



R. W. Gillespie & Associates, Inc.

Geotechnical Engineering • Geohydrology • Materials Testing Services

27 August 2004

Mr. Phillip J. Doughty, AIA
Doughty & Associates, Inc.
362 U.S. Route One
Falmouth, ME 04105

Subject: Pile Driving Observation
New Jetways and Addition to Baggage Claim Area
Portland International Jetport
Portland, Maine
RWG&A Project No. 438-05

Dear Mr. Doughty:

The following report presents a summary of the installation data for the piles installed at the New Jetways and Baggage Claim Area at Portland International Jetport in Portland, Maine. Ten HP10x42 piles were installed on 23 and 24 August 2004. A representative of R. W. Gillespie & Associates, Inc., (RWG&A) was on-site to observe pile installation.

Pile Installation Records

Please find enclosed the following pile driving records for 40 ton design capacity HP10x42 steel H-piles for the above referenced project.

- Table 1, Summary of Piles observed by RWG&A
- Individual Pile Driving Logs

Installation Criteria

The submittal provided by H. B. Fleming was based upon the output generated from the WEAP analysis. Piles were to be driven until a blow count of 5 to 8 blows per inch was obtained for 6 consecutive inches. No criteria for pile refusal were given. However, a criteria of 5 blows for ½ inch or 5 blows for no movement was used for pile refusal.

The piles were installed using a MKT DE-30 single acting diesel hammer with a stroke of 10 feet 6 inches and a rated energy of 28,000 foot-pounds. The hammer cushioning material consisted of 2.5 inches of Hamortex material.

Pile Lengths

Ten piles were installed with final pile lengths of 26 feet 9 inches to 30 feet. Piles were driven to a refusal of 5 blows for ½ inch or 5 blows for no movement.

Pile Locations

It is understood that the pile locations were staked out by Ledgewood Construction. The piles were driven in the canopy area near column lines 17 and 18 as shown Sheet No. S2 of the plans titled *Additions and Alteration: Easterly Expansion of Baggage Claim Facility, Portland International Jetport, Portland, Maine*, prepared by Phillip J. Doughty Associates and dated 22 April 2004. Determination of as-driven pile locations was beyond RWG&A's scope of work.

Closure

This letter has been prepared to document pile installation for the New Jetways and Addition to Baggage Claim area at Portland International Jetport in Portland, Maine, and for the exclusive use of Doughty & Associates, Inc. This work has been completed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made nor should one be inferred.

We have enjoyed serving you on this project. If you have any questions, or if we may be of further service, please do not hesitate to contact us.

Very truly yours,
R. W. GILLESPIE & ASSOCIATES, INC.



Matthew P. Lilley, P. E.
Geotechnical Engineer



Charles R. Nickerson, P. E.
Chief Geotechnical Engineer

MPL/CRN:ci

Copy: John S. Linscott, III, P.E. - H.B. Fleming

TABLE 1
SUMMARY OF COMPLETED PILE DATA
NEW JETWAYS AND ADDITION TO BAGGAGE CLAIM AREA
PORTLAND INTERNATIONAL JETPORT
PORTLAND, MAINE
RWG&A PROJECT NO. 438-05

Pile Number	Pile Hammer Used MKT DE-30	Final Penetration Resistance	Final Installed Pile Length (ft)	Date Installed
17-1	X	8 blows for ½ inch	28.8	08/23/2004
17-2	X	5 blows for ½ inch	28.8	08/23/2004
17-3	X	8 blows for ½ inch	28.3	08/23/2004
17-4	X	5 blows for ½ inch	26.8	08/23/2004
17-5	X	5 blows for ½ inch	28.3	08/23/2004
18-1	X	5 blows for < ½ inch	28.4	08/24/2004
18-2	X	8 blows for ½ inch	27.3	08/24/2004
18-3	X	8 blows for < ½ inch	30.0	08/24/2004
18-4	X	5 blows for < ½ inch	28.1	08/24/2004
18-5	X	7 blows for < ½ inch	28.2	08/24/2004

Note: Individual piles near each column line were given numbers starting from south to north and then west to east.

PILE DRIVING RECORD

Project Name: New Jetways and Addition to Baggage Claim Area
 RWG&A Project No.: 438-05
 Client: Doughty & Associates, Inc.
 General Contractor: Ledgewood Construction
 Pile Contractor: H. B. Fleming

Pile No.: 17-1
 Date: 8/23
 Initials: MPL

Pile Type: HP10x42 Design Capacity: 40 tons
 Pile Hammer: MKT DE-30 Rated Energy: 28,000 ft-lbs

Initial Pile Length: 30' + Splice Length(s): 1' = Total Length (ft): 30'

Cut-off Length (ft): 1' 3" Cut-off Elev.: _____
 Pay Length (ft): 28' 9" Tip Elev.: _____

Start Time: _____ Stop Time: _____

<u>Depth</u> <u>(ft)</u>	<u>Blows/</u> <u>ft</u>					<u>Depth</u> <u>ft</u>	<u>Blows/</u> <u>in</u>
1	18	41	61	81	<u>28' 9"</u>	1	<u>8 1/2"</u>
2	15	42	62	82		2	
3	16	43	63	83		3	
4	17	44	64	84		4	
5	23	45	65	85		5	
6	12	46	66	86		6	
7	12	47	67	87		7	
8	12	48	68	88		8	
9	13	49	69	89		9	
10		50	70	90		10	
11		51	71	91		11	
12		52	72	92	12		
13		53	73	93	1		
14		54	74	94	2		
15		55	75	95	3		
16		56	76	96	4		
17		57	77	97	5		
18	13	58	78	98	6		
19	17	59	79	99	7		
20	18	60	80	100	8		

Remarks: Refusal

PILE DRIVING RECORD

Project Name: New Jetways and Addition to Baggage Claim Area
 RWG&A Project No.: 438-05
 Client: Doughty & Associates, Inc.
 General Contractor: Ledgewood Construction
 Pile Contractor: H. B. Fleming

Pile No.: 17-2
 Date: 8/23
 Initials: MPL

Pile Type: HP10x42 Design Capacity: 40 tons
 Pile Hammer: MKT DE-30 Rated Energy: 28,000 ft-lbs

Initial Pile Length: 35' + Splice Length(s): _____ = Total Length (ft): 35'

Cut-off Length (ft): 6'3" Cut-off Elev.: _____
 Pay Length (ft): 28'9" Tip Elev.: _____

Start Time: _____ Stop Time: _____

<u>Depth</u> <u>(ft)</u>	<u>Blows/</u> <u>ft</u>					<u>Depth</u> <u>ft</u>	<u>Blows/</u> <u>in</u>
1	1	21	30	41	61	81	28'9"
2	1	22	20	42	62	82	15 1/2"
3	2	23	22	43	63	83	
4	2	24	25	44	64	84	
5	2	25	29	45	65	85	
6	4	26	18	46	66	86	
7	4	27	25	47	67	87	
8	6	28	21	48	68	88	
9	14	29	28	49	69	89	
10	13	30		50	70	90	
11	25	31		51	71	91	
12	32	32		52	72	92	
13	27	33		53	73	93	1
14	26	34		54	74	94	2
15	25	35		55	75	95	3
16	17	36		56	76	96	4
17	15	37		57	77	97	5
18	20	38		58	78	98	6
19	20	39		59	79	99	7
20	26	40		60	80	100	8

Remarks: Refusal

PILE DRIVING RECORD

Project Name: New Jetways and Addition to Baggage Claim Area Pile No.: 17-3
 RWG&A Project No.: 438-05 Date: 8/23
 Client: Doughty & Associates, Inc. Initials: MPL
 General Contractor: Ledgewood Construction
 Pile Contractor: H. B. Fleming

Pile Type: HP10x42 Design Capacity: 40 tons
 Pile Hammer: MKT DE-30 Rated Energy: 28,000 ft-lbs

Initial Pile Length: 35' + Splice Length(s): _____ = Total Length (ft):

Cut-off Length (ft): 6'9" Cut-off Elev.: _____
 Pay Length (ft): 28'3" Tip Elev.: _____

Start Time: _____ Stop Time: _____

<u>Depth</u> <u>(ft)</u>	<u>Blows/</u> <u>ft</u>					<u>Depth</u> <u>ft</u>	<u>Blows/</u> <u>in</u>
1	1	21	22	41	61	81	28'3"
2	1	22	19	42	62	82	1 8 1/2"
3	2	23	19	43	63	83	2
4	3	24	19	44	64	84	3
5	4	25	20	45	65	85	4
6	4	26	17	46	66	86	5
7	4	27	14	47	67	87	6
8	5	28	32	48	68	88	7
9	7	29		49	69	89	8
10	16	30		50	70	90	9
11	20	31		51	71	91	10
12	14	32		52	72	92	11
13	18	33		53	73	93	12
14	18	34		54	74	94	1
15	22	35		55	75	95	2
16	19	36		56	76	96	3
17	16	37		57	77	97	4
18	16	38		58	78	98	5
19	19	39		59	79	99	6
20	19	40		60	80	100	7
							8

Remarks: Refusal

PILE DRIVING RECORD

Project Name: New Jetways and Addition to Baggage Claim Area
 RWG&A Project No.: 438-05
 Client: Doughty & Associates, Inc.
 General Contractor: Ledgewood Construction
 Pile Contractor: H. B. Fleming

Pile No.: 17-4
 Date: 8/23
 Initials: MPZ

Pile Type: HP10x42 Design Capacity: 40 tons
 Pile Hammer: MKT DE-30 Rated Energy: 28,000 ft-lbs

Initial Pile Length: 21' + Splice Length(s): 15' = Total Length (ft): 36'

Cut-off Length (ft): 9'3" Cut-off Elev.: _____
 Pay Length (ft): 26'9" Tip Elev.: _____

Start Time: _____ Stop Time: _____

<u>Depth</u> <u>(ft)</u>	<u>Blows/</u> <u>ft</u>					<u>Depth</u> <u>ft</u>	<u>Blows/</u> <u>in</u>
1	1	21	22	41	61	81	26'9"
2	1	22	27	42	62	82	
3	2	23	27	43	63	83	
4	3	24	34	44	64	84	
5	3	25	29	45	65	85	
6	2	26	23	46	66	86	
7	3	27		47	67	87	
8	5	28		48	68	88	
9	5	29		49	69	89	
10	19	30		50	70	90	
11	31	31		51	71	91	
12	30	32		52	72	92	
13	33	33		53	73	93	1
14	29	34		54	74	94	2
15	27	35		55	75	95	3
16	18	36		56	76	96	4
17	14	37		57	77	97	5
18	27	38		58	78	98	6
19	24	39		59	79	99	7
20	24	40		60	80	100	8

Remarks: Refusal

PILE DRIVING RECORD

Project Name: New Jetways and Addition to Baggage Claim Area
 RWG&A Project No.: 438-05
 Client: Doughty & Associates, Inc.
 General Contractor: Ledgewood Construction
 Pile Contractor: H. B. Fleming

Pile No.: 17-5
 Date: 8/23
 Initials: MPL

Pile Type: HP10x42 Design Capacity: 40 tons
 Pile Hammer: MKT DE-30 Rated Energy: 28,000 ft-lbs

Initial Pile Length: 35' + Splice Length(s): _____ = Total Length (ft): 35'

Cut-off Length (ft): 6'9" Cut-off Elev.: _____
 Pay Length (ft): 28'3" Tip Elev.: _____

Start Time: _____ Stop Time: _____

<u>Depth</u> <u>(ft)</u>	<u>Blows/</u> <u>ft</u>					<u>Depth</u> <u>ft</u>	<u>Blows/</u> <u>in</u>
1	1	21	20	41	61	81	28'3"
2	2	22	24	42	62	82	
3	2	23	24	43	63	83	
4	1	24	28	44	64	84	
5	3	25	28	45	65	85	
6	3	26	26	46	66	86	
7	2	27	21	47	67	87	
8	4	28	28	48	68	88	
9	5	29		49	69	89	
10	18	30		50	70	90	
11	20	31		51	71	91	
12	29	32		52	72	92	
13	30	33		53	73	93	1
14	36	34		54	74	94	2
15	31	35		55	75	95	3
16	18	36		56	76	96	4
17	12	37		57	77	97	5
18	18	38		58	78	98	6
19	21	39		59	79	99	7
20	20	40		60	80	100	8

Remarks: Refusal

PILE DRIVING RECORD

Project Name: New Jetways and Addition to Baggage Claim Area
 RWG&A Project No.: 438-05
 Client: Doughty & Associates, Inc.
 General Contractor: Ledgewood Construction
 Pile Contractor: H. B. Fleming

Pile No.: 18-1
 Date: 8/24
 Initials: MPL

Pile Type: HP10x42 Design Capacity: 40 tons
 Pile Hammer: MKT DE-30 Rated Energy: 28,000 ft-lbs

Initial Pile Length: 25' + Splice Length(s): 15' = Total Length (ft): 40'

Cut-off Length (ft): 11'7" Cut-off Elev.: _____
 Pay Length (ft): 28'5" Tip Elev.: _____

Start Time: _____ Stop Time: _____

Depth (ft)	Blows/ft				Depth (ft)	Blows/in
1	21	14	41	61	28'5"	15/1/2"
2	22	10	42	62		2
3	23	9	43	63		3
4	24	6	44	64		4
5	25	9	45	65		5
6	26	10	46	66		6
7	Not observed	10	47	67		7
8	28	24	48	68		8
9	29		49	69		9
10	30		50	70		10
11	31		51	71		11
12	32		52	72		12
13	33		53	73	1	
14	34		54	74	2	
15	15		55	75	3	
16	13		56	76	4	
17	13		57	77	5	
18	6		58	78	6	
19	4		59	79	7	
20	14		60	80	8	

Remarks:

PILE DRIVING RECORD

Project Name: New Jetways and Addition to Baggage Claim Area
 RWG&A Project No.: 438-05
 Client: Doughty & Associates, Inc.
 General Contractor: Ledgewood Construction
 Pile Contractor: H. B. Fleming

Pile No.: 18-2
 Date: 8/24
 Initials: MPL

Pile Type: HP10x42 Design Capacity: 40 tons
 Pile Hammer: MKT DE-30 Rated Energy: 28,000 ft-lbs

Initial Pile Length: 25' + Splice Length(s): 11' = Total Length (ft): 36'

Cut-off Length (ft): 8'9" Cut-off Elev.: _____
 Pay Length (ft): 27'3" Tip Elev.: _____

Start Time: _____ Stop Time: _____

<u>Depth</u> <u>(ft)</u>	<u>Blows/</u> <u>ft</u>					<u>Depth</u> <u>ft</u>	<u>Blows/</u> <u>in</u>
1	1	21	16	41	61	81	27'3"
2	2	22	18	42	62	82	1 8 1/2"
3	2	23	12	43	63	83	2
4	2	24	13	44	64	84	3
5	2	25	16	45	65	85	4
6	3	26	18	46	66	86	5
7	3	27	18	47	67	87	6
8	10	28		48	68	88	7
9	3	29		49	69	89	8
10	5	30		50	70	90	9
11	4	31		51	71	91	10
12	4	32		52	72	92	11
13	17	33		53	73	93	12
14	17	34		54	74	94	1
15	16	35		55	75	95	2
16	10	36		56	76	96	3
17	6	37		57	77	97	4
18	14	38		58	78	98	5
19	11	39		59	79	99	6
20	17	40		60	80	100	7
							8

Remarks:

PILE DRIVING RECORD

Project Name: New Jetways and Addition to Baggage Claim Area Pile No.: 18-3
 RWG&A Project No.: 438-05 Date: 8/24
 Client: Doughty & Associates, Inc. Initials: MPZ
 General Contractor: Ledgewood Construction
 Pile Contractor: H. B. Fleming

Pile Type: HP10x42 Design Capacity: 40 tons
 Pile Hammer: MKT DE-30 Rated Energy: 28,000 ft-lbs

Initial Pile Length: 25' + Splice Length(s): 15' = Total Length (ft): 40'

Cut-off Length (ft): 10' Cut-off Elev.: _____
 Pay Length (ft): 30' Tip Elev.: _____

Start Time: _____ Stop Time: _____

<u>Depth</u> <u>(ft)</u>	<u>Blows/</u> <u>ft</u>					<u>Depth</u> <u>ft</u>	<u>Blows/</u> <u>in</u>
1	12	41	61	81	30'0"	1	8 1/2"
2	11	42	62	82		2	
3	11	43	63	83		3	
4	14	44	64	84		4	
5	14	45	65	85		5	
6	10	46	66	86		6	
7	10	47	67	87		7	
8	13	48	68	88		8	
9	13	49	69	89		9	
10	20	50	70	90		10	
11		51	71	91		11	
12		52	72	92		12	
13		53	73	93	1		
14		54	74	94	2		
15	4	55	75	95	3		
16	3	56	76	96	4		
17	4	57	77	97	5		
18	6	58	78	98	6		
19	6	59	79	99	7		
20	7	60	80	100	8		

Remarks: Refusal

PILE DRIVING RECORD

Project Name: New Jetways and Addition to Baggage Claim Area
 RWG&A Project No.: 438-05
 Client: Doughty & Associates, Inc.
 General Contractor: Ledgewood Construction
 Pile Contractor: H. B. Fleming

Pile No.: 18-4
 Date: 8/24
 Initials: MPL

Pile Type: HP10x42 Design Capacity: 40 tons
 Pile Hammer: MKT DE-30 Rated Energy: 28,000 ft-lbs

Initial Pile Length: 25' + Splice Length(s): 9' = Total Length (ft): 34'

Cut-off Length (ft): 5'11" Cut-off Elev.: _____
 Pay Length (ft): 28'1" Tip Elev.: _____

Start Time: _____ Stop Time: _____

<u>Depth</u> <u>(ft)</u>	<u>Blows/</u> <u>ft</u>					<u>Depth</u> <u>ft</u>	<u>Blows/</u> <u>in</u>
1	—	21	20	41	61	81	28'1"
2	1	22	10	42	62	82	1 5/8"
3	1	23	10	43	63	83	2
4	1	24	10	44	64	84	3
5	1	25	10	45	65	85	4
6	1	26	7	46	66	86	5
7	1	27	11	47	67	87	6
8	1	28	9	48	68	88	7
9	2	29	12	49	69	89	8
10	5	30		50	70	90	9
11	5	31		51	71	91	10
12	5	32		52	72	92	11
13	8	33		53	73	93	12
14	2	34		54	74	94	1
15	6	35		55	75	95	2
16	8	36		56	76	96	3
17	4	37		57	77	97	4
18	4	38		58	78	98	5
19	3	39		59	79	99	6
20	5	40		60	80	100	7
							8

Remarks: Refusal