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Company: Haala Industries Address: 2101 Hwy. 4 South Sleepy Eye, Minnesota 56085 Attn: Mr. Steve Haala Report Number:ESP009248PDate:January 23, 2012Page:1 of 7

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.

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Prepared By:

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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 February 16, 2012, and approved under there purchased order 33236.

CONCLUSION:

The precast concrete insert/anchor was tested on February 17, 2012. One sample was loaded to failure in accordance with the Test Procedures found on page 3 of this report. The failure mode for sample consisted of steel failure. **The ultimate load of the sample was 16,688 pounds**.

TEST SAMPLE:

The insert/anchor samples were submitted by the client to Element Materials Technology, St. Paul, Minnesota, where they were received on February 9, 2012. A single concrete block with two embedded lifting inserts/anchors was submitted. Haala Industries Insert/Anchors are used with precast concrete. The top of the insert/anchor was installed above the surface of the concrete approximately 2-1/2". Sample drawing as received is shown below.





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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, December 21, 2010, 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. A description of the mix design as received can be found on page 7 of this report. 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-401 last calibrated on 06/21/11. Displacement was measured with a string transducer, CME-SPC-505, calibrated on 11/09/11.

REMARKS:

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



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TEST RESULTS:

Pr	oject No. ESP0092	+0F		rialia II)Q.					Tre-Cast Anch		
									Tension Test		
Setup and Installation					Test Equipmen	t			Calibration		
Tech:	S. Palodichuk				System No.		CME-SPC-903				
Drill:	n/a				Load Cell		CME-SPC-401		6/21/2011		
Hammer weight (lbs):	n/a				String CME-SPC-506			11/9/2011			
Clean Meth:	n/a										
Bit:	n/a										
Spec Drill:	n/a										
Test Specimen Data			Concrete Data				Calculations ba	ased on test data	C.		
Anchor System:			Mix #				No. of Test Sar	mples, n	1		
Anchor Element			Cast Date				F _{u,test,i}		16688		
Anchor Size (in.)			Anchor Location	n							
Embed (h _{ef})			Member dim (in	1.)							
Hole Depth (in.)			Est. Prism Stree	ngth (psi)							
Spacing (in.)											
Edge (in.)			Set Temp (°F): Test Temp (°F)		Air: 72 / Conc:	68					
Test No.	1										
Test Data									_		
Test Date	02/17/12										_
Test Time	14:00										
									-		_
Ult Load (lbf)	16688										
Fail Displace (in.)	0.469										
Fail Mode	SB										
Test Duration (sec.)	132										
Failure Mode Index:	C	C - Concrete	Cone		SB = Steel, Bo	dy		BB - Borehole	Bond		
PO - Anchor Pull Out	c	E - Concrete I	Edge		ST = Steel, Thr	reads		BE - Bond Eler	nent		
PT - Anchor Pull Through	c	P - Concrete	Pryout		SN = Steel, Ne	ck		BA - Bond Anc	hor		
		S - Concrete	Split		TN - Mating Ele	ement		TI - Internal Th	read		
20000											-
40000											
18000											
16000						_					-
14000			/								
14000			/								
រ្ម ¹²⁰⁰⁰		/									+
10000		/									
		/									
8000										-1	H
6000											
0000										2	1
4000											H
										3	
2000											/T
2000											
2000						0.000	0.705	0.000			1.00

EAR CONTROLLED



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PHOTOGRAPHS:



Figure 1 – 90-degree Tension Test Set-up



Figure 2 - Tension Failure Mode

EAR CONTROLLED



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PRODUCT DRAWINGS:





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Water Cement Ratio Total Cementitious

Air Entraining

et Stablizer

17 1

uper Plasticizer

Admixtures

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638 lbs/yd3

4.5 oz/yd

35.9 oz/yd

7.0 oz/yd

Cubic Yard Quantity

lbs

oz

oz

oz

Ounce/

CWT

0.7

5.6

1.1

Ounces per

batch

Concrete Mix Design Information as Received