-inch anchor rods respectively. The Department reserves the right to perform in-place pullout tests. Replace bolts failing to meet the pullout strength requirements.

SECTION 523: BEARINGS - 523.091 Anchor Rods
The contractor shall drill the holes and set the anchor rods with a chemical or cementitious Anchoring Material from the MaineDOT Qualified Products List. The Anchoring Material shall completely fill the holes. In place anchor rods shall be capable of developing unconfined pullout strength of 30 kips and 70 kips for M24 and M36, 1 inch and 1-½ inch anchor bolts, respectively.

PLEASE NOTE:
MaineDOT requires re-certification by all manufacturers every five years to ensure that product names and formulations have remained the same since the product was originally placed on this list and that products are still relevant and in production. This shall include the most recent NTPEP testing. NTPEP provides for retesting of this product category on a 5-year basis. A lapse of NTPEP test results may result in disqualification of the product.

The Department continues to evaluate its Acceptance Criteria and reserves the right to revise the criteria and/or withdraw product qualification at any time for any reason without notice. Furthermore, the ability of a product to meet these requirements does not necessarily guarantee addition to the Qualified Products List. Reminder that, products once placed on the Qualified Products List are to be considered prequalified for use only, meaning that they have undergone preliminary review for compliance with MaineDOT, and AASHTO specifications. As with all products, final approval rests with the Designer, Project Manager, Supplier and/or Resident to determine if a product best suits the need of a particular project.

If you are experiencing difficulties reading or printing this page, or have questions regarding the Qualified Products List website, please contact the Product Evaluation Program Coordinator at 207-624-3268 or by email at: NewProducts.MaineDOT@maine.gov