

Testing: Horizontal Movement



ANALYTICAL SERVICES

Testing of Bigfoot Systems® Footing Forms Horizontal Testing

Conducted By: PSC Analytical Services
Mechanical Testing Services Group

PSC Project No.: 02-03825H

Client: F & S Manufacturing Inc.
R.R. #2, Mahone Bay, NS

Date: April 18, 2002

Scope: The purpose of this testing program was to determine the load required to initiate horizontal movement of various combinations of Bigfoot Systems® Footing (The System) and construction tubes.

Test Article Description:

1. 36" Bigfoot Systems® Footing Form with 18" Construction Tube
2. 36" Bigfoot Systems® Footing Form with 18" Construction Tube
3. 36" Bigfoot Systems® Footing Form with 16" Construction Tube
4. 36" Bigfoot Systems® Footing Form with 14" Construction Tube
5. 36" Bigfoot Systems® Footing Form with 12" Construction Tube

Testing Procedure: The cardboard construction tubes were secured to the four footing forms using six one inch wood screws equally spaced around the circumference. The Systems were placed in a trench approximately four feet, six inches deep, on undisturbed soil. The Systems were then backfilled in approximately 18" lifts. The soil around The Systems was compacted after each lift using a mechanical tamper. Table I below shows the installation details while Figure 1 schematically shows the test set-up. The soil on which The Systems were placed and the material used for backfilling consisted primarily of a sandy loam with some stone.

Table I: Installation details.

	Footing System	Construction Tube Diameter	Tube Height Above Ground Level
#1	36" dia Bigfoot Systems®	18"	8"
#2	36" dia Bigfoot Systems®	18"	7"
#3	36" dia Bigfoot Systems®	16"	9½"
#4	36" dia Bigfoot Systems®	14"	10½"
#5	36" dia Bigfoot Systems®	12"	12"



The concrete was poured directly into The Systems from the concrete truck in lifts of approximately 24 inches until the construction tubes were completely filled. The concrete was rodded approximately twelve times between each lift. Four pieces of rebar were inserted into each System with an eye being inserted into the top of the column. The concrete used was specified to have a compressive strength of 3500 psi and was a mixture of ¾ inch crushed stone aggregate, standard sand, and type 10 portland cement. The concrete had an approximate slump of 3.

Testing: The concrete was allowed to set up for at least one week prior to load testing. A horizontal load was applied to each System using a portable hydraulic ram, see Figure 2. The load was measured using a 50 kip load cell and movement was measured using a displacement transducer, both were recorded using a digital data acquisition system.

Results: The results of the test are detailed in Table II below. The values reported are for the maximum load The Systems withstood and the total amount of displacement that occurred. Do to the nature of the displacement transducer this total displacement not only comprises the horizontal movement of The System but also the bending of the loading eye in the top of the column and any movement of the excavator bucket. It is because of these variables that the initial movement of the columns cannot be accurately calculated from the recorded data.

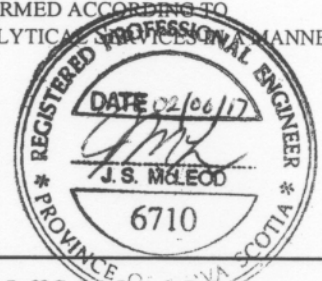
Table II: Horizontal Test Results

Footing System		Construction Tube Diameter	Results		
			Maximum Load (lbs)	Displacement at Max. Load (in)	Comments
#1	36" dia Bigfoot Systems®	18"	11,400	15⅞	no break
#2	36" dia Bigfoot Systems®	18"	12,100	---	straps on disp. transducer broke concrete in column failed
#3	36" dia Bigfoot Systems®	16"	15,000	9	ring pulled out of column
#4	36" dia Bigfoot Systems®	14"	10,100	12¼	no break
#5	36" dia Bigfoot Systems®	12"	8,100	13	concrete broke

Verification: THIS IS TO CERTIFY THAT THE ABOVE TESTING WAS PERFORMED ACCORDING TO REQUIREMENTS SET FORTH BY THE CLIENT AND PSC ANALYTICAL SERVICES IN A MANNER CONSISTENT WITH STANDARD PRACTICES.

Verified By: _____

Jeff S. McLeod, P.Eng.
Manager, Mechanical Testing



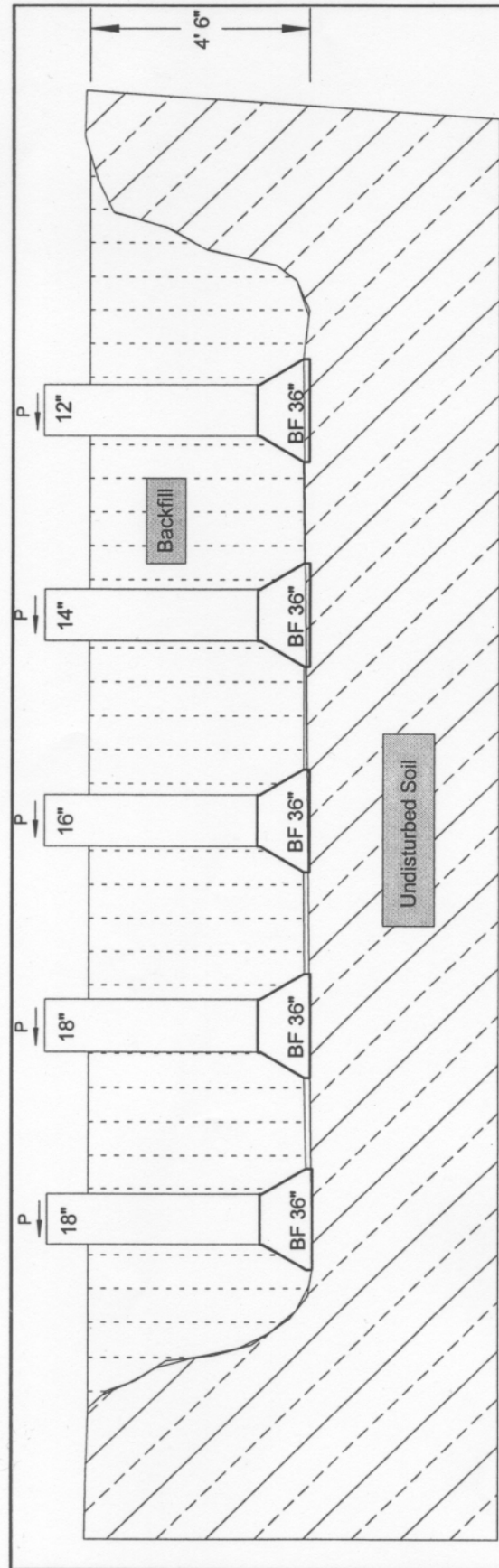


Figure 1: Footing Systems Load Test Set-Up.

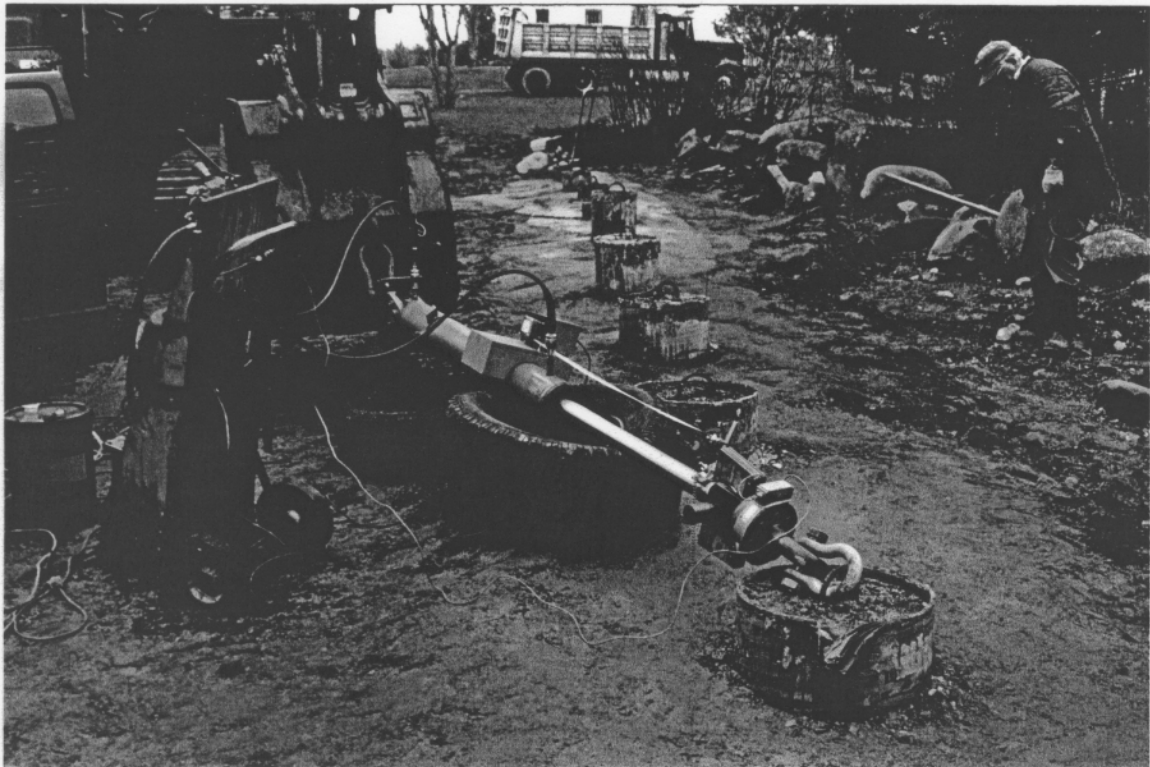


Figure 2: Horizontal Load Test Set-up.