



15 August 2007  
File No. 30322-030

Riverwalk, LLC  
2 Market Street, Suite 500  
Portland, Maine 04101

Attention: Mr. Drew Swenson  
Manager

Subject: Summary of Pile Foundation Installation  
Proposed Ocean Gateway Garage  
Portland, Maine

Dear Mr. Swenson:

The purpose of this letter is to transmit the pile driving records for the above referenced project in accordance with Section 1808.2 of the International Building Code, 2003 edition (IBC Code).

#### **General**

165 steel HP12x53 and HP14x102 H-piles were driven to end bearing in the underlying glacial till and/or bedrock. The piles were fabricated from Grade 50 steel (yield strength of 50 ksi) and were advanced using a steel driving shoe. Design capacities (axial compression) of the piles are 180 and 340 kips for the HP12x53 and HP14x102 piles, respectively.

#### **Indicator Pile Installation and Dynamic Pile Load Testing**

Prior to the start of pile driving, the contractor's engineer submitted their WEAP analysis for review by Haley & Aldrich. This analysis concluded that the following driving criteria should be used to install the piles: 7 and 10 blows per inch (bpi) for the last 6 in. of driving for the HP12x53 and HP14x102, respectively using the pile-hammer system described below. The indicator piles were driven using this criteria. G. Donaldson Construction Co. (Donaldson) installed all of the indicator and production piles for this project.

A total of seven indicator piles were driven at the site on 6 and 7 June 2007 (Pile Nos. 20, 30, 36, 86, 92, 141A and 151). An eighth indicator was attempted at column line B-3 but the pile was not long enough to achieve end bearing without splicing. Donaldson and Haley & Aldrich agreed that this pile was not needed as an indicator pile but would later be spliced and used as a production pile. Both pile sizes were driven using the Junttan HHK-9A hydraulic hammer proposed by Donaldson (in their original WEAP submittal) to install the production piles. The HHK-9A hammer has a maximum rated energy of 78,000 ft-lbs with a ram weight of 19.8 kips and a maximum stroke of 3.94 ft. An 18-in. ram fall setting was used to install the HP12x53 piles and a 30-in. ram fall setting was used to install the HP14x102 piles,

resulting in hammer energies of approximately 25,000 and 42,000 ft-lbs, respectively. Dynamic pile testing was performed by Geosciences Testing and Research, Inc. (GTR). GTR prepared a document entitled "Dynamic Pile Testing Report, Ocean Gateway Parking Garage – Eastern Waterfront Development, Portland, ME," dated 10 June 2007.

### **Results of Dynamic Pile Load Testing**

We reviewed the above referenced report prepared by GTR. A summary of the dynamic testing results and the recommended driving criteria that were used to install the production piles are provided below.

- At the end of initial driving, the calculated total (ultimate) capacity of the piles tested were:
  - 535 to 637 kips (FS = 3.0 to 3.5) for the HP 12x53 piles (2 piles tested)
  - 828 to 1158 kips (FS = 2.4 to 3.4) for the HP 14x102 piles (5 piles tested)

In summary, the indicator piles were driven to the required ultimate capacity with a factor of safety (FS) greater than or equal to the minimum 2.25 (per IBC Code requirements). Accordingly, the piles are acceptable to support the design capacities of 180 and 340 kips (axial compression) for the HP12x53 and HP14x102 pile sections, respectively.

- Per the requirements of the project specifications, four of the indicator piles were selected for "restrike" 24 hours after the end of initial driving to assess false driving resistance (i.e., loss of capacity) and/or setup (i.e., gain in capacity) of the piles. Based on restrike results no appreciable loss or gain in capacity was measured between the end of initial driving and the beginning of redriving. However, two of the piles that were restruck drove at a reduced penetration resistance at the beginning of redriving as compared to the end of initial driving (e.g., 7 bpi at the end of initial driving vs. 4 bpi at beginning of redriving, and 8 bpi at end of initial driving vs. 5 bpi at beginning of redriving). This information was used to revise the driving criteria (originally submitted in the WEAP analysis) for production pile installation (see next bullet).
- Based on the PDA and restrike results, we recommended that the production piles be installed based on the following revised driving criteria:
  - a minimum of 8 bpi for the last 6 in. of driving for HP12x53 piles (original WEAP criteria was 7 bpi)
  - a minimum of 9 bpi for the last 6 in. of driving for HP14x102 piles (original WEAP criteria was 10 bpi)
  - or 10 blows per less than ½ in. of pile penetration (refusal)

The production piles were installed using these revised criteria.

- The measured hammer energy delivered to the indicator piles during installation ranged from 26,200 to 30,500 ft-lbs for the HP12x53 piles, and 36,800 to

43,400 ft-lbs for the HP14x102 piles. These measurements confirmed the hammer energies for the ram fall settings used to install the piles.

- The average compressive stress in the pile section was less than the 90 percent of the yield strength of the steel (45 ksi), per the requirements of the IBC Code. No signs of pile damage were noted in the dynamic records.

### **Monitoring of Pile Installation**

Per the requirements of the IBC Code, a Haley & Aldrich field engineer provided full-time monitoring of pile installation, including all indicator and production piles. Haley & Aldrich was present to verify pile dimensions, to document installation settings of the pile driving equipment, to record pile resistance information during driving and to verify that the specified driving criteria were met for each installed pile (i.e., when to terminate driving of each pile). Based on our observations and measurements of pile resistance during driving, it is our opinion that none of the piles were structurally damaged during installation.

Per the project specifications all of the piles installed along 3.1-line (adjacent to Fore Street) were pre-augered down to El. 0 (approximately 15 ft below grade) in order to protect the adjacent 4-ft diameter brick sewer beneath in Fore Street (sewer invert at approximately El. 4). A 17-in. diameter, continuous flight auger was used to pre-auger at each pile location. Haley & Aldrich monitored the pre-augering activities.

As built plan location of piles and elevations of the pile cut-offs were determined using optical surveying methods by Ledgewood. This information was provided to Haley & Aldrich and Simon Design Engineering to check each pile for compliance with the plan tolerances outlined in the project specifications. No additional piles were driven to account for out of tolerance piles. Surveyed pile cut-off elevations were used to determine final pile quantities. The as-built surveyed information can be provided to you upon your request.

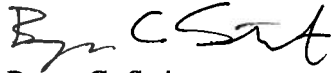
As documented in the enclosed Pile Installation Summary (Table I) and Daily Summary – End Bearing Pile Installation records (Appendix A), Haley & Aldrich observed the installation of 165 piles (41 HP12x53s and 124 HP14x102s) during the period from 6 to 27 June 2007. A total of 8,820.5 lf of pile was installed based on the surveyed pile cut off elevations provided by Ledgewood (2,212.2 linear ft of HP12x53 and 6,608.3 lf of HP14x102). A total of 37 piles required mechanical (Champion) splices and 0 piles required full-penetration weld splices (for piles along column line 1.9-2.1).


### **Conclusion and Closure**

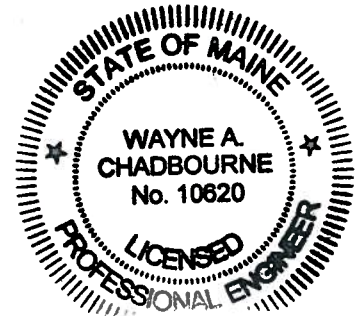
In our opinion, the pile installation work performed by Donaldson and monitored in the field by Haley & Aldrich was conducted in general accordance with the design intent of the project specifications, the project-specific pile driving criteria as outlined herein, and the requirements of the IBC Code.

Please do not hesitate to contact us if you have any questions regarding the pile installation for the Ocean Gateway Garage or if you need any additional information.

Sincerely yours,  
HALEY & ALDRICH, INC.

  
Bryan C. Steinert  
Engineer

  
Wayne A. Chadbourne, P.E.  
Vice President



Attachments:

Table I – Pile Installation Summary

Figure 1 – Foundation Plan

Appendix A – Daily Summary – End Bearing Pile Installation

c: Intercontinental Real Estate Co.; Attn.: Richard Libardoni  
Ledgewood Construction Co.; Attn.: Steve Pitts

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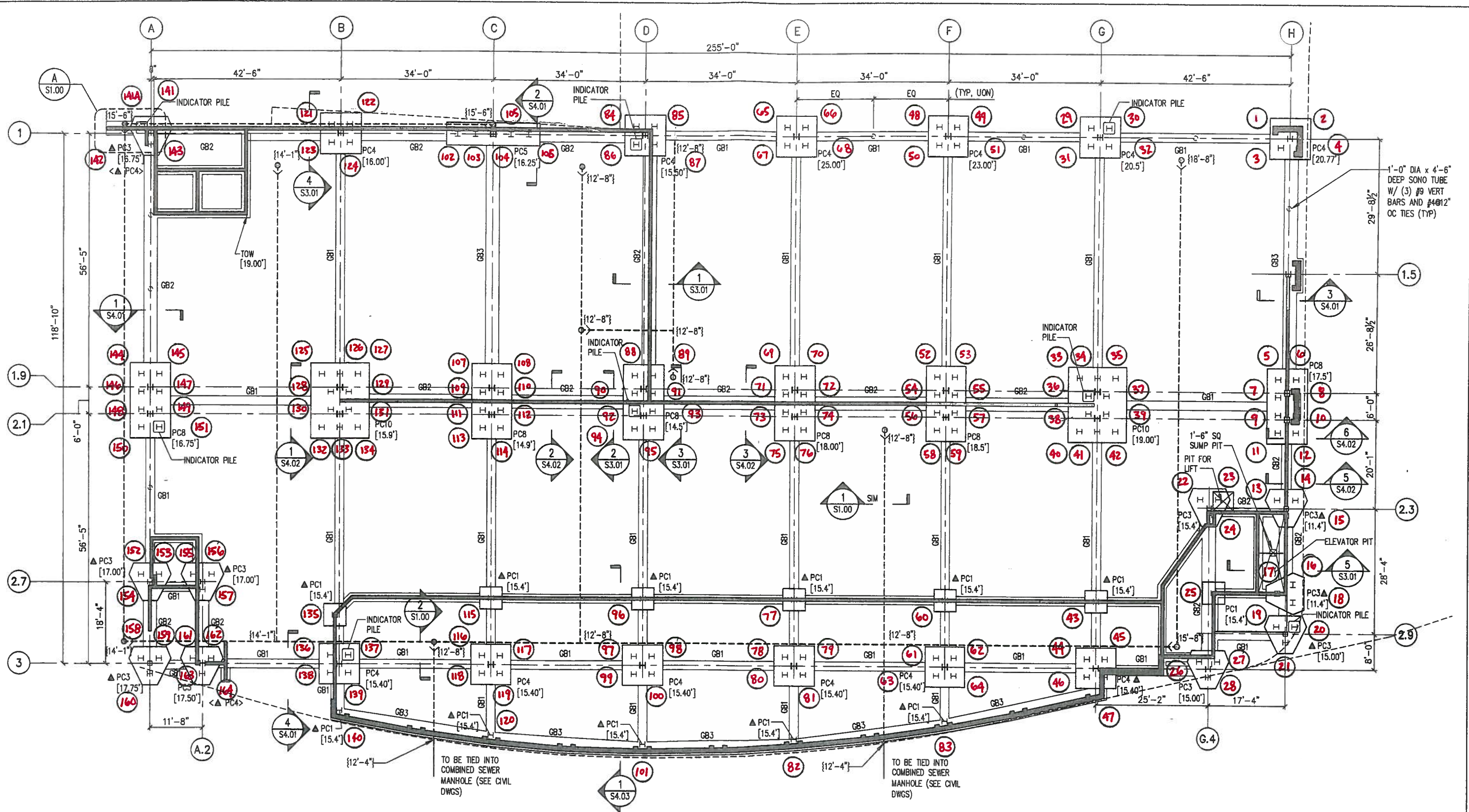
Sort	Pile cap location	Pile Number w/in cap	Date Bottom Installed	Date Top Installed	Date if Pile Restrike	Date Pile Driven	Pile Length Installed (ft)	Elevation			Pay Length (ft)	Blows Per Inch Last 6 Inches							Avg	Comments
								Top of Pile (ft)	Cut-off (ft)	Pile Tip (ft)										
1	H-1	1	8-Jun-07	8-Jun-07		8-Jun-07	60.67	45.50	17.80	-15.2	33.0	6	7	6	6	10	10		Refusal	
2	H-1	2	8-Jun-07	8-Jun-07		8-Jun-07	60.67	44.65	17.80	-16.0	33.8	4	3	3	8	10	10		Refusal	
3	H-1	3	8-Jun-07	8-Jun-07		8-Jun-07	60.67	38.85	17.80	-21.8	39.6	4	5	5	6	9	10		Refusal	
4	H-1	4	8-Jun-07	8-Jun-07		8-Jun-07	60.58	48.80	17.80	-11.8	29.6	5	5	12	10	18	10		Refusal	
5	H-1.9/2.1	5	7-Jun-07	7-Jun-07		7-Jun-07	60.63	33.65	15.00	-27.0	42.0	3	5	4	8	10	10		Refusal	
6	H-1.9/2.1	6	7-Jun-07	7-Jun-07		7-Jun-07	60.63	34.33	15.00	-26.3	41.3	3	7	8	11	12	10		Refusal	
7	H-1.9/2.1	7	7-Jun-07	7-Jun-07		7-Jun-07	60.63	33.27	15.00	-27.4	42.4	3	3	5	10	11	10		Refusal	
8	H-1.9/2.1	8	7-Jun-07	7-Jun-07		7-Jun-07	60.63	34.51	15.00	-26.1	41.1	4	6	8	11	12	10		Refusal	
9	H-1.9/2.1	9	7-Jun-07	7-Jun-07		7-Jun-07	60.63	32.14	15.00	-28.5	43.5	4	4	4	8	13	10		Refusal	
10	H-1.9/2.1	10	7-Jun-07	7-Jun-07		7-Jun-07	60.63	32.02	15.00	-28.6	43.6	4	5	6	10	10	10		Refusal	
11	H-1.9/2.1	11	7-Jun-07	7-Jun-07		7-Jun-07	60.63	28.80	15.00	-31.8	46.8	4	5	9	10	15	10		Refusal	
12	H-1.9/2.1	12	7-Jun-07	7-Jun-07		7-Jun-07	60.63	29.92	15.00	-30.7	45.7	5	7	8	9	12	10		Refusal	
13	H-2.3	13	7-Jun-07	7-Jun-07		7-Jun-07	60.50	26.59	7.92	-33.9	41.8	5	8	8	10	12	10		Refusal	
14	H-2.3	14	7-Jun-07	7-Jun-07		7-Jun-07	60.63	27.87	7.87	-32.8	40.6	2	2	2	2	10	10		Refusal	
15	H-2.3	15	7-Jun-07	7-Jun-07		7-Jun-07	60.50	25.63	7.92	-34.9	42.8	2	2	3	4	7	14		Refusal	
16	H-2.8	16	7-Jun-07	7-Jun-07		7-Jun-07	60.58	20.63	7.92	-40.0	47.9	7	7	8	8	8	8	8		
17	H-2.8	17	7-Jun-07	7-Jun-07		7-Jun-07	60.58	20.37	7.91	-40.2	48.1	6	6	7	8	8	10		Refusal	
18	H-2.8	18	7-Jun-07	7-Jun-07		7-Jun-07	60.63	21.29	7.91	-39.3	47.3	3	3	3	6	16	10		Refusal	
19	H-2.9	19	7-Jun-07	7-Jun-07		7-Jun-07	60.58	19.57	11.99	-41.0	53.0	6	6	8	8	8	10		Refusal	
20	H-2.9	20	6-Jun-07	6-Jun-07	7-Jun-07	6-Jun-07	65.50	24.08	11.92	-41.4	53.3	2	3	3	3	3	7	4		Indicator Pile, restruck on 6/7/07
21	H-2.9	21	7-Jun-07	7-Jun-07		7-Jun-07	60.54	19.59	12.01	-41.0	53.0	2	8	6	10	11	10		Refusal	
22	G-4-2.3	22	13-Jun-07	13-Jun-07		13-Jun-07	60.79	24.02	12.44	-36.8	49.2	9	10	11	13	14	10		Refusal	
23	G-4-2.3	23	13-Jun-07	13-Jun-07		13-Jun-07	60.75	23.54	12.37	-37.2	49.6	5	5	9	15	10			Refusal	
24	G-4-2.3	24	13-Jun-07	13-Jun-07		13-Jun-07	60.83	22.60	12.39	-38.2	50.6	13	14	13	16	10			Refusal	
25	G-4-2.8	25	13-Jun-07	13-Jun-07		13-Jun-07	60.75	19.62	11.37	-41.1	52.5	10	10	10					Refusal	
26	G-4-3	26	8-Jun-07	8-Jun-07		8-Jun-07	60.67	17.55	11.97	-43.1	55.1	6	8	10	14	10	10		Refusal	
27	G-4-3	27	8-Jun-07	8-Jun-07		8-Jun-07	60.75	17.60	12.02	-43.2	55.2	6	8	10	9	10	10	9		
28	G-4-3	28	8-Jun-07	12-Jun-07		8-Jun-07	60.67	16.29	11.96	-44.4	56.3	10	7	6	8	13	10		Refusal	
29	G-1	29	8-Jun-07	8-Jun-07		8-Jun-07	60.63	27.08	17.50	-33.6	51.1	5	7	11	11	12	10		Refusal	
30	G-1	30	6-Jun-07	6-Jun-07		6-Jun-07	60.50	30.61	17.50	-29.9	47.4	7	11	10					Indicator Pile, Refusal	
31	G-1	31	8-Jun-07	8-Jun-07		8-Jun-07	60.60	27.75	17.50	-32.9	50.4	8	11	10	11	14	10		Refusal	
32	G-1	32	8-Jun-07	8-Jun-07		8-Jun-07	60.60	28.75	17.50	-31.9	49.4	5	5	5	14	13	12		Refusal	
33	G-1.9/2.1	33	13-Jun-07	13-Jun-07		13-Jun-07	60.67	20.32	14.65	-40.4	55.0	9	10	11	11	12	12	11		
34	G-1.9/2.1	34	13-Jun-07	13-Jun-07		13-Jun-07	60.71	19.12	14.65	-41.6	56.2	5	6	6	11	15	10		Refusal	
35	G-1.9/2.1	35	13-Jun-07	13-Jun-07		13-Jun-07	60.75	22.96	14.66	-37.8	52.5	9	10	9	9	9	10		Refusal	
36	G-1.9/2.1	36	6-Jun-07	6-Jun-07		6-Jun-07	60.00	19.10	14.66	-40.9	55.6	2	1	2	2	3	12		Indicator Pile, Refusal	
37	G-1.9/2.1	37	13-Jun-07	13-Jun-07		13-Jun-07	61.17	20.69	14.64	-40.5	55.1	15	10						Refusal	
38	G-1.9/2.1	38	13-Jun-07	13-Jun-07		13-Jun-07	60.67	19.36	14.65	-41.3	56.0	7	9	11	8	11	10		Refusal	
39	G-1.9/2.1	39	13-Jun-07	13-Jun-07		13-Jun-07	60.79	19.98	14.65	-40.8	55.5	3	3	5	8	15	10		Refusal	
40	G-1.9/2.1	40	13-Jun-07	13-Jun-07		13-Jun-07	60.79	21.34	14.66	-39.5	54.1	7	7	9	11	18	10		Refusal	
41	G-1.9/2.1	41	13-Jun-07	13-Jun-07		13-Jun-07	60.67	21.35	14.67	-39.3	54.0	10	11	13	12	15	10		Refusal	
42	G-1.9/2.1	42	13-Jun-07	13-Jun-07		13-Jun-07	61.25	20.25	14.66	-41.0	55.7	10	10	9	10	11	11	10		
43	G-2.8	43	12-Jun-07	18-Jun-07		12-Jun-07	60.46	16.94	13.42	-43.5	56.9	12	10						Refusal	
44	G-3	44	8-Jun-07	8-Jun-07		8-Jun-07	60.50	17.28	12.40	-43.2	55.6	6	6	9	9	10	10		Refusal	
45	G-3	45	8-Jun-07	12-Jun-07		8-Jun-07	60.50	16.67	12.40	-43.8	56.2	5	6	6	7	16	10		Refusal	
46	G-3	46	8-Jun-07	8-Jun-07		8-Jun-07	60.50	17.22	12.38	-43.3	55.7	3	2	2	3	10	10		Refusal	
47	G-3	47	8-Jun-07	8-Jun-07		8-Jun-07	65.54	22.34	12.39	-43.2	55.6	3	10	10					Refusal	
48	F-1	48	8-Jun-07	8-Jun-07		8-Jun-07	60.54	23.35	20.00	-37.2	57.2	3	4	4	7	13	10		Refusal	
49	F-1	49	8-Jun-07	8-Jun-07		8-Jun-07	60.63	23.33	20.00	-37.3	57.3	7	10	10	9	10	10	9		
50	F-1	50	8-Jun-07	8-Jun-07		8-Jun-07	60.63	24.55	19.90	-36.1	56.0	2	5	6	11	12	10		Refusal	
51	F-1	51	8-Jun-07	8-Jun-07		8-Jun-07	61.17	23.95	20.00	-37.2	57.2	3	5	7	11	15	10		Refusal	
52	F-1.9/2.1	52	14-Jun-07	15-Jun-07		14-Jun-07	60.79	17.43	14.76	-43.4	58.1	7	8	10	13	10			Refusal	
53	F-1.9/2.1	53	14-Jun-07	15-Jun-07		14-Jun-07	61.17	17.65	14.82	-43.5	58.3	10	9	13	12	13	16	12		
54	F-1.9/2.1	54	14-Jun-07	15-Jun-07		14-Jun-07	60.75	17.01	14.68	-43.7	58.4	5	8	7	8	19	10		Refusal	
55	F-1.9/2.1	55	14-Jun-07	15-Jun-07		14-Jun-07	60.79	17.81	14.89	-43.0	57.9	8	10	11	14	10			Refusal	
56	F-1.9/2.1	56	14-Jun-07	15-Jun-07		14-Jun-07	60.75	16.97	14.72	-43.8	58.5	6	7	8	12	15	10		Refusal	
57	F-1.9/2.1	57	14-Jun-07	15-Jun-07		14-Jun-07	60.75	17.53	14.78	-43.2	58.0	7	11	12	15	10			Refusal	
58	F-1.9/2.1	58	14-Jun-07	15-Jun-07		14-Jun-07	60.79	16.50	14.75	-44.3	59.0	4	6	11	15	12	10		Refusal	
59	F-1.9/2.1	59	14-Jun-07	15-Jun-07		14-Jun-07	60.75	16.92	14.75	-43.8	58.6	4	6	7	12	17	10		Refusal	
60	F-2.8	60	7-Jun-07	7-Jun-07		7-Jun-07	60.58	17.80	13.43	-42.8	56.2	11	12	13	14				Refusal	
61	F-3	61	13-Jun-07	13-Jun-07		13-Jun-07	60.75	17.22	12.43	-43.5	56.0	9	11	15	13	15	10		Refusal	
62	F-3	62	13-Jun-07	13-Jun-07		13-Jun-07	60.58	17.72	13.41	-42.9	56.3	3	3	3	4	10	10		Refusal	
63	F-3	63	13-Jun-07	13-Jun-07		13-Jun-07	60.67	18.57	12.42	-42.1	54.5	4	7	8	10	14	10		Refusal	



Sort	Pile cap location	Pile Number w/in cap	Date Bottom Installed	Date Top Installed	Date if Pile Restrike	Date Pile Driven	Pile Length Installed (ft)	Elevation			Pay Length (ft)	Blows Per Inch Last 6 Inches							Comments
								Top of Pile (ft)	Cut-off (ft)	Pile Tip (ft)								Avg	
65	E-1	65	8-Jun-07	8-Jun-07		8-Jun-07	61.17	26.96	21.30	-34.2	55.5	5	7	9	14	10			Refusal
66	E-1	66	8-Jun-07	8-Jun-07		8-Jun-07	61.13	26.90	21.30	-34.2	55.5	5	7	8	11	14	10		Refusal
67	E-1	67	8-Jun-07	8-Jun-07		8-Jun-07	61.13	27.00	21.30	-34.1	55.4	15	15	14	15	10			Refusal
68	E-1	68	8-Jun-07	8-Jun-07		8-Jun-07	61.13	26.46	21.30	-34.7	56.0	6	8	8	8	12	10	9	
69	E-1.9/2.1	69	25-Jun-07	25-Jun-07		25-Jun-07	60.75	17.87	14.27	-42.9	57.2	8	10						Refusal
70	E-1.9/2.1	70	25-Jun-07	25-Jun-07		25-Jun-07	60.58	17.93	14.24	-42.7	56.9	12	10						Refusal
71	E-1.9/2.1	71	18-Jun-07	18-Jun-07		18-Jun-07	60.50	17.87	14.28	-42.6	56.9	20	15						Refusal
72	E-1.9/2.1	72	18-Jun-07	18-Jun-07		18-Jun-07	60.50	17.86	14.23	-42.6	56.9	20							Refusal
73	E-1.9/2.1	73	18-Jun-07	18-Jun-07		18-Jun-07	60.50	17.73	14.25	-42.8	57.0	6	8	12	17	20	10		Refusal
74	E-1.9/2.1	74	18-Jun-07	18-Jun-07		18-Jun-07	60.50	21.42	14.26	-39.1	53.3	11	9	9	10	10	12	10	
75	E-1.9/2.1	75	18-Jun-07	19-Jun-07		18-Jun-07	60.50	17.58	14.31	-42.9	57.2	15	10						Refusal
76	E-1.9/2.1	76	18-Jun-07	18-Jun-07		18-Jun-07	60.50	19.53	14.26	-41.0	55.2	5	10	15	15	20	13		Refusal
77	E-2.8	77	12-Jun-07	26-Jun-07		12-Jun-07	80.32	34.99	13.36	-45.3	58.7	13	8	9	13	10			Refusal
78	E-3	78	12-Jun-07	26-Jun-07		12-Jun-07	78.79	32.20	12.39	-46.6	59.0	8	10						Refusal
79	E-3	79	12-Jun-07	26-Jun-07		12-Jun-07	79.11	32.98	12.36	-46.1	58.5	9	20	10					Refusal
80	E-3	80	12-Jun-07	26-Jun-07		12-Jun-07	79.17	32.26	12.36	-46.9	59.3	9	13	10					Refusal
81	E-3	81	12-Jun-07	26-Jun-07		12-Jun-07	80.87	34.69	12.44	-46.2	58.6	7	15	10					Refusal
82	E-3.1	82	11-Jun-07	25-Jun-07		11-Jun-07	80.65	28.75	12.45	-51.9	64.4	7	10	12	10	11	10	10	
83	F-3.1	83	12-Jun-07	12-Jun-07		12-Jun-07	60.50	17.55	12.44	-43.0	55.4	6	3	8	12	17	10		Refusal
84	D-1	84	15-Jun-07	15-Jun-07		15-Jun-07	60.58	26.37	12.51	-34.2	46.7	12	17	10					Refusal
85	D-1	85	15-Jun-07	15-Jun-07		15-Jun-07	60.75	21.98	12.56	-38.8	51.3	9	10	9	10	12	12	10	
86	D-1	86	6-Jun-07	7-Jun-07	7-Jun-07	6-Jun-07	60.50	19.50	12.52	-41.0	53.5	8	8	10	9	8	8	9	Indicator Pile
87	D-1	87	15-Jun-07	15-Jun-07		15-Jun-07	60.63	21.50	12.51	-39.1	51.6	10	12	13	11	11	11	11	
88	D-1.9/2.1	88	18-Jun-07	18-Jun-07		18-Jun-07	60.75	20.39	10.82	-40.4	51.2	1	2	2	21	20	10		Refusal
89	D-1.9/2.1	89	18-Jun-07	18-Jun-07		18-Jun-07	60.50	19.57	10.78	-40.9	51.7	10	9	11	9	11	11	10	
90	D-1.9/2.1	90	18-Jun-07	19-Jun-07		18-Jun-07	60.75	18.73	10.79	-42.0	52.8	5	11	17	22	20	10		Refusal
91	D-1.9/2.1	91	18-Jun-07	18-Jun-07		18-Jun-07	60.75	19.43	10.76	-41.3	52.1	9	9	10	14	13	17	12	
92	D-1.9/2.1	92	6-Jun-07	6-Jun-07		6-Jun-07	60.50	20.42	10.85	-40.1	50.9	15							Indicator Pile, Refusal
93	D-1.9/2.1	93	18-Jun-07	18-Jun-07		18-Jun-07	60.75	20.05	10.75	-40.7	51.5	9	13	11	10				Refusal
94	D-1.9/2.1	94	18-Jun-07	19-Jun-07		18-Jun-07	60.50	18.93	10.80	-41.6	52.4	3	4	3	8	18	10		Refusal
95	D-1.9/2.1	95	18-Jun-07	18-Jun-07		18-Jun-07	60.75	19.45	10.79	-41.3	52.1	5	6	6	6	12	10		Refusal
96	D-2.8	96	12-Jun-07	26-Jun-07		12-Jun-07	80.25	31.31	13.45	-48.9	62.4	12	10	10					Refusal
97	D-3	97	12-Jun-07	25-Jun-07		12-Jun-07	78.48	26.23	12.37	-52.3	64.6	12	10						Refusal
98	D-3	98	12-Jun-07	26-Jun-07		12-Jun-07	80.83	29.19	12.51	-51.6	64.2	12	18	10					Refusal
99	D-3	99	12-Jun-07	26-Jun-07		12-Jun-07	79.18	25.45	12.47	-53.7	66.2	8	10	10					Refusal
100	D-3	100	12-Jun-07	26-Jun-07		12-Jun-07	83.22	30.65	12.47	-52.6	65.0	12	10						Refusal
101	D-3.1	101	8-Jun-07	26-Jun-07		8-Jun-07	85.34	34.94	12.45	-50.4	62.9	10	12	14	10				Refusal
102	C-1	102	14-Jun-07	14-Jun-07		14-Jun-07	60.75	25.96	11.77	-34.8	46.6	10	10	11	12	13	12		Refusal
103	C-1	103	14-Jun-07	14-Jun-07		14-Jun-07	60.75	24.97	11.77	-35.8	47.6	7	7	9	10	13	10		Refusal
104	C-1	104	14-Jun-07	14-Jun-07		14-Jun-07	60.75	24.91	11.77	-35.8	47.6	9	10	12	13	14	10		Refusal
105	C-1	105	14-Jun-07	14-Jun-07		14-Jun-07	60.75	24.77	11.73	-36.0	47.7	8	8	9	10	12	10		Refusal
106	C-1	106	14-Jun-07	14-Jun-07		14-Jun-07	60.58	24.79	11.72	-35.8	47.5	7	9	9	12	14	10		Refusal
107	C-1.9/2.1	107	18-Jun-07	18-Jun-07		18-Jun-07	60.50	27.76	11.14	-32.7	43.9	10	13	10					Refusal
108	C-1.9/2.1	108	18-Jun-07	18-Jun-07		18-Jun-07	60.50	26.57	11.17	-33.9	45.1	10	10						Refusal
109	C-1.9/2.1	109	18-Jun-07	18-Jun-07		18-Jun-07	60.50	25.90	11.15	-34.6	45.8	10	16	10					Refusal
110	C-1.9/2.1	110	18-Jun-07	18-Jun-07		18-Jun-07	60.50	25.72	11.14	-34.8	45.9	15							Refusal
111	C-1.9/2.1	111	25-Jun-07	25-Jun-07		25-Jun-07	61.17	25.65	11.18	-35.5	46.7	7	11	12	17	18			Refusal
112	C-1.9/2.1	112	18-Jun-07	18-Jun-07		18-Jun-07	60.50	23.92	11.12	-36.6	47.7	6	5	8	10	15	10		Refusal
113	C-1.9/2.1	113	25-Jun-07	25-Jun-07		25-Jun-07	60.75	25.77	11.22	-35.0	46.2	10	9	8	10				Refusal
114	C-1.9/2.1	114	18-Jun-07	18-Jun-07		18-Jun-07	60.75	24.13	11.16	-36.6	47.8	10	12	10					Refusal
115	C-2.8	115	12-Jun-07	26-Jun-07		12-Jun-07	80.44	28.52	13.38	-51.9	65.3	7	8	8	10	13	10		Refusal
116	C-3	116	12-Jun-07	19-Jun-07		12-Jun-07	79.65	24.61	12.43	-55.0	67.5	9	12						Refusal
117	C-3	117	12-Jun-07	26-Jun-07		12-Jun-07	78.65	30.20	12.44	-48.5	60.9	4	4	4	7	10	10		Refusal
118	C-3	118	7-Jun-07	26-Jun-07		7-Jun-07	79.73	24.75	12.37	-55.0	67.4	8	12	16	10				Indicator Pile, Refusal

Sort	Pile cap location	Pile Number w/in cap	Date Bottom Installed	Date Top Installed	Date if Pile Restrike	Date Pile Driven	Pile Length Installed (ft)	Elevation			Pay Length (ft)	Blows Per Inch Last 6 Inches							Comments
								Top of Pile (ft)	Cut-off (ft)	Pile Tip (ft)								Avg	
119	C-3	119	12-Jun-07	26-Jun-07		12-Jun-07	77.44	26.67	12.44	-50.8	63.2	7	7	7	9	12	10		Refusal
120	C-3.1	120	11-Jun-07	26-Jun-07		11-Jun-07	80.50	27.63	12.32	-52.9	65.2	5	8	14	15	16	10		Refusal
121	B-1	121	14-Jun-07	14-Jun-07		14-Jun-07	60.58	29.92	12.97	-30.7	43.6	10	9	9	10	10	10	10	
122	B-1	122	14-Jun-07	14-Jun-07		14-Jun-07	60.63	30.05	13.00	-30.6	43.6	10	10	11	13	10			Refusal
123	B-1	123	14-Jun-07	14-Jun-07		14-Jun-07	60.63	29.82	12.97	-30.8	43.8	10							Refusal
124	B-1	124	14-Jun-07	14-Jun-07		14-Jun-07	60.63	30.14	13.00	-30.5	43.5	3	3	4	9	15	10		Refusal
125	B-1.9/2.1	125	25-Jun-07	25-Jun-07		25-Jun-07	60.75	24.35	11.14	-36.4	47.5	10	10	10					Refusal
126	B-1.9/2.1	126	25-Jun-07	25-Jun-07		25-Jun-07	60.75	22.57	11.10	-38.2	49.3	4	7	9	9	11	10		Refusal
127	B-1.9/2.1	127	25-Jun-07	25-Jun-07		25-Jun-07	60.58	23.38	11.20	-37.2	48.4	4	5	6	8	9	10		Refusal
128	B-1.9/2.1	128	25-Jun-07	25-Jun-07		25-Jun-07	60.75	25.99	11.15	-34.8	45.9	5	5	8	10				Refusal
129	B-1.9/2.1	129	25-Jun-07	25-Jun-07		25-Jun-07	60.75	26.68	11.22	-34.1	45.3	9	11	11	11	12	10		Refusal
130	B-1.9/2.1	130	25-Jun-07	25-Jun-07		25-Jun-07	60.75	26.17	11.14	-34.6	45.7	10	10						Refusal
131	B-1.9/2.1	131	25-Jun-07	25-Jun-07		25-Jun-07	60.75	26.84	11.21	-33.9	45.1	3	4	10	10				Refusal
132	B-1.9/2.1	132	25-Jun-07	25-Jun-07		25-Jun-07	60.75	25.25	11.16	-35.5	46.7	2	3	6	3	17	10		Refusal
133	B-1.9/2.1	133	25-Jun-07	25-Jun-07		25-Jun-07	60.83	25.79	11.21	-35.0	46.3	4	4	10					Refusal
134	B-1.9/2.1	134	25-Jun-07	25-Jun-07		25-Jun-07	60.58	26.53	11.21	-34.1	45.3	12	10						Refusal
135	B-2.8	135	26-Jun-07	27-Jun-07		26-Jun-07	80.58	32.66	13.39	-47.9	61.3	5	8	6	9	17	10		Refusal
136	B-3	136	26-Jun-07	27-Jun-07		26-Jun-07	91.50	40.21	12.87	-51.3	64.2	5	6	9	10	10	10		Refusal
137	B-3	137	6-Jun-07	27-Jun-07		6-Jun-07	80.83	29.10	12.36	-51.7	64.1	10	10						Indicator Pile, Refusal
138	B-3	138	26-Jun-07	27-Jun-07		26-Jun-07	81.17	28.54	13.00	-52.6	65.6	6	6	6	10	10			Refusal
139	B-3	139	26-Jun-07	27-Jun-07		26-Jun-07	88.20	36.11	12.76	-52.1	64.9	15	10						Refusal
140	B-3.1	140	13-Jun-07	27-Jun-07		13-Jun-07	80.29	26.21	12.96	-54.1	67.0	4	3	4	4	8	10		Refusal
141	A-1	141	14-Jun-07	14-Jun-07		14-Jun-07	60.58	32.47	13.72	-28.1	41.8	6	9	9	14	15	10		Refusal
142	A-1	141A	6-Jun-07	6-Jun-07	7-Jun-07	6-Jun-07	65.60	38.77	13.73	-26.8	40.6	12	12	12					Indicator Pile, Refusal
143	A-1	142	14-Jun-07	14-Jun-07		14-Jun-07	60.54	32.73	13.63	-27.8	41.4	11	12	15	10				Refusal
144	A-1	143	14-Jun-07	14-Jun-07		14-Jun-07	60.58	33.87	13.78	-26.7	40.5	12	17	10					Refusal
145	A-1.9/2.1	144	27-Jun-07	27-Jun-07		27-Jun-07	61.17	22.73	13.10	-38.4	51.5	10	9	9	9	10	9	9	
146	A-1.9/2.1	145	27-Jun-07	27-Jun-07		27-Jun-07	60.83	24.74	13.15	-36.1	49.2	8	12	10					Refusal
147	A-1.9/2.1	146	27-Jun-07	27-Jun-07		27-Jun-07	60.75	27.34	13.15	-33.4	46.6	5	8	11	18	10			Refusal
148	A-1.9/2.1	147	27-Jun-07	27-Jun-07		27-Jun-07	60.83	25.78	13.11	-35.1	48.2	5	5	7	7	11	10		Refusal
149	A-1.9/2.1	148	27-Jun-07	27-Jun-07		27-Jun-07	60.75	24.82	13.06	-35.9	49.0	5	5	5	5	12	10		Refusal
150	A-1.9/2.1	149	27-Jun-07	27-Jun-07		27-Jun-07	61.17	25.40	13.16	-35.8	48.9	5	10	13	10				Refusal
151	A-1.9/2.1	150	27-Jun-07	27-Jun-07		27-Jun-07	60.75	24.24	13.04	-36.5	49.6	5	5	7	8	15	10		Refusal
152	A-1.9/2.1	151	6-Jun-07	6-Jun-07	7-Jun-07	6-Jun-07	60.54	23.62	13.16	-36.9	50.1	2	2	5	10				Indicator Pile, Refusal
153	A-2.7	152	11-Jun-07	26-Jun-07		11-Jun-07	85.18	37.68	14.00	-47.5	61.5	12	10						Refusal
154	A-2.7	153	11-Jun-07	26-Jun-07		11-Jun-07	85.34	35.70	14.02	-49.6	63.7	13	12	13	12	10	10		Refusal
155	A-2.7	154	11-Jun-07	26-Jun-07		11-Jun-07	84.74	31.24	13.96	-53.5	67.5	5	7	8	12	11	10		Refusal
156	A.2-2.7	155	11-Jun-07	26-Jun-07		11-Jun-07	80.37	31.14	14.06	-49.2	63.3	8	6	8	9	11	10		Refusal
157	A.2-2.7	156	11-Jun-07	26-Jun-07		11-Jun-07	80.17	31.93	14.01	-48.2	62.3	6	8	8	12	10	10		Refusal
158	A.2-2.7	157	11-Jun-07	26-Jun-07		11-Jun-07	79.77	30.36	13.95	-49.4	63.4	5	6	9	9	13	10		Refusal
159	A-3	158	11-Jun-07	26-Jun-07		11-Jun-07	85.42	26.72	14.72	-58.7	73.4	9	10	15	10				Refusal
160	A-3	159	26-Jun-07	27-Jun-07		26-Jun-07	79.87	29.12	14.69	-50.8	65.4	6	5	10	10	15	10		Refusal
161	A-3	160	11-Jun-07	26-Jun-07		11-Jun-07	85.42	31.83	14.76	-53.6	68.4	8	12	9	8	10	12	10	
162	A.2-3	161	11-Jun-07	26-Jun-07		11-Jun-07	85.57	30.11	14.50	-55.5	70.0	8	8	8	14	17	10		Refusal
163	A.2-3	162	11-Jun-07	26-Jun-07		11-Jun-07	85.28	30.24	14.49	-55.0	69.5	12	10						Refusal
164	A.2-3	163	11-Jun-07	26-Jun-07		11-Jun-07	85.35	30.25	14.54	-55.1	69.6	11	14	10					Refusal
165	A.2-3	164	11-Jun-07	19-Jun-07		11-Jun-07	81.63	25.47	14.43	-56.2	70.6	11	11						Refusal





**FOUNDATION PLAN**  
3/32"=1'-0"



**HALEY &  
ALDRICH**

OCEAN GATEWAY PARKING GARAGE  
MIDDLE STREET  
PORTLAND, MAINE

FOUNDATION PLAN (SHEET NO. S1.00)

SCALE: AS SHOWN  
APRIL 2007

FIGURE 1



## **Appendix A**

### **Daily Summary – End Bearing Pile Installation**

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	18

Form 4015

<b>H&amp;A FILE NO.</b>	<u>30322-030</u>
<b>PROJECT MGR</b>	<u>W. CHADBOURNE</u>
<b>FIELD REP</b>	<u>B. STEINERT</u>
<b>DATE</b>	<u>6/6/2007</u>
<b>WFR NO.</b>	<u>3</u>

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	30

Form 4015

<b>PROJECT</b>	OCEAN GATEWAY PARKING GARAGE	<b>H&amp;A FILE NO.</b>	30322-030
<b>LOCATION</b>	PORTLAND, MAINE	<b>PROJECT MGR</b>	W. CHADBOURNE
<b>CLIENT</b>	RIVERWALK, LLC.	<b>FIELD REP</b>	B. STEINERT
<b>GEN. CONTRACTOR</b>	LEDGEWOOD CONSTRUCTION	<b>DATE</b>	6/7/2007
<b>PILE CONTRACTOR</b>	G. DONALDSON CONSTRUCTION	<b>WFR NO.</b>	3

**PILES:**

Type	STEEL H-PILE	
Size	HP 12x53	
Design Capacity	90	tons

**HAMMER:**

Type	Junttan HHK 9A
Cushion	Monocast MC 904P
Rated Energy	25,000 ft-lbs

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	18

[illegible]

Total Length of Piles Driven Today:	374.5
Total Length of Piles Driven Previously:	351.4
Total Length of Piles Driven To Date:	725.9

*Required Minimum:	8	avg. (per Contractor's WEAP)
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**Additional remarks:**

All piles driven with steel driving shoe.

**Remarks:**

- a. Rejected
- b. Added due to mislocated pile
- c. Added due to broken pile
- d. Added due to design change
- e. Deleted due to design change
- f. Broken
- g. Test Pile

**Notes:**

1. Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
2. Elevations are in feet and reference Portland City Base datum.

**Total Number of Piles Driven Today: 8**

Previous total Number of Piles: 7

**Total Number of Piles To Date: 15**

**Registered Engineer**





<b>H&amp;A FILE NO.</b>	<u>30322-030</u>
<b>PROJECT MGR</b>	<u>W. CHADBOURNE</u>
<b>FIELD REP</b>	<u>B. STEINERT</u>
<b>DATE</b>	<u>6/8/2007</u>
<b>WFR NO.</b>	<u>3</u>

**PILES:**

**HAMMER:**

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	18

Total Length of Piles Driven Today:	166.9
Total Length of Piles Driven Previously:	1072.3
Total Length of Piles Driven To Date:	1239.2

*Required Minimum:	8	avg. (per Contractor's WEAP)
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**Remarks:**

- a. Rejected
- b. Added due to mislocated pile
- c. Added due to broken pile
- d. Added due to design change
- e. Deleted due to design change
- f. Broken
- g. Test Pile

**Notes:**

1. Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
2. Elevations are in feet and reference Portland City Base datum.

**Additional remarks:**

Pile Nos. 45 and 101 did not achieve capacity at the end of initial driving. Excavation around the piles or splicing is required to continue driving.

**All piles driven with steel driving shoe.**

**Total Number of Piles Driven Today: 3**

Previous total Number of Piles: 23

**Total Number of Piles To Date: 26**

Registered Engineer

DAILY SUMMARY  
END BEARING PILE INSTALLATION

Page 6 of 6

PROJECT	OCEAN GATEWAY PARKING GARAGE	H&A FILE NO.	30322-030
LOCATION	PORTLAND, MAINE	PROJECT MGR	W. CHADBOURNE
CLIENT	RIVERWALK, LLC.	FIELD REP	B. STEINERT
GEN. CONTRACTOR	LEDGEWOOD CONSTRUCTION	DATE	6/8/2007
PILE CONTRACTOR	G. DONALDSON CONSTRUCTION	WFR NO.	3

## PILES:

Type STEEL H-PILE  
 Size HP 14x102  
 Design Capacity 170 tons

## HAMMER:

Type Junttan HHK 9A  
 Cushion Monocast MC 904P  
 Rated Energy 79,801 ft-lbs

Blows per min. 40-100  
 Ram Weight (lbs) 19,800  
 Fall (in) 30

Pile No.	Pile Length	Elevation			Pay Length (ft)	Blows Per Inch							Remarks
		Top	Cut-off	Tip		Final 6 in.						Ave.*	
1	60.67	45.50	17.80	-15.17	33.0	6	7	6	6	10	10<0.5"		refusal
2	60.67	44.65	17.80	-16.02	33.8	4	3	3	8	10	10<0.5"		refusal
3	60.67	38.85	17.80	-21.82	39.6	4	5	5	6	9	10<0.5"		refusal
4	60.58	48.80	17.80	-11.78	29.6	5	5	12	10	18	10<0.5"		refusal
26	60.67	17.55	11.97	-43.12	55.1	6	8	10	14	10	10<0.5"		refusal
27	60.75	17.60	12.02	-43.15	55.2	6	8	10	9	10	10	9	
28													see add. Remarks; final driving on 6/12
29	60.63	27.08	17.50	-33.55	51.1	5	7	11	11	12	10<0.5"		refusal
31	60.60	27.75	17.50	-32.85	50.4	8	11	10	11	14	10<0.5"		refusal
32	60.60	28.75	17.50	-31.85	49.4	5	5	5	14	13	12<0.5"		refusal
48	60.54	23.35	20.00	-37.19	57.2	3	4	4	7	13	10<0.5"		refusal
49	60.63	23.33	20.00	-37.30	57.3	7	10	10	9	10	10	9	
50	60.63	24.55	19.90	-36.08	56.0	2	5	6	11	12	10<0.5"		refusal
51	61.17	23.95	20.00	-37.22	57.2	3	5	7	11	15	10<0.5"		refusal
65	61.17	26.96	21.30	-34.21	55.5	5	7	9	14	10<0.5"			refusal
66	61.13	26.90	21.30	-34.23	55.5	5	7	8	11	14	10<0.5"		refusal
67	61.13	27.00	21.30	-34.13	55.4	15	15	14	15	10<0.5"			refusal
68	61.13	26.46	21.30	-34.67	56.0	6	8	8	8	12	10	9	

Total Length of Piles Driven Today: 847.1  
 Total Length of Piles Driven Previously: 1239.2  
 Total Length of Piles Driven To Date: 2086.3

\*Required Minimum: 9 avg. (per Contractor's WEAP)

## Additional remarks:

All piles driven with steel driving shoe.

Pile No. 28 did not achieve capacity at the end of initial driving.


Excavation around pile and/or splicing will be required to complete driving.

## Remarks:

- Rejected
- Added due to mislocated pile
- Added due to broken pile
- Added due to design change
- Deleted due to design change
- Broken
- Test Pile

## Notes:

- Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
- Elevations are in feet and reference Portland City Base datum.

Total Number of Piles Driven Today: 17Previous total Number of Piles: 26Total Number of Piles To Date: 43
  
 Registered Engineer

**PILES:**

**HAMMER:**

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	18

*Required Minimum:	8	avg. (per Contractor's WEAP)
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**Remarks:**

- Additional remarks:**

**Piles listed above did not achieve capacity at the end of initial driving. Excavation or pile splice is required to continue driving.**

**All piles driven with steel driving shoe.**

**Notes:**

- Total Number of Piles Driven Today:** 0

Previous total Number of Piles: 43

**Total Number of Piles To Date: 43**

Form 4015



<b>H&amp;A FILE NO.</b>	<u>30322-030</u>
<b>PROJECT MGR</b>	<u>W. CHADBOURNE</u>
<b>FIELD REP</b>	<u>B. STEINERT</u>
<b>DATE</b>	<u>6/12/2007</u>
<b>WFR NO.</b>	<u>4</u>

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	18

Total Length of Piles Driven Today:	111.6
Total Length of Piles Driven Previously:	2086.3
Total Length of Piles Driven To Date:	2197.9

**All piles driven with steel driving shoe.**

**Total Number of Piles To Date: 45**

Form 4015

<b>H&amp;A FILE NO.</b>	<u>30322-030</u>
<b>PROJECT MGR</b>	<u>W. CHADBOURNE</u>
<b>FIELD REP</b>	<u>B. STEINERT</u>
<b>DATE</b>	<u>6/12/2007</u>
<b>WFR NO.</b>	<u>4</u>

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	30

Total Length of Piles Driven Today:	114.7
Total Length of Piles Driven Previously:	2197.9
Total Length of Piles Driven To Date:	2312.7

**All piles driven with steel driving shoe.**

1. Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
2. Elevations are in feet and reference Portland City datum.

**Total Number of Piles To Date: 47**

Form 4015

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	18

Form 4015

DAILY SUMMARY  
END BEARING PILE INSTALLATION

Page 5 of 7

PROJECT	OCEAN GATEWAY PARKING GARAGE	H&A FILE NO.	30322-030
LOCATION	PORTLAND, MAINE	PROJECT MGR	W. CHADBOURNE
CLIENT	RIVERWALK, LLC.	FIELD REP	B. STEINERT
GEN. CONTRACTOR	LEDGEWOOD CONSTRUCTION	DATE	6/13/2007
PILE CONTRACTOR	G. DONALDSON CONSTRUCTION	WFR NO.	4

## PILES:

Type STEEL H-PILE  
 Size HP 14x102  
 Design Capacity 170 tons

## HAMMER:

Type Junttan HHK 9A  
 Cushion Monocast MC 904P  
 Rated Energy 79,801 ft-lbs

Blows per min. 40-100  
 Ram Weight (lbs) 19,800  
 Fall (in) 30

Pile No.	Pile Length	Elevation			Pay Length (ft)	Blows Per Inch							Remarks
		Top	Cut-off	Tip		Final 6 in.						Ave.*	
22	60.79	24.02	12.44	-36.77	49.2	9	10	11	13	14	10<0.5"		refusal
23	60.75	23.54	12.37	-37.21	49.6	5	5	9	15	10<0.5"			refusal
24	60.83	22.60	12.39	-38.23	50.6	13	14	13	16	10<0.5"			refusal
25	60.75	19.62	11.37	-41.13	52.5	10	10	10<0.5"					refusal
33	60.67	20.32	14.65	-40.35	55.0	9	10	11	11	12	12	11	
34	60.71	19.12	14.65	-41.59	56.2	5	6	6	11	15	10<0.5"		refusal
35	60.75	22.96	14.66	-37.79	52.5	9	10	9	9	9	10<0.5"		refusal
37	61.17	20.69	14.64	-40.48	55.1	15	10<0.5"						refusal
38	60.67	19.36	14.65	-41.31	56.0	7	9	11	8	11	10<0.5"		refusal
39	60.79	19.98	14.65	-40.81	55.5	3	3	5	8	15	10<0.5"		refusal
40	60.79	21.34	14.66	-39.45	54.1	7	7	9	11	18	10<0.5"		refusal
41	60.67	21.35	14.67	-39.32	54.0	10	11	13	12	15	10<0.5"		refusal
42	61.25	20.25	14.66	-41.00	55.7	10	10	9	10	11	11	10	
61	60.75	17.22	12.43	-43.53	56.0	9	11	15	13	15	10<0.5"		refusal
62	60.58	17.72	13.41	-42.86	56.3	3	3	3	4	10	10<0.5"		refusal
63	60.67	18.57	12.42	-42.10	54.5	4	7	8	10	14	10<0.5"		refusal

Total Length of Piles Driven Today: 862.7  
 Total Length of Piles Driven Previously: 2410.7  
 Total Length of Piles Driven To Date: 3273.3

\*Required Minimum: 9 avg. (per Contractor's WEAP)

## Additional remarks:

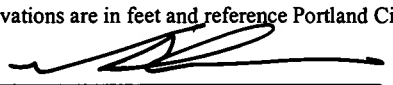
All piles driven with steel driving shoe.

## Remarks:

- Rejected
- Added due to mislocated pile
- Added due to broken pile
- Added due to design change
- Deleted due to design change
- Broken
- Test Pile

## Notes:

- Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
- Elevations are in feet and reference Portland City datum.

Total Number of Piles Driven Today: 16Previous total Number of Piles: 49Total Number of Piles To Date: 65
  
 Registered Engineer



# DAILY SUMMARY END BEARING PILE INSTALLATION

Page 6 of 7

<b>PROJECT</b>	OCEAN GATEWAY PARKING GARAGE	<b>H&amp;A FILE NO.</b>	30322-030
<b>LOCATION</b>	PORTLAND, MAINE	<b>PROJECT MGR</b>	W. CHADBOURNE
<b>CLIENT</b>	RIVERWALK, LLC.	<b>FIELD REP</b>	B. STEINERT
<b>GEN. CONTRACTOR</b>	LEDGEWOOD CONSTRUCTION	<b>DATE</b>	6/14/2007
<b>PILE CONTRACTOR</b>	G. DONALDSON CONSTRUCTION	<b>WFR NO.</b>	4

**PILES:**

Type STEEL H-PILE  
 Size HP 14x102  
 Design Capacity 170 tons

**HAMMER:**

Type Junttan HHK 9A  
 Cushion Monocast MC 904P  
 Rated Energy 79,801 ft-lbs

Blows per min. 40-100  
 Ram Weight (lbs) 19,800  
 Fall (in) 30

Pile No.	Pile Length	Elevation			Pay Length (ft)	Blows Per Inch							Remarks
		Top	Cut-off	Tip		Final 6 in.						Ave.*	
52													see add. remarks, final driving on 6/15
53													see add. remarks, final driving on 6/15
54													see add. remarks, final driving on 6/15
55													see add. remarks, final driving on 6/15
56													see add. remarks, final driving on 6/15
57													see add. remarks, final driving on 6/15
58													see add. remarks, final driving on 6/15
59													see add. remarks, final driving on 6/15
102	60.75	25.96	11.77	-34.79	46.6	10	10	11	12	13	12<0.5"		refusal
103	60.75	24.97	11.77	-35.78	47.6	7	7	9	10	13	10<0.5"		refusal
104	60.75	24.91	11.77	-35.84	47.6	9	10	12	13	14	10<0.5"		refusal
105	60.75	24.77	11.73	-35.98	47.7	8	8	9	10	12	10<0.5"		refusal
106	60.58	24.79	11.72	-35.79	47.5	7	9	9	12	14	10<0.5"		refusal
121	60.58	29.92	12.97	-30.66	43.6	10	9	9	10	10	10	10	
122	60.63	30.05	13.00	-30.58	43.6	10	10	11	13	10<0.5"			refusal
123	60.63	29.82	12.97	-30.81	43.8	10<0.5"							refusal
124	60.63	30.14	13.00	-30.49	43.5	3	3	4	9	15	10<0.5"		refusal
142	60.54	32.73	13.63	-27.81	41.4	11	12	15	10<0.5"				refusal
143	60.58	33.87	13.78	-26.71	40.5	12	17	10<0.5"					refusal

Total Length of Piles Driven Today: 493.4  
 Total Length of Piles Driven Previously: 3273.3  
 Total Length of Piles Driven To Date: 3766.7

\*Required Minimum: 9 avg. (per Contractor's WEAP)**Additional remarks:**

Piles listed above did not achieve capacity at the end of initial driving. Excavation or pile splice is required to continue driving.

All piles driven with steel driving shoe.

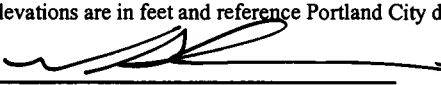
**Remarks:**

- a. Rejected
- b. Added due to mislocated pile
- c. Added due to broken pile
- d. Added due to design change
- e. Deleted due to design change
- f. Broken
- g. Test Pile

**Notes:**

- Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
- Elevations are in feet and reference Portland City datum.

Total Number of Piles Driven Today: 11Previous total Number of Piles: 65Total Number of Piles To Date: 76

  
 Registered Engineer

<b>H&amp;A FILE NO.</b>	30322-030
<b>PROJECT MGR</b>	W. CHADBOURNE
<b>FIELD REP</b>	B. STEINERT
<b>DATE</b>	6/15/2007
<b>WFR NO.</b>	4

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	30

Total Length of Piles Driven Today:	616.6
Total Length of Piles Driven Previously:	3766.7
Total Length of Piles Driven To Date:	4383.3

**All piles driven with steel driving shoe.**

**Total Number of Piles To Date: 87**

## Form 4015

PROJECT	OCEAN GATEWAY PARKING GARAGE	H&A FILE NO.	30322-030
LOCATION	PORTLAND, MAINE	PROJECT MGR	W. CHADBOURNE
CLIENT	RIVERWALK, LLC.	FIELD REP	W. ARMSTRONG
GEN. CONTRACTOR	LEDGEWOOD CONSTRUCTION	DATE	6/18/2007
PILE CONTRACTOR	G. DONALDSON CONSTRUCTION	WFR NO.	5

**PILES:**

Type	STEEL H-PILE	
Size	HP 12X53	
Design Capacity	90	tons

**HAMMER:**

Type	JUNTTAN HHK 9A	
Cushion	Monocast MC 904P	
Rated Energy	25,000	ft-lbs

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	18

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Total Length of Piles Driven Today:	56.9
Total Length of Piles Driven Previously:	4383.3
Total Length of Piles Driven To Date:	4440.2

*Required Minimum:	8	avg. (per Contractor's WEAP)
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**Remarks:**

- a. Rejected
- b. Added due to mislocated pile
- c. Added due to broken pile
- d. Added due to design change
- e. Deleted due to design change
- f. Broken
- g. Test Pile

**Additional remarks:**

All piles driven with steel driving shoe.

**Notes:**

1. Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
2. Elevations are in feet and reference Portland City Base datum.

**Total Number of Piles Driven Today:** 1

Previous total Number of Piles: 87

**Total Number of Piles To Date: 88**

Registered Engineer

DAILY SUMMARY  
END BEARING PILE INSTALLATION

Page 2 of 4

PROJECT	OCEAN GATEWAY PARKING GARAGE	H&A FILE NO.	30322-030
LOCATION	PORTLAND, MAINE	PROJECT MGR	W. CHADBOURNE
CLIENT	RIVERWALK, LLC.	FIELD REP	W. ARMSTRONG
GEN. CONTRACTOR	LEDGEWOOD CONSTRUCTION	DATE	6/18/2007
PILE CONTRACTOR	G. DONALDSON CONSTRUCTION	WFR NO.	5

## PILES:

Type STEEL H-PILE  
 Size HP 14X102  
 Design Capacity 170 tons

## HAMMER:

Type JUNTTAN HHK 9A  
 Cushion Monocast MC 904P  
 Rated Energy 79,801 ft-lbs

Blows per min. 40-100  
 Ram Weight (lbs) 19,800  
 Fall (in) 30

Pile No.	Pile Length	Elevation			Pay Length (ft)	Blows Per Inch							Remarks
		Top	Cut-off	Tip		Final 6 in.						Ave.*	
71	60.50	17.87	14.28	-42.63	56.9	20	15<0.5"						refusal
72	60.50	17.86	14.23	-42.64	56.9	20<0.5"							refusal
73													see add. remarks, final driving on 6/19
74	60.50	21.42	14.26	-39.08	53.3	11	9	9	10	10	12	10	
75													see add. remarks, final driving on 6/19
76	60.50	19.53	14.26	-40.97	55.2	5	10	15	15	20	13<0.5"		refusal
88	60.75	20.39	10.82	-40.36	51.2	1	2	2	21	20	10<0.5"		refusal
89	60.50	19.57	10.78	-40.93	51.7	10	9	11	9	11	11	10	
90													see add. remarks, final driving on 6/19
91	60.75	19.43	10.76	-41.32	52.1	9	9	10	14	13	17	12	
93	60.75	20.05	10.75	-40.70	51.5	9	13	11	10<0.5"				refusal
94													see add. remarks, final driving on 6/19
95	60.75	19.45	10.79	-41.30	52.1	5	6	6	6	12	10<0.5"		refusal
107	60.50	27.76	11.14	-32.74	43.9	10	13	10<0.5"					refusal
108	60.50	26.57	11.17	-33.93	45.1	10	10<0.5"						refusal
109	60.50	25.90	11.15	-34.60	45.8	10	16	10<0.5"					refusal
110	60.50	25.72	11.14	-34.78	45.9	15<0.5"							refusal
112	60.50	23.92	11.12	-36.58	47.7	6	5	8	10	15	10<0.5"		refusal
114	60.75	24.13	11.16	-36.62	47.8	10	12	10<0.5"					refusal

Total Length of Piles Driven Today: 757.0  
 Total Length of Piles Driven Previously: 4440.2  
 Total Length of Piles Driven To Date: 5197.2

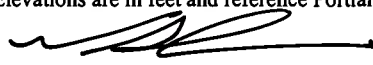
\*Required Minimum: 9 avg. (per Contractor's WEAP)

## Remarks:

- Rejected
- Added due to mislocated pile
- Added due to broken pile
- Added due to design change
- Deleted due to design change
- Broken
- Test Pile

## Notes:

- Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
- Elevations are in feet and reference Portland City Base datum.



Registered Engineer

## Additional remarks:

Piles listed above did not achieve capacity at the end of initial driving. Excavation or pile splice is required to continue driving.

All piles driven with steel driving shoe.

Total Number of Piles Driven Today: 15Previous total Number of Piles: 88Total Number of Piles To Date: 103





H&A FILE NO.	30322-030
PROJECT MGR	W. CHADBOURNE
FIELD REP	W. ARMSTRONG
DATE	6/19/2007
WFR NO.	5

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	30

Total Length of Piles Driven Today:	286.9
Total Length of Piles Driven Previously:	5267.8
Total Length of Piles Driven To Date:	5554.7

**All piles driven with steel driving shoe.**

1. Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
2. Elevations are in feet and reference Portland City Base datum.

**Total Number of Piles To Date: 109**

Form 4015

DAILY SUMMARY  
END BEARING PILE INSTALLATION

Page 1 of 5

PROJECT	OCEAN GATEWAY PARKING GARAGE	H&A FILE NO.	30322-030
LOCATION	PORTLAND, MAINE	PROJECT MGR	W. CHADBOURNE
CLIENT	RIVERWALK, LLC.	FIELD REP	W. ARMSTRONG
GEN. CONTRACTOR	LEDGEWOOD CONSTRUCTION	DATE	6/25/2007
PILE CONTRACTOR	G. DONALDSON CONSTRUCTION	WFR NO.	6

## PILES:

Type STEEL H-PILE  
 Size HP 14X102  
 Design Capacity 170 tons

## HAMMER:

Type JUNTTAN HHK 9A  
 Cushion Monocast MC 904P  
 Rated Energy 79,801 ft-lbs

Blows per min. 40-100  
 Ram Weight (lbs) 19,800  
 Fall (in) 30

Pile No.	Pile Length	Elevation			Pay Length (ft)	Blows Per Inch						Ave.*	Remarks
		Top	Cut-off	Tip		Final 6 in.							
69	60.75	17.87	14.27	-42.88	57.2	8	10<0.5"						refusal
70	60.58	17.93	14.24	-42.65	56.9	12	10<0.5"						refusal
111	61.17	25.65	11.18	-35.52	46.7	7	11	12	17	18	10<0.5"		refusal
113	60.75	25.77	11.22	-34.98	46.2	10	9	8	10<0.5"				refusal
125	60.75	24.35	11.14	-36.40	47.5	10	10	10<0.5"					refusal
126	60.75	22.57	11.10	-38.18	49.3	4	7	9	9	11	10<0.5"		refusal
127	60.58	23.38	11.20	-37.20	48.4	4	5	6	8	9	10<0.5"		refusal
128	60.75	25.99	11.15	-34.76	45.9	5	5	8	10<0.5"				refusal
129	60.75	26.68	11.22	-34.07	45.3	9	11	11	11	12	10<0.5"		refusal
130	60.75	26.17	11.14	-34.58	45.7	10	10<0.5"						refusal
131	60.75	26.84	11.21	-33.91	45.1	3	4	10	10<0.5"				refusal
132	60.75	25.25	11.16	-35.50	46.7	2	3	6	3	17	10<0.5"		refusal
133	60.83	25.79	11.21	-35.04	46.3	4	4	10<0.5"					refusal
134	60.58	26.53	11.21	-34.05	45.3	12	10<0.5"						refusal

Total Length of Piles Driven Today: 672.4  
 Total Length of Piles Driven Previously: 5554.7  
 Total Length of Piles Driven To Date: 6227.0

\*Required Minimum: 9 avg. (per Contractor's WEAP)

## Additional remarks:

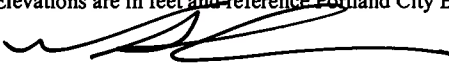
All piles driven with steel driving shoe.

## Remarks:

- Rejected
- Added due to mislocated pile
- Added due to broken pile
- Added due to design change
- Deleted due to design change
- Broken
- Test Pile

## Notes:

- Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
- Elevations are in feet and reference Portland City Base datum.

Total Number of Piles Driven Today: 14Previous total Number of Piles: 109Total Number of Piles To Date: 123
  
 Registered Engineer

# DAILY SUMMARY END BEARING PILE INSTALLATION

Page 2 of 5

PROJECT	OCEAN GATEWAY PARKING GARAGE	H&A FILE NO.	30322-030
LOCATION	PORTLAND, MAINE	PROJECT MGR	W. CHADBOURNE
CLIENT	RIVERWALK, LLC.	FIELD REP	W. ARMSTRONG
GEN. CONTRACTOR	LEDGEWOOD CONSTRUCTION	DATE	6/26/2007
PILE CONTRACTOR	G. DONALDSON CONSTRUCTION	WFR NO.	6

## PILES:

Type STEEL H-PILE  
 Size HP 12X53  
 Design Capacity 90 tons

## HAMMER:

Type JUNTTAN HHK 9A  
 Cushion Monocast MC 904P  
 Rated Energy 25,000 ft-lbs

Blows per min. 40-100  
 Ram Weight (lbs) 19,800  
 Fall (in) 18

Pile No.	Pile Length	Elevation			Pay Length (ft)	Blows Per Inch							Remarks
		Top	Cut-off	Tip		Final 6 in.						Ave.*	
77	80.32	34.99	13.36	-45.33	58.7	13	8	9	13	10<0.5"			refusal; splice added
82	80.65	28.75	12.45	-51.90	64.4	7	10	12	10	11	10	10	splice added
101	85.34	34.94	12.45	-50.40	62.9	10	12	14	10<0.5"				refusal; splice added
115	80.44	28.52	13.38	-51.92	65.3	7	8	8	10	13	10<0.5"		refusal; splice added
135													see add. remarks, final driving on 6/27
152	85.18	37.68	14.00	-47.50	61.5	12	10<0.5"						refusal; splice added
153	85.34	35.70	14.02	-49.64	63.7	13	12	13	12	10	10<0.5"		refusal; splice added
154	84.74	31.24	13.96	-53.50	67.5	5	7	8	12	11	10<0.5"		refusal; splice added
155	80.37	31.14	14.06	-49.23	63.3	8	6	8	9	11	10<0.5"		refusal; splice added
156	80.17	31.93	14.01	-48.24	62.3	6	8	8	12	10	10<0.5"		refusal; splice added
157	79.77	30.36	13.95	-49.41	63.4	5	6	9	9	13	10<0.5"		refusal; splice added
158	85.42	26.72	14.72	-58.70	73.4	9	10	15	10<0.5"				refusal; splice added
159													see add. remarks, final driving on 6/27
160	85.42	31.83	14.76	-53.59	68.4	8	12	9	8	10	12	10	splice added
161	85.57	30.11	14.50	-55.46	70.0	8	8	8	14	17	10<0.5"		refusal; splice added
162	85.28	30.24	14.49	-55.04	69.5	12	10<0.5"						refusal; splice added
163	85.35	30.25	14.54	-55.10	69.6	11	14	10<0.5"					refusal; splice added
96	80.25	31.31	13.45	-48.94	62.4	12	10	10<0.5"					refusal; splice added

Total Length of Piles Driven Today: 1046.0  
 Total Length of Piles Driven Previously: 6227.0  
 Total Length of Piles Driven To Date: 7273.0

\*Required Minimum: 8 avg. (per Contractor's WEAP)

## Additional remarks:

All piles driven with steel driving shoe.


Piles listed above did not achieve capacity at the end of initial driving. Excavation or pile splice is required to continue driving.

## Remarks:

- Rejected
- Added due to mislocated pile
- Added due to broken pile
- Added due to design change
- Deleted due to design change
- Broken
- Test Pile

## Notes:

- Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
- Elevations are in feet and reference Portland City Base datum.

Total Number of Piles Driven Today: 16Previous total Number of Piles: 123Total Number of Piles To Date: 139
  
 Registered Engineer

DAILY SUMMARY  
END BEARING PILE INSTALLATION

Page 3 of 5

PROJECT	OCEAN GATEWAY PARKING GARAGE	H&A FILE NO.	30322-030
LOCATION	PORTLAND, MAINE	PROJECT MGR	W. CHADBOURNE
CLIENT	RIVERWALK, LLC.	FIELD REP	W. ARMSTRONG
GEN. CONTRACTOR	LEDGEWOOD CONSTRUCTION	DATE	6/26/2007
PILE CONTRACTOR	G. DONALDSON CONSTRUCTION	WFR NO.	6

## PILES:

Type STEEL H-PILE  
 Size HP 14X102  
 Design Capacity 170 tons

## HAMMER:

Type JUNTTAN HHK 9A  
 Cushion Monocast MC 904P  
 Rated Energy 79,801 ft-lbs

Blows per min. 40-100  
 Ram Weight (lbs) 19,800  
 Fall (in) 30

Pile No.	Pile Length	Elevation			Pay Length (ft)	Blows Per Inch							Remarks
		Top	Cut-off	Tip		Final 6 in.						Ave.*	
78	78.79	32.20	12.39	-46.59	59.0	8	10<0.5"						refusal; splice added
79	79.11	32.98	12.36	-46.13	58.5	9	20	10<0.5"					refusal; splice added
80	79.17	32.26	12.36	-46.91	59.3	9	13	10<0.5"					refusal; splice added
81	80.87	34.69	12.44	-46.18	58.6	7	15	10<0.5"					refusal; splice added
97	78.48	26.23	12.37	-52.25	64.6	12	10<0.5"						refusal; splice added
98	80.83	29.19	12.51	-51.64	64.2	12	18	10<0.5"					refusal; splice added
99	79.18	25.45	12.47	-53.73	66.2	8	10	10<0.5"					refusal; splice added
100	83.22	30.65	12.47	-52.57	65.0	12	10<0.5"						refusal; splice added
117	78.65	30.20	12.44	-48.45	60.9	4	4	4	7	10	10<0.5"		refusal; splice added
118	79.73	24.75	12.37	-54.98	67.4	8	12	16	10<0.5"				refusal; splice added
119	77.44	26.67	12.44	-50.77	63.2	7	7	7	9	12	10<0.5"		refusal; splice added
120	80.50	27.63	12.32	-52.87	65.2	5	8	14	15	16	10<0.5"		refusal; splice added
136													see add. remarks, final driving on 6/27
138													see add. remarks, final driving on 6/27
139													see add. remarks, final driving on 6/27

Total Length of Piles Driven Today: 752.0  
 Total Length of Piles Driven Previously: 7273.0  
 Total Length of Piles Driven To Date: 8025.0

\*Required Minimum: 9 avg. (per Contractor's WEAP)

## Remarks:

- Rejected
- Added due to mislocated pile
- Added due to broken pile
- Added due to design change
- Deleted due to design change
- Broken
- Test Pile

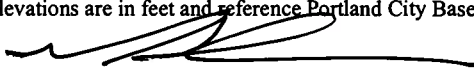
## Notes:

- Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
- Elevations are in feet and reference Portland City Base datum.

## Additional remarks:

Piles listed above did not achieve capacity at the end of initial driving. Excavation or pile splice is required to continue driving.

All piles driven with steel driving shoe.

Total Number of Piles Driven Today: 12Previous total Number of Piles: 139Total Number of Piles To Date: 151
  
 Registered Engineer



<b>H&amp;A FILE NO.</b>	<u>30322-030</u>
<b>PROJECT MGR</b>	<u>W. CHADBOURNE</u>
<b>FIELD REP</b>	<u>W. ARMSTRONG</u>
<b>DATE</b>	<u>6/27/2007</u>
<b>WFR NO.</b>	6

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	18

Total Length of Piles Driven Today:	193.8
Total Length of Piles Driven Previously:	8025.0
Total Length of Piles Driven To Date:	8218.8

**All piles driven with steel driving shoe.**

1. Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
2. Elevations are in feet and reference Portland City Base datum.

**Total Number of Piles To Date: 154**

Form 4015

<b>PROJECT</b>	<u>OCEAN GATEWAY PARKING GARAGE</u>
<b>LOCATION</b>	<u>PORTLAND, MAINE</u>
<b>CLIENT</b>	<u>RIVERWALK, LLC.</u>
<b>GEN. CONTRACTOR</b>	<u>LEDGEWOOD CONSTRUCTION</u>
<b>PILE CONTRACTOR</b>	<u>G. DONALDSON CONSTRUCTION</u>

<b>H&amp;A FILE NO.</b>	<u>30322-030</u>
<b>PROJECT MGR</b>	<u>W. CHADBOURNE</u>
<b>FIELD REP</b>	<u>W. ARMSTRONG</u>
<b>DATE</b>	<u>6/27/2007</u>
<b>WFR NO.</b>	<u>6</u>

**PILES:**

Type	STEEL H-PILE	
Size	HP 14X102	
Design Capacity	170	tons

**HAMMER:**

Type	JUNTTAN HHK 9A	
Cushion	Monocast MC 904P	
Rated Energy	79,801	ft-lbs

Blows per min.	40-100
Ram Weight (lbs)	19,800
Fall (in)	30

[illegible]

Total Length of Piles Driven Today:	601.7
Total Length of Piles Driven Previously:	8218.8
Total Length of Piles Driven To Date:	8820.5

\*Required Minimum: 9 avg. (per Contractor's WEAP)

**Remarks:**

- a. Rejected
- b. Added due to mislocated pile
- c. Added due to broken pile
- d. Added due to design change
- e. Deleted due to design change
- f. Broken
- g. Test Pile

**Notes:**

1. Pay lengths indicated are preliminary and are based on proposed cut-off elevations and as-built elevation data provided by Owen Haskell, Inc.
2. Elevations are in feet and reference Portland City Base datum.

**Additional remarks:**

Piles 136 to 139 were redriven after splices were added.

**All piles driven with steel driving shoe.**

**Total Number of Piles Driven Today:** 11

Previous total Number of Piles: 154

**Total Number of Piles To Date: 165**

Registered Engineer