



## Cor-Form strength test

Performed by: UTS of Massachusetts

Test date:10/9/2020





**Of Massachusetts**  
**"The Construction Testing People"**

5 Richardson Lane, Stoneham, MA 02180 781-438-7755 (Voice) 781-438-6216 (Fax)

**EPOXY EMBED.REBAR STEEL TENSION TESTING**

Distribution Copy

**Report Date** 10-09-2020  
**Report No.** 1  
**Job Number** 25123  
**Project** QC Samples 3 Lower Ladd Hill Rd  
 Meredith, N.H.  
**Contractor** Cor-Form

**WEATHER:**

**.TIME:**

**CONTACT:** Mike Freeman

**SUMMARY:**

Attached is the epoxy embedded reinforcing steel tension testing procedure prepared by UTS inspectors Stephen and Nicholas Alikonis for the above project.

**GENERAL REMARKS:**

Inspector Name	Premium Time	Hours	Travel Time
S. Alikonis	No		
Nicholas Alikonis	No		

**REVIEWED BY:** William P. Crabtree

*WPC*

Our reports are available in PDF form via email. Please email us at [reports@utsofmass.com](mailto:reports@utsofmass.com) for more information.

CC: Cor-Form Michael Freeman

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### Attachment

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T of Massachusetts Inc.  
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5 Richardson Lane  
Stoneham, Ma  
781-438-7755

Project: Mike Freeman, Core-Form  
Inspector: S. Alikonis/N Alikonis  
Contact: Mike Freeman  
Date: 10-09-20  
Time: 7:00am to 10:00am

### **Epoxy Embedded Reinforcing Steel Tension Testing Procedure**

The following procedure for testing the core infill strength of the Core-Form, infill form will be performed in general accordance with ASTM E488-15 *Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements*. This test method will verify the adequacy of the infill by means of a load test, in tension.

#### **Equipment**

- Calibrated 20-ton capacity hydraulic ram.
- ½" threaded rod.

#### **Test Procedure**

Testing shall be conducted in general accordance with ASTM E488-15. A continuous load shall be applied to the threaded rod passing through the concrete and Core-Form by means of a 9/16" hole with a ½" threaded rod connected to the hydraulic ram at a uniform loading rate. Testing will be performed with a tensile load applied to the threaded rod using a calibrated tester. An initial load of 5% of the maximum load, in order to bring all members into bearing. A loading rate of 25 to 100% of the test load will be applied at 25% increments, in a continuously increasing manner, to most closely replicate the forces applied to the concrete infill.

#### **Test Load to failure**

#### **Failure Criteria**

Failure modes will be determined by visual inspection of the exposed areas within the vicinity of the test embed by the following;

- Failure of the concrete such as cracking that radiates outward from the location of the test load,
- Pullout of the core infill,
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**Continued page 2**

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### Page 2

#### Core-Form Infill Test Results

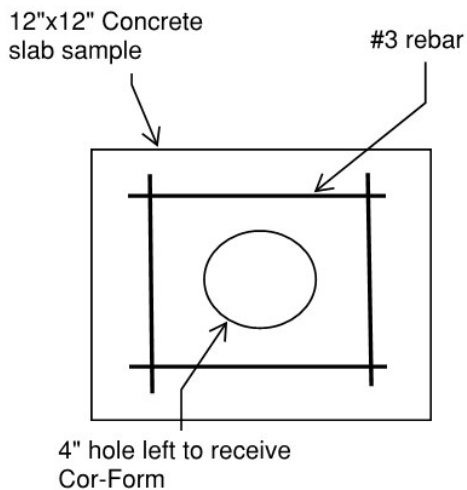
Testing of the 4" Core-Form and concrete infill was performed this date with a mock-up slab thickness of 5.5". Using the attached procedure, testing this date revealed the following,

<u>Test #</u>	<u>Location</u>	<u>Load Achieved</u>	<u>Observations</u>
1.	Mock-up #1	15, 000 Lbf	Testing discontinued at 15,000 Lbf. Inspection of the concrete core and Core-Form revealed no displacement or failures within the concrete of Core-Form.
2.	Mock-up #2	15, 500 Lbf	Testing discontinued at 15,500 Lbf. Inspection of the concrete core and Core-Form revealed no displacement or failures within the concrete of Core-Form.

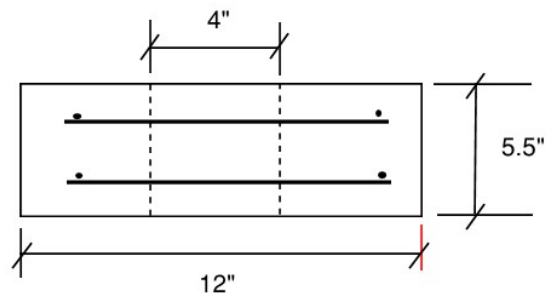
## Test sample details:

- A 12" x 12" x 5.5" concrete sample was placed with a 4" diameter hole in the center.
- 2 layers of #3 rebar were used surrounding the hole in the sample to keep it from cracking during the test.
- 5000PSI concrete was used to make this sample
- The sample was left to cure for 30 days before the Cor-Form was set in place.
- Once the Cor-Form product was set in place, the concrete was placed to fill the hole and was left to cure for another 30 days.
- The following sketches detail how the samples were made.

Top view (plan view)



Side view (section)





## **Test process explanation:**

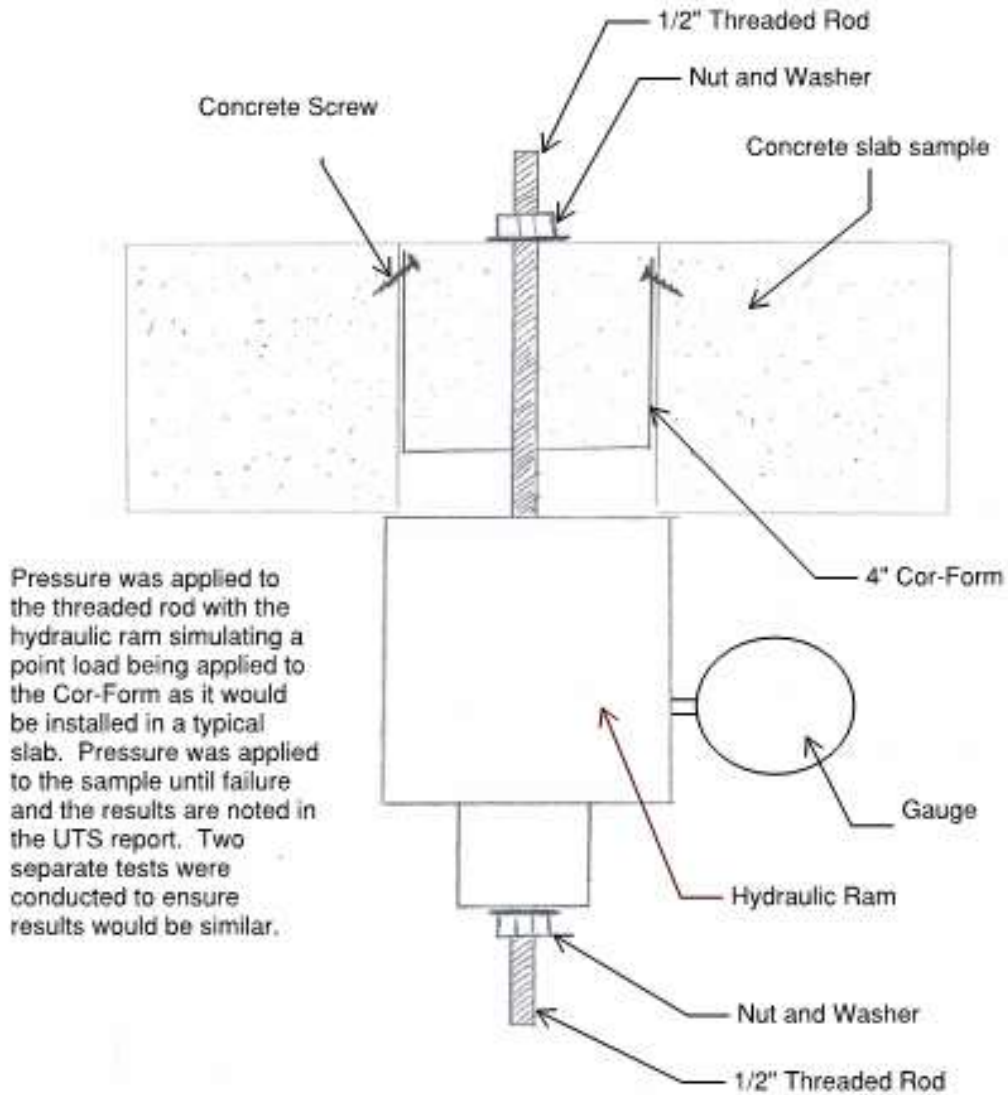
The goal of this test is to determine the overall strength of the Cor-Form assembly when set in a concrete slab. Two samples were made to simulate the existing condition you would find on a construction project. The intent of having two samples was to see if they would have similar breaking points. If the breaking points were similar, then we knew that the strength of the assembly was consistent.

After reviewing the goals and testing options with representatives at UTS of Massachusetts, it was determined that we could perform a modified pull test to gain the data we needed for this test.

After the samples were completely cured, we drilled a hole through the center of the core. Threaded rod was pushed through the hole from the bottom with a nut and washer on the top of the sample. The hydraulic ram was set on the bottom of the sample and tied to the threaded rod. The hydraulic ram pulled the threaded rod to simulate a point load being applied to the center of the repaired core.

A load was applied slowly until the sample failed. That breaking point strength was documented and is noted in the UTS report. Please refer to the following drawing to detail the sample with the hydraulic ram.

# COR-FORM



## Pics of the test in process:



Setting up for the test, rod is installed and ready for the hydraulic ram



The hydraulic ram is in place and ready to begin test



Pressure is being applied to the sample



Test is complete and we are removing the ram.