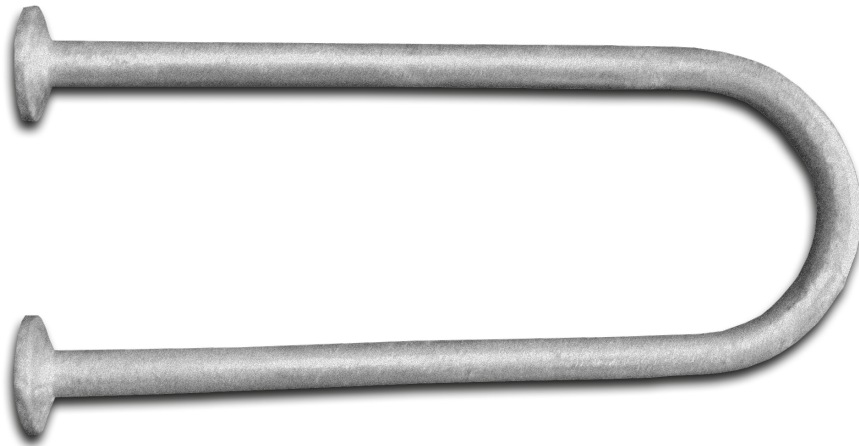




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**Test Report for
A.L. Patterson Precast Anchor Systems
1000 psi concrete strength**

Prepared for:

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INTRODUCTION:

This report presents the results of testing performed by Stork Twin City Testing Corporation (TCT); on A.L. Patterson precast Anchor Systems. The scope of our work was limited to the following:

1. Install three (3) specialty anchors in a single block of concrete
2. Conduct pull out testing of the anchors.
3. Prepare a video of the three pull out test.
4. Prepare a report in regards to the results.

Our work was authorized by Mr. Greg Fleck of A.L. Patterson on April 22, 2010, and approved to proceed via email verification.

SAMPLES:

The anchor samples were submitted by the client to Stork Twin City Testing Corporation, Saint Paul, Minnesota, where they were received on April 23, 2010.

ANCHOR DESCRIPTION:

A.L. Patterson Anchors are used with precast concrete. These anchors recess just below the surface of the concrete. They come with a recessing element, which is removed after casting and thus forms a pocket in the concrete for a hook to be subsequently inserted for lifting. These anchors are embedded the full depth of 7". The recess element forms a pocket that is 4-1/2" wide x 5-1/2" long x 2-3/4" deep. The element tapers to 3" in width and length at the base.



Figure 1 - A.L. Patterson precast anchor (with recessing device removed)

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TEST PROCEDURES:

Stork Twin City Testing cast the concrete block (12" x 72" x 72") that was used for this project on April 27, 2010. During the casting of the block, the anchors were installed according to the manufacturer's installation instructions. After the casting of the concrete, the strength was monitored. When the strength reached approximately 1,000 psi the pull-out test was initiated. The tests were conducted as tension tests in accordance with the test provisions listed in ASTM E 488 - 96 "standard Test Method for Strength of Anchors in Concrete and Masonry Element". The International Accreditation Service, Inc. (IAS) issued a Certificate of Accreditation TL-217, June 3, 2009, listing Stork Twin City Testing Corporation (Stork TCT) as an accredited laboratory for a scope of services that includes testing to ASTM E 488.

CONCRETE:

The concrete structural members used conformed to the requirements of ASTM E 488. The concrete mixtures were proportioned in accordance with the PCA's Design and Control of Concrete Mixtures, Thirteenth Edition. The concrete mixture was proportioned to achieve the prescribed strength. The coarse and fine aggregates conform to ASTM C 33-07. The cement conforms to ASTM C 150-07. No fly ash or other additives were used. The concrete cast and used in this project was Normal Weight.

ANCHOR INSTALLATION:

The concrete anchors tested in this project were installed in general conformance to the manufacturer's installation instructions. The anchors were installed in a single block, in the steel-troweled-finished surface of the concrete during the casting of this block. In general, the test locations were selected within the concrete structural member based on the provisions of Table 2 of ASTM E 488.

EQUIPMENT:

The test load was measured with load cell, serial number 1241143, last calibrated on 12/21/09. Displacement was measured with a string transducer, CME-SPC-053, calibrated on 08/31/09.

REMARKS:

The concrete member used for this project was discarded after testing. The remains of the anchor test-specimens are subject to disposal thirty days from the date of this report.

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TEST RESULTS:

Stork Twin City Testing Corporation Project No. 3209330			Test Series: A.L. Patterson: Precast Anchor Systems ASTM E 488 - 96			Test Type: Pull-Out Test		
Setup and Installation Tech: S. Palodichuk			Test Equipment System No. 2 Load Cell S/N 1241143 LVDT CME-SPC-053			Calibration 12/21/2009 8/31/2009		
Test Specimen Data Anchor System: precast Anchor Material: Not Specified Lot Number: n/a Embed (h _{ef}): 7 Spacing (in.): 28 Edge (in.): 14			Concrete Data Mix #: TCT131 Cast Date: 4/27/10 Anchor Location: Top - Form Finish Member dim (in.): 72 x 72 x 12 Concrete strength (psi): 1030			Calculations based on test data: No. of Test Samples, n: 3 F _{u, test, j} : 20143 Standard Deviation: 259 %COV: 1.3%		
Test No.	1	2	3					
Test Date	04/30/10	04/30/10	04/30/10					
Ult Load (lbf)	19884	20402	20143					
Fail Displace (in.)	0.783	0.964	0.958					
Fail Mode	SB	SB	SB					
Test Duration (sec.)	95	126	111					
Concrete Strength	1030	1030	1030					
Failure Mode Index:	CC - Concrete Cone	SB = Steel, Body	BB - Borehole Bond					
PO - Anchor Pull Out	CE - Concrete Edge	ST = Steel, Threads	BE - Bond Element					
PT - Anchor Pull Through	CP - Concrete Pryout	SN = Steel, Neck	BA - Bond Anchor					
	CS - Concrete Split	TN - Mating Element	TI - Internal Thread					

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Photographs:



Figure 2 - Pull-Out Test set up



Figure 3 – Anchor component un-cast

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Failure Pictures:



Figure 4 – Sample A Failure



Figure 5 – Sample B Failure

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Figure 6 – Sample C Failure