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Company: Haala Industries  
Address: 2101 Hwy. 4 South  
Sleepy Eye, Minnesota 56085  
Attn: Mr. Steve Haala

Report Number: ESP010867P.2  
Date: August 21, 2012  
Page: 1 of 6

### Tension Testing of Lifting Insert/Anchor

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Engineer under the laws of the State of Minnesota.

Jason R. Steen, P.E.  
Registration No. 43491

**Prepared By:**

**Jason R. Steen, P.E.**  
**Staff Engineer, Building Products Evaluation**  
**Phone: 651-659-7259**

**Reviewed By:**

**John D. Lee, P.E., LEED AP**  
**Manager, Building Products Evaluation**  
**Phone: 651-659-7408**

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## **INTRODUCTION:**

This report presents the results of testing performed by Element Materials Technology; on Haala Industries precast concrete insert/anchor. The scope of our work was limited to the following:

1. Conduct pull out testing of the insert/anchor.
2. Prepare a report in regards to the results.

Our work was authorized by Mr. Steve Haala of Haala, Industries on July 24, 2012, and approved verbally.

## **CONCLUSION:**

The precast concrete insert/anchor was tested on August 1, 2012. One sample was loaded to failure in accordance with the Test Procedures found below. The failure mode for sample consisted of concrete split. **The ultimate load of the sample was 21,484 pounds.**

## **TEST SAMPLE:**

The insert/anchor samples were submitted by the client to Element Materials Technology, St. Paul, Minnesota, where they were received on July 17, 2012. A single concrete block with one embedded lifting insert/anchor was submitted. Haala Industries Insert/Anchors are used with precast concrete. The top of the insert/anchor was installed below the surface of the concrete approximately 2" in an access pocket. Sample drawing as received is shown below.

## **TEST PROCEDURES:**

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, January 12, 2012, listing Element Materials Technology as an accredited laboratory for a scope of services that includes testing to ASTM E 488.

## **CONCRETE:**

The concrete structural member was designed and cast by others. No description of the mix design was received for this concrete. No concrete strength was determined at time of testing.


## **ANCHOR INSTALLATION:**

The concrete insert/anchor tested in this project was pre-installed by the client. Element has no information as to the installation of the anchor in general.

### EQUIPMENT:

The test load was measured with load cells, CME-SPC-406 calibration due on 05/11/13.

### TEST RESULTS:

 Element Materials Technology - St. Paul Project No. ESP010867P		Sample Information Cast In Place Loop Anchor and Strand Anchors			Tests Performed 90-Degree Tension																																																																																																																																			
<b>Setup and Installation</b>  Technicians: S. Palodichuk, N. Holderbaum  Concrete Cast By: Contractor Anchors Installed By: Contractor		<b>Test Equipment</b>  System Number: CME-SPC-910 Load Cell: CME-SPC-406 Caliper: CME-SPC-300			<b>Calibration Due Date</b>  5/26/2013 5/11/2013 5/22/2013																																																																																																																																			
<b>Test #2 Information</b>  Anchor System: Part # 3836 Cable Anchor Material: Steel Strands Anchor Location: Side of Block - Form Finish Anchor Size Before(in.): 0.375" Diameter Anchor Size After(in.): 0.275" Diameter Block Number: 48 2B 2X3C Cast Date: 5/21/2012 Install Depth (in.): Unknown Confined Test: No																																																																																																																																								
<table border="1"> <thead> <tr> <th>Test Number</th> <th>2</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td><b>Test Data</b></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Test Date</td> <td>08/01/12</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Test Time</td> <td>10:20 AM</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Install Date</td> <td>05/21/12</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Ultimate Load (lbf)</td> <td>21484</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Failure Mode</td> <td>CS</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Test Duration (sec)</td> <td>83</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Test Fixture Type</td> <td>Clevis</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Test Fixture Diameter</td> <td>1.060</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Outside Anchor Span</td> <td>2 1/4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Anchor Height Before</td> <td>n/a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Anchor Height After</td> <td>n/a</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Test Number	2									<b>Test Data</b>										Test Date	08/01/12									Test Time	10:20 AM									Install Date	05/21/12									Ultimate Load (lbf)	21484									Failure Mode	CS									Test Duration (sec)	83									Test Fixture Type	Clevis									Test Fixture Diameter	1.060									Outside Anchor Span	2 1/4									Anchor Height Before	n/a									Anchor Height After	n/a													
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<b>Failure Mode Index</b> PO - Anchor Pull Out PT - Anchor Pull Through		CC - Concrete Cone CE - Concrete Edge CP - Concrete Pryout CS - Concrete Split			SB - Steel, Body ST - Steel, Threads SN - Steel, Neck TN - Mating Element																																																																																																																																			
		BB - Borehole Bond BE - Bond Element BA - Bond Anchor TI - Internal Thread																																																																																																																																						

### REMARKS:

The remains of the concrete sample and insert/anchor test specimens are subject to disposal thirty days from the date of this report.

**PHOTOGRAPHS:**



Figure 1 – 90-degree Tension Test Set-up



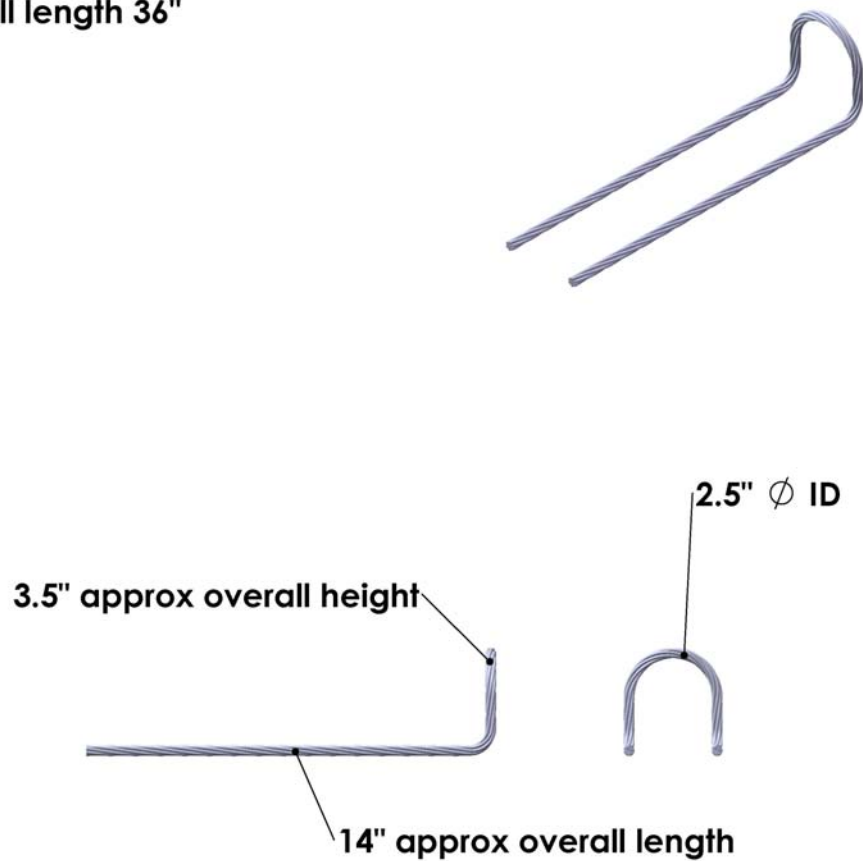
Figure 2 – Tension Failure Mode

**PRODUCT DRAWING:**

**3/8" cable, 7 wire EHS class A galvanized**

**Dimensions are Inches**

**Overall length 36"**



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Email: [steve@haala.com](mailto:steve@haala.com)

DATE : 03/28/08
DRAWN BY: CALEB

**STEEL PROPERTIES:**

**NATIONAL STRAND**
A HEICO WIRE GROUP COMPANY

P.O. Box 96149  
 12611 Cain Circle (77015)  
 Houston, Texas 77213-6149  
 Phone: (713) 455-2888  
 Fax: (713) 455-3888

## CERTIFICATE OF COMPLIANCE

CUSTOMER: <b>HAALA INDUSTRIES, INC</b>		DATE: <b>1/31/2012</b>	
CUSTOMER PO #: <b>33060</b>		SALES ORDER #: <b>116280</b>	
<b>PRODUCT</b>	<b>DIAMETER</b>	<b>PACKAGE</b>	<b>SPECIFICATION</b>
GALVANIZED STEEL STRAND EXTRA HIGH STRENGTH 7-WIRE CLASS "A"	3/8"	30 X 5000' REELS	ASTM-A475

TEST RESULTS						
HEAT #	SIZE	MINIMUM BREAKING STRENGTH (LBS)	ELONGATION PER 24"	WEIGHT OF COATING (OZ. PER FT <sup>2</sup> )	MANDREL ADHERENCE & DUCTILITY	LAY LENGTH
N/A	3/8"	15400	4% min.	0.85	PASS	5.40"

National Strand certifies that the above test results are representative of those contained in company records and were obtained using methods consistent with the requirements of applicable specifications.

The above products were manufactured in the USA.



Juan Garza  
 Quality Department