

**THIS MEMO HAS EXPIRED**

February 21, 2001

**MEMORANDUM NO. 02-01**

**TO:** DISTRICT CONSTRUCTION ENGINEERS

**FROM:** Greg Xanders, State Construction Engineer

**COPIES:** Robert Nichols

**SUBJECT:** **ADHESIVE BONDING SYSTEMS FOR STRUCTURAL APPLICATIONS,  
SECTIONS 416 AND 937**

A copy of an attached memorandum from Robert Nichols of the State Structures Design Office, alerts construction personnel to a continuing problem with use of unapproved adhesive bonding systems for splicing prestressed concrete piles is attached.

These bonding systems were dramatically improved as a result of research at the University of Florida and the specifications implementing the improvements went into effect January of 2000. However, in some cases piles are still being spliced with the bonding systems that were in use prior to January 2000. Please be certain that your construction staff is aware of this problem and are completely familiar with the new specifications.

If you have any questions, please call Steve Plotkin at sc 994-4155.

GX/sp  
Attachments

January 30, 2001

M-E-M-O-R-A-N-D-U-M

TO: Greg Xanders, P.E., State Construction Engineer

FROM: Robert E. Nichols, P.E., Ass't. State Structures Design Engineer

COPIES: William N. Nickas, P.E., Robert V. Robertson, P.E., Duane Brautigam, P.E., John Godwin (U. S. Anchor Corp.)

SUBJECT: Adhesive Bonding Systems for Structural Applications, Sections 416 and 937

It has been brought to our attention by one of our Section 937 (Adhesive Bonding Material Systems for Structural Applications) suppliers, U. S. Anchor Corp., that prestressed concrete piles continue to be spliced by some Contractors with bonding material that does not conform to Section 937 of the Specifications and is not on the Department's QPL.

A brief history of the situation is that the use of the old >Type J=epoxy compounds for pile splice bonding material was discontinued effective with the January 2000 Bid Letting by Special Provision [Copy enclosed as Attachment AA@ for your reference]. In lieu thereof, the requirements of Section 416 were

implemented, and one of the requirements is that the bonding material had to comply with Section 937 **and had to be selected from the Department's QPL.**

Additionally, the requirements for using material meeting Sections 416 and 937, and thereby required to be listed on the QPL, were even more emphatically specified in January 2001 by Supplemental Specification Sub-Article 455-7.7.2(d) [Copy of extraction enclosed as Attachment AB@for your reference].

Furthermore, Index No. 600 of the Structures Design Office's Standard Drawings (Topic No. 625-020-300), issued May 5, 2000, requires splices in standard prestressed concrete piles to be constructed with material conforming to Section 937 and listed on the Department's QPL.

It has been suggested that Metric projects are at least a contributing factor in the continued misuse of the Department's requirements regarding bonding material for prestressed concrete pile splices and may even be the predominate factor. It has not yet filtered throughout the bridge design community that all projects, Metric or English, must utilize the 2000 English Standard Indexes to be LRFD-Compliant and to meet the Department's current technical requirements.

These indexes contain the Section 416/937 requirements; whereas, the last Metric Standards Indexes, published in 1998, do not. Therefore, the latest pure-Metric prestressed pile splice details are out-of-date regarding AASHTO-LRFD requirements and regarding the Department's own Specifications.

We respectfully request your assistance in notifying District Construction Engineers that all splices for prestressed concrete piles must be constructed with adhesive bonding material complying with the current Specification Sections 416, 455, and 937 and by the use of products listed on the Department's QPL as Adhesive Bonding Materials for Structural Applications (QPL Category A, products beginning with AAA@).

REN

Attachments

## ATTACHMENT A

### 926-11 Specific Requirements for Type J Compounds.

Epoxies for installing rebar and anchor bolts into the hardened concrete shall meet the requirements of Section 937 and be installed in accordance with Section 416. When the Contract Documents call for the use of Type J, Class I, II, III, IV, epoxy or a Class IV Adhesive Anchor System, use materials meeting the requirements of Section 937, constructed in accordance with Section 416. Use materials meeting Section 937 to construct doweled splices for prestressed concrete piles.

## ATTACHMENT B

**455-7.7.2 Extensions to be Driven or Those 21 feet [6.4 m] or Longer:** Construct extensions to be driven or extensions 21 feet [6.4 m] or longer in length in accordance with the details shown in the plans and in a manner including the requirements, sequences, and procedures outlined below:

(a) Cast a splice section in accordance with Section 450 with the dowel steel in the correct position and alignment.

(b) Drill dowel holes using an approved steel template that will position and align the drill bit during drilling. Drill holes a minimum of 2 inches [50 mm] deeper than the length of the dowel to be inserted.

(c) Clean the drilled dowel holes by inserting a high pressure air hose to the bottom of the hole and blowing the hole clean from the bottom upward. Eliminate any oil, dust, water, and other deleterious materials from the holes and the concrete surfaces to be joined.

(d) Mix the adhesive components in accordance with the manufacturer's directions. Do not mix sand or any other filler material with the epoxy components unless it is prepackaged by the manufacturer for this specific purpose. Use adhesives meeting the requirements of Section 416.

(e) After ensuring that all concrete surfaces are dry, fill the dowel holes with the adhesive material.

(f) Place forms around joints between the pile sections.

(g) Insert the dowels of the spliced section into the adhesive filled holes of the bottom section and position the spliced section so that the axes of the two sections are in concentric alignment and the ends of the abutting sections are spaced ½ inch [15 mm] apart. The Contractor may use small steel spacers of the required thickness provided they have 3 inches [75 mm] or more of cover after completing the splice. Fill the space between the abutting sections completely with the adhesive.

(h) Secure the spliced sections in alignment until the adhesive is cured in accordance with the manufacturer's directions for the time appropriate with the prevailing ambient temperatures. Do not utilize the crane to secure the pile extension during the adhesive cure time. Utilize alignment braces to maintain the proper pile alignment during the epoxy cure time.

(i) After curing is completed, remove alignment braces and forms and clean and dress the spliced area to match the pile dimensions.