

PILE LOAD TEST REPORT
BELMONT HIGH SCHOOL
BELMONT, MASSACHUSETTS

OFFICE COPY

for
Korslund, LeNormand & Quann
Norwood, Massachusetts

by
Haley & Aldrich, Inc.
Consulting Soil Engineers
Cambridge, Massachusetts

File No. 68-1969

~~February~~ 1969
MARCH

HALEY & ALDRICH, INC.



CONSULTING SOIL ENGINEERS • 238 MAIN STREET • CAMBRIDGE, MASSACHUSETTS 02142

HARL P. ALDRICH, JR.
JAMES F. HALEY

TEL: (617) 492-6460

EDMUND G. JOHNSON
MARTIN C. MURPHY
RONALD E. BUCKNAM

3 March 1969
File No. 68-1969

Korslund, LeNormand & Quann, Inc.
20 Vernon Street
Norwood, Massachusetts

Attention: Mr. Vincent A. Iannone

Subject: Belmont High School
Belmont, Massachusetts
Pile Load Test Report

Gentlemen:

This report summarizes the results of two successful pile load tests performed in connection with the subject project. Enclosed for each test, in Figures 2 and 3 are graphs of the time-settlement curve for each increment of load, and of the load-settlement and rebound curve for the entire test. In addition, the test pile driving records, jack calibrations and observed test data are included in the appendixes.

A copy of this report is being filed with the Belmont Town Engineer.

GENERAL

Two types of pile support were proposed for the project; 12-3/4 in. outside diameter by 3/8 in. wall thickness, concrete filled pipe piles and 10-3/4 in. outside diameter by 1/2 in. wall thickness concrete filled pipe piles. The piles were designed for capacities of 90 and 50 tons respectively, and were to be driven below the clay to a specified penetration resistance.

The general contractor for the project, Perini Corporation of Framingham, engaged Hub Foundation Co., of Wellesley as sub-contractor for the pipe piles. The sub-contractor drove and load tested the test piles.

Full-time inspection of all pile driving and testing, and the recording of all test data was performed by Haley & Aldrich, Inc., acting for the project Architect, Korslund, LeNormand & Quann.

PURPOSE AND SCOPE

Two load tests of 12-3/4 in. O.D. concrete filled pipe bearing piles were specified, in order to observe the performance, under load, of a pile driven to the specified penetration resistance. The penetration resistances specified for the 50 ton and 90 ton capacity piles were approximately 50 percent greater than values that would be computed by the Boston Building Code formula.

Test pile No. 1 was driven at the pile sub-contractor's expense between groups 1-74 and 1-75. An additional pile was driven in group 1-74 at the pile sub-contractor's expense to provide three reaction piles at this location. Test pile No. 2 was driven at the pile sub-contractor's expense between groups 1-49 and 1-50.

The pile sub-contractor elected to use a system of reaction piles to provide the required 180 ton reaction. A large jacking beam was placed between the reaction piles at a position over the load test pile. The connections were welded as shown in Appendixes A and B. An additional 20 tons of dead weight was provided on top of the jacking beam.

PILE DRIVING AND LOAD TESTING

The test piles were driven as described above to a specified penetration resistance. The piles were driven with the same equipment to be used for driving production piles.

Pile movements were measured by micrometer dials reading to 0.001 in., reference wires and scales, and an engineers level. For each test, three micrometer dials were equally spaced around the bearing plate at the top of the pile. The dials were attached to a reference beam supported by pipes driven 20 ft. into the ground, 10 ft. away from the test pile. The reference beam was fixed at one end and free to expand or contract at the opposite end.

In addition, a wire was mounted to the reference beam in such a way as to be within approximately one half inch of the pile or jack. A graduated scale was mounted on a mirror and the unit affixed to the pile or jack opposite the wire and with the face of the mirror parallel to the wire. Such an arrangement permitted pile movements to be read by means of the wire and scale, using the mirror to insure a consistent horizontal line of sight at the time readings are made.

The accuracy of the entire observation system was insured by making frequent level readings on the reference beam and the pile itself, using an engineer's level and a reliable benchmark.

The pile sub-contractor employed newly calibrated hydraulic jacks to apply the test loads. For reaction loads, the previously described system of reaction beams and dead weight was utilized. The entire measuring set-up at each test location was protected against wind, rain and sunlight, by means of tarpaulins.

The piles were loaded and unloaded in the following sequence, as a function of design load: 0.5, 0.75, 1.00, 1.25, 1.50, 1.75, 2.00, 1.5, 1.0, 0.5 and 0.0. The design load and twice design load were maintained for a minimum of 24 hours and until the rate of settlement was less than 0.02 inches in 24 hours. The intermediate loads were maintained constant for a minimum of 4 hours.

TEST RESULTS

The results of the tests on the pipe piles are shown on Figures 2 and 3, and the detailed test data are included in Appendixes A and B.

In summary, the gross settlement at twice design load was 0.454 in. for load test No. 1 and 0.463 in. for load test No. 2, while the net settlement after unloading to zero following twice design load was 0.053 for load test No. 1 and 0.052 for load test No. 2.

CONCLUSIONS

It is concluded on the basis of the test results, that the design assumptions regarding the required penetration resistance for bearing piles are satisfactory for the project.

Thank you for allowing us to participate in the project. If you need additional information please do not hesitate to contact us.

Sincerely yours,
HALEY & ALDRICH, INC.

David E. Thompson

DET:tbm
CC: Mr. Joseph Kales
Town Engineer
Belmont, Massachusetts

FIGURES

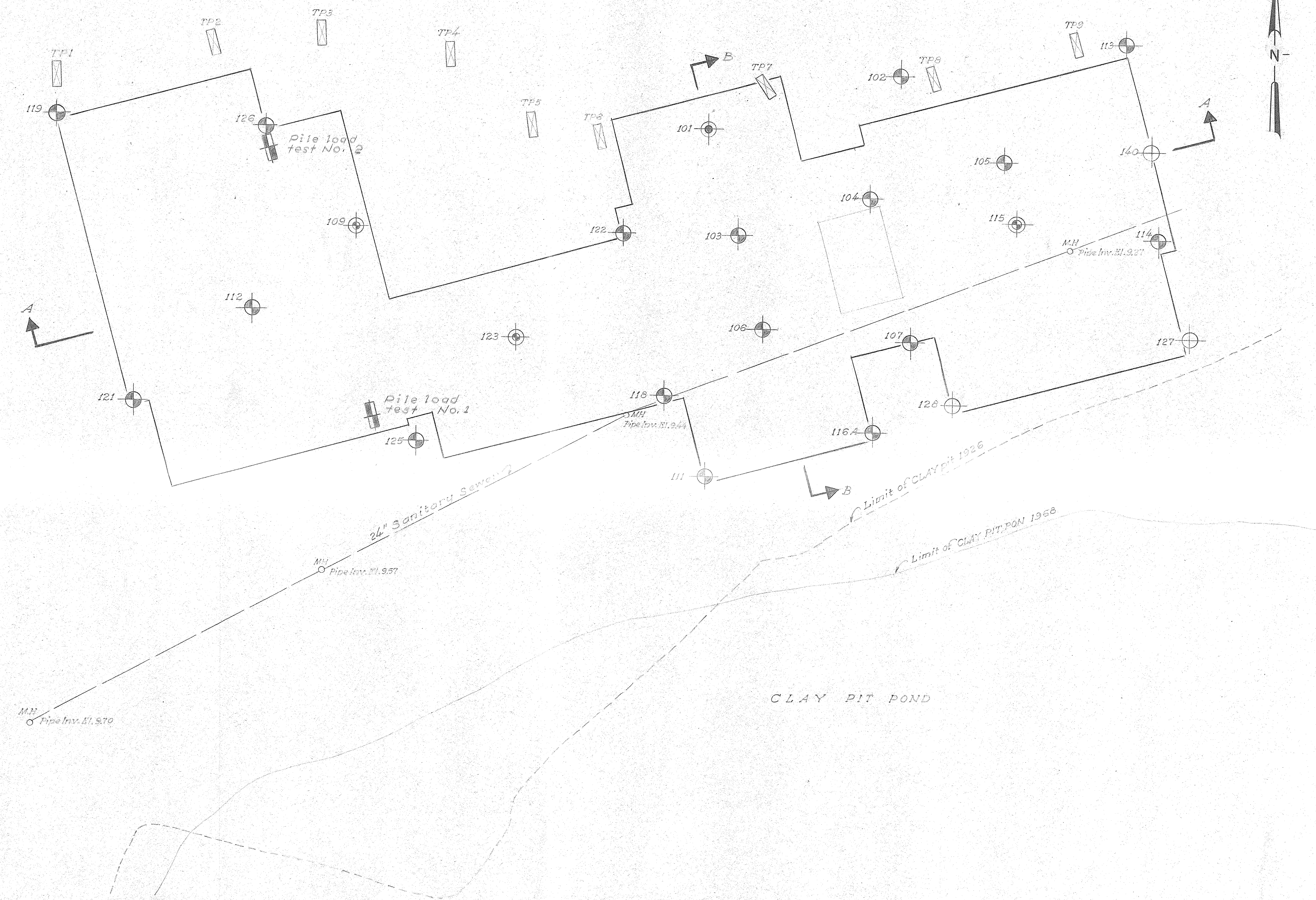
Boston & Maine RR.

LEGEND

- 103 2 1/2" drive sample borings to refusal.
- 115 4" drive sample borings with 3' undisturbed piston samples to refusal.
- 101 2 1/2" drive sample boring to refusal with permanent observation well installed.
- 2 1/2" drive sample borings to the surface of the clay.
- TP1 Machine excavated test pits.
- Pile load test location.

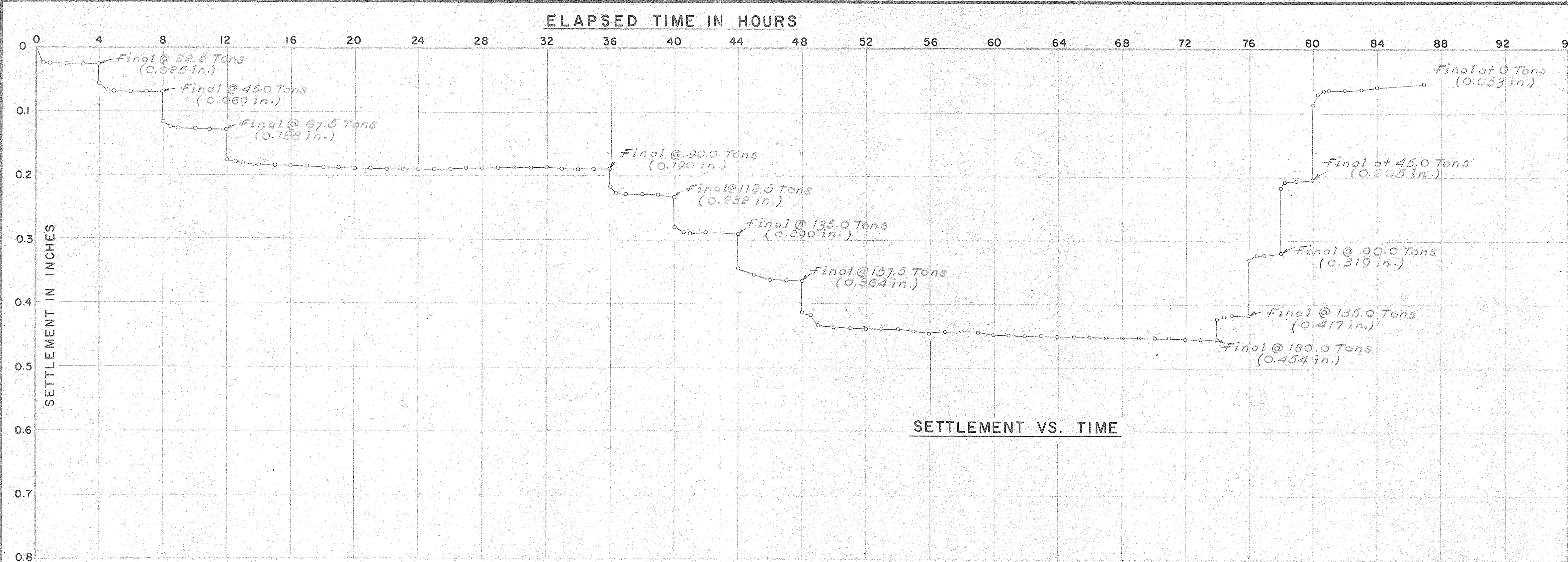
NOTES

1. Plan of land and boring locations by Town Engineer, Belmont, Mass.
2. Building location by Korslund, LeNormand and Quinn, Inc.
3. Record high elevation of CLAY PIT POND El. 19.73 recorded August 15, 1955.



BELMONT HIGH SCHOOL
 BELMONT, MASS.
**PILE LOAD TEST AND
 BORING LOCATION PLAN**
 SCALE: 1" = 40' FEB. 1969

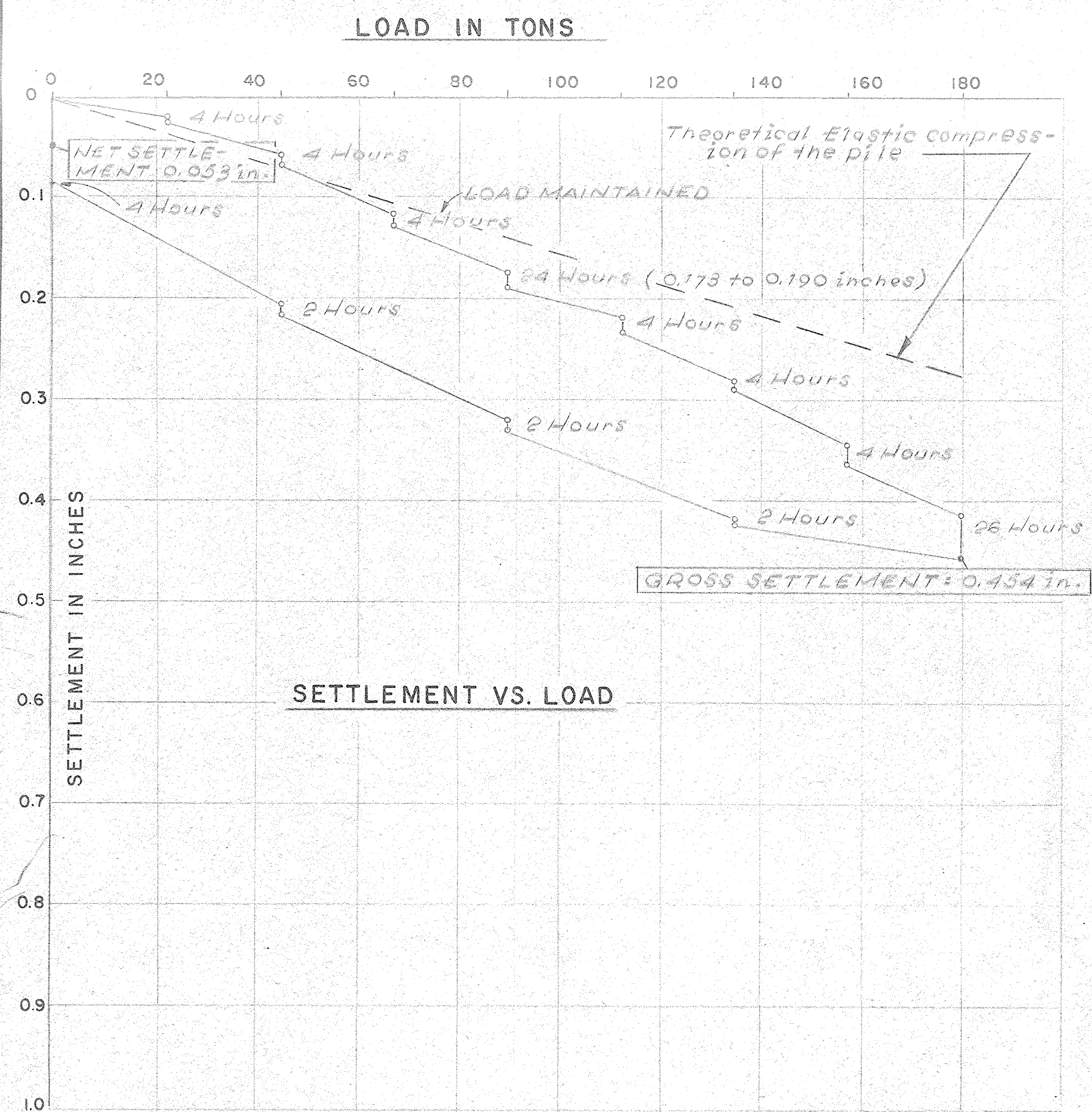
FILE NO. 68-1969



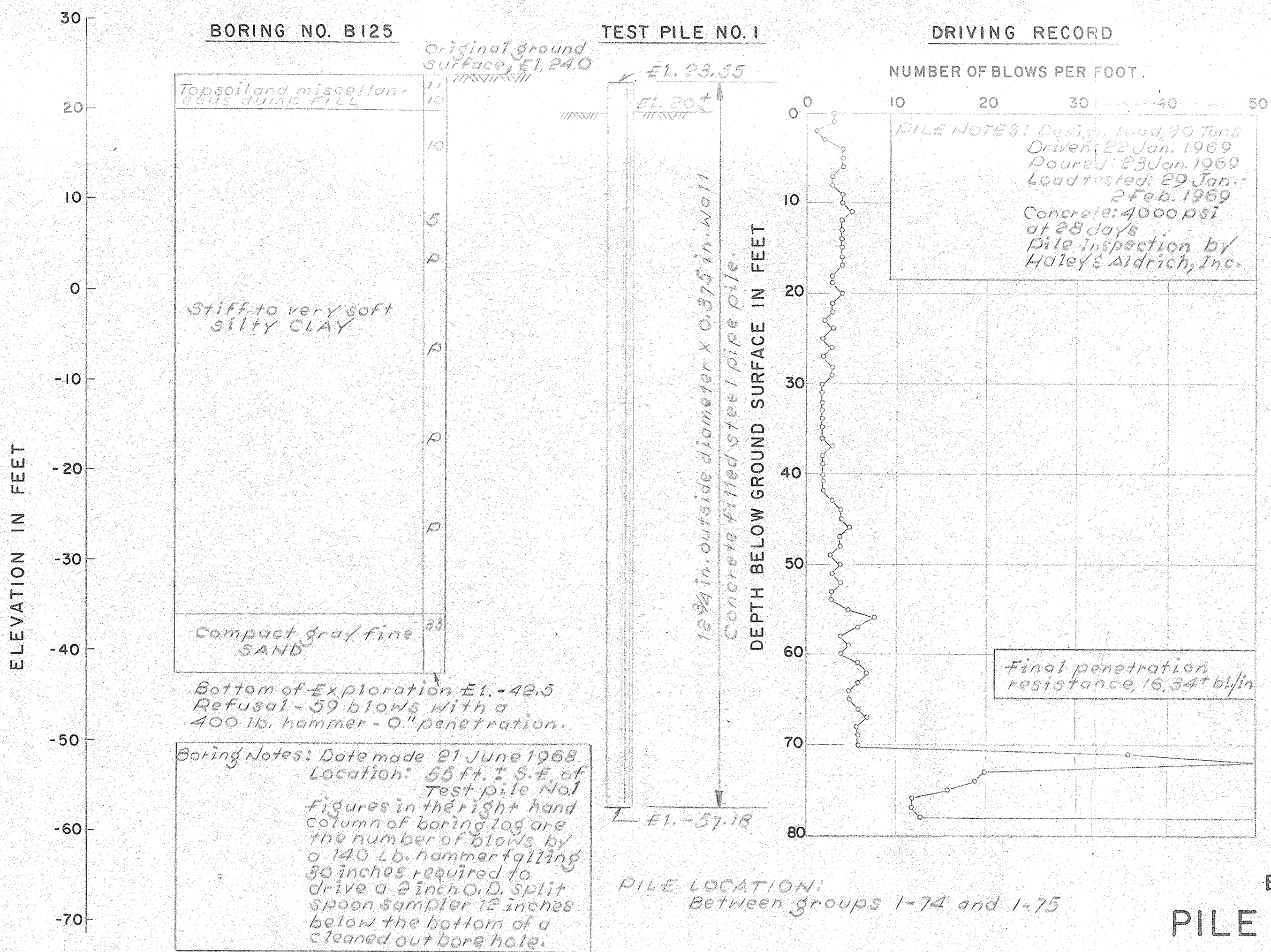
EQUIPMENT NOTES
 PILE HAMMER: VULCAN 500
 WEIGHT OF RAM: 8000 Lbs.
 RATED ENERGY: 24,450 Ft. Lbs.
 RATED SPEED: 111 Blows per min.

GENERAL NOTES
 ELEVATION DATUM: BELMONT TOWN BASE
 PILE CONTRACTOR: HUB FOUNDATION CO., WELLESLEY, MASSACHUSETTS
 PILE LOCATION: SEE FIGURE NO. 1
 TEST BORINGS: MADE BY NORTHEAST TEST BORING COMPANY, 156 ESSEX STREET, WEYMOUTH, MASS.
 SOIL DESCRIPTIONS BY THE DRILLING CONTRACTOR.

SETTLEMENT VS. TIME



SETTLEMENT VS. LOAD



PILE LOCATION:
 Between groups 1-74 and 1-75

BELMONT HIGH SCHOOL
 BELMONT, MASSACHUSETTS

**PILE LOAD TEST RESULTS
 TEST PILE NO. 1**

HALEY & ALDRICH, INC.
 CONSULTING SOIL ENGINEERS

FILE NO. 68-1969

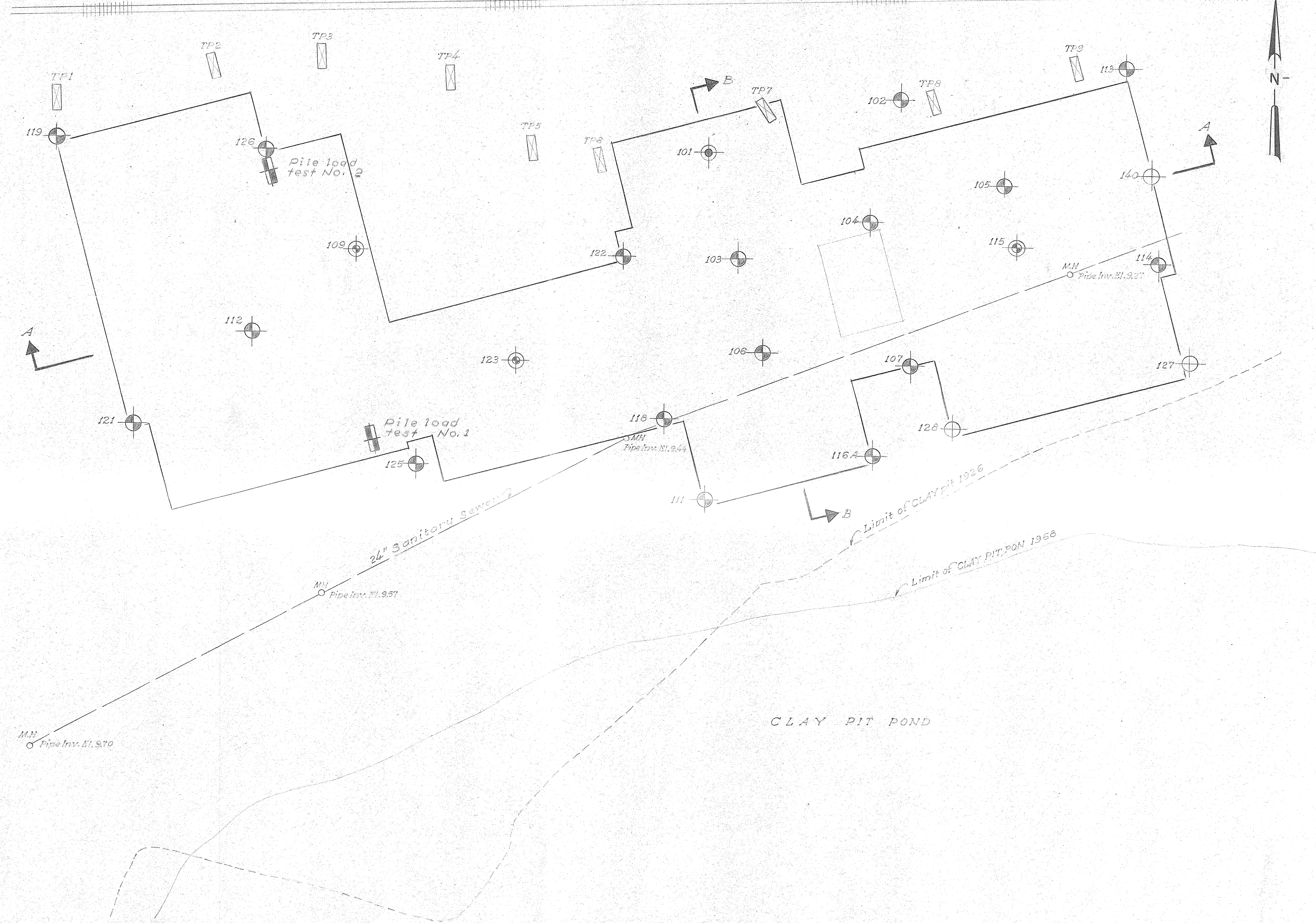
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BELMONT HIGH SCHOOL
 BELMONT, MASS.
**PILE LOAD TEST AND
 BORING LOCATION PLAN**
 SCALE: 1" = 40' FEB. 1969

FILE NO. 68-1969

APPENDIX A

Test Pile No. 1

PILE DRIVING RECORD

Project: Belmont High School File No. 68-1969
 Architect: Korslund, LeNormand & Ouann Page of
 General Contractor: Perini Corporation
 Pile Contractor: Hub Foundation Co. Pile No. TEST PILE NO. 1
 Pile Type: Concrete Filled Pipe Piles Cap No. TEST PILE
 Pile Hammer Vulcan 80c Rated Energy 24,450 ft. lbs. Pile Design Load 90 T

Weld Approved	Concrete	Ident. No.	Section	Length	Date Driven
Date: <u>1-23-69</u>	By: <u> </u>		<u>Bottom</u>	<u>58.64</u>	<u>1-22-69</u>
	Approv. by: <u> </u>		<u>Top</u>	<u>53.64</u>	<u>1-22-69</u>
	Volume, cu. yd. <u> </u>				

HEAVE MEASUREMENT

Date	Elevation	Movement
End of Driving		
Prior to Concrete		
Re-Drive Check		

Pile Length C.O. (1) 112.28
 (2) 31.55
 (3) 8.88 Tot. Length 152.71
 Tot. C.O. 40.43
 1" Boot Plate
 23.55
 14.67
 8.88
 80.73
 71.85

NECESSARY TO RE-DRIVE YES NO Pile Elevations

Deviation From Final Inspect. Date: 1-23-69 Initial: El. Top +23.55 ✓
 Design Location (in) Pile Accepted Yes Pile Length 80.73 Check Tip Elev. 71.85
 Final: El. Tip -57.18 -57.18
 C.O. +14.67 Redrive Final pay
 Pay Length 71.85 + = 71.85

Depth (feet)	Blows	Depth (feet)	Blows	Depth (feet)	Blows	Depth (feet)	Blows	Depth (feet)	Blows	Depth (INCHES)	Blows PER INCH
1	3	41	2	81		121		161		1	9
2	3	42	2	82		122		162		2	9
3	1	43	3	83		123		163		3	6
4	2	44	4	84		124		164		4	6
5	4	45	4	85		125		165		5	5
6	4	46	5	86		126		166		6	4
7	4	47	4	87		127		167		7	4
8	3	48	4	88		128		168		8	5
9	3	49	3	89		129		169		9	3
10	3	50	4	90		130		170		10	3
11	4	51	3	91		131		171		11	3
12	5	52	4	92		132		172		12	3
13	4	53	3	93		133		173		13	
14	4	54	3	94		134		174		14	16
15	4	55	5	95		135		175		15	30/11.11
16	4	56	5	96		136		176		16	
17	4	57	6	97		137		177		17	
18	4	58	6	98		138		178		18	
19	3	59	6	99		139		179		19	
20	3	60	7	100		140		180		20	
21	4	61	6	101		141		181		21	
22	3	62	5	102		142		182		22	
23	3	63	5	103		143		183		23	
24	2	64	6	104		144		184		24	
25	3	65	7	105		145		185		25	
26	2	66	6	106		146		186		26	
27	3	67	6	107		147		187		27	
28	2	68	6	108		148		188		28	
29	2	69	36	109		149		189		29	
30	3	70	64	110		150		190		30	
31	2	71	4	111		151		191		31	
32	2	72	20	112		152		192		32	
33	2	73	19	113		153		193		33	
34	2	74	16	114		154		194		34	
35	2	75	12	115		155		195		35	
36	2	76	12	116		156		196		36	
37	2	77	12	117		157		197		37	
38	2	78	40/11	118		158		198		38	
39	2	79		119		159		199		39	
40	2	80		120		160		200		40	

Blows For Final in. Blows/in. Av.
 Inspector

FORM HBA OCT 67 22

Carleton Materials Laboratory
(212) 280-3522, 280-3145

Engineering Terrace Bldg
Amsterdam Ave. & 120th St

Date: January 6, 1969

Machine Used 600,000 lb. Southwark-Emery

Made for: Richard Dudgeon Inc.

Tested By: J. Horton

789 Bergen Street, Brooklyn, New York 11328

REPORT OF CALIBRATION OF HYDRAULIC JACK UNIT

UNIT CALIBRATED: 200 Ton Dudgeon Hydraulic Jack Unit
 LABORATORY TEST NO.: 79405
 TEST UNIT: 200 ton, 8" stroke, hydraulic-jack S/N RJ89, 10,000 psi pressure gauge S/N B3585-7 pump S/N _____ with 12 ft. hose.

HOW TESTED: The jack unit was calibrated in compression at three different runouts of the ram as reported in the following "Log of Test". The ram was loaded by jacking against the head of the testing machine, and gauge pressures were read at predetermined increments of indicated machine load.

LOG OF TEST:

Testing Machine Load, Lbs.	Gauge Readings		
	2" runout	4" runout	6" runout
40,000	550	600	600
80,000	1,260	1,300	1,300
120,000	1,900	1,900	1,900
160,000	2,550	2,550	2,500
200,000	3,220	3,200	3,200
240,000	3,820	3,800	3,820
280,000	4,450	4,450	4,470
320,000	5,100	5,100	5,120
360,000	5,800	5,800	5,800
400,000	6,500	6,400	6,400

RECEIVED

JAN 14 1969

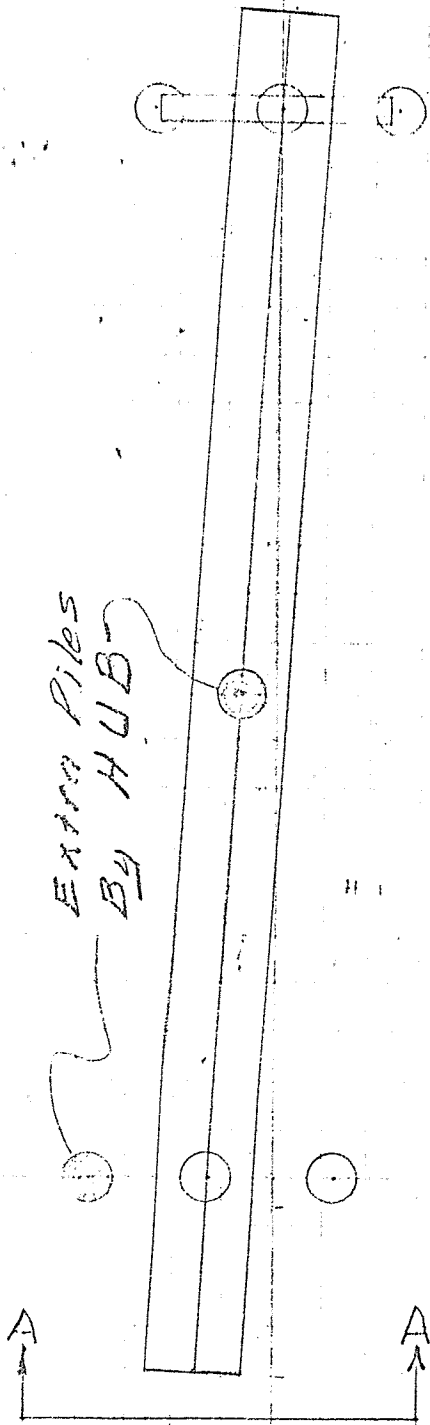
Perini Corp.



Pile Group 1-75

Ground Level

Extra Piles By HUB

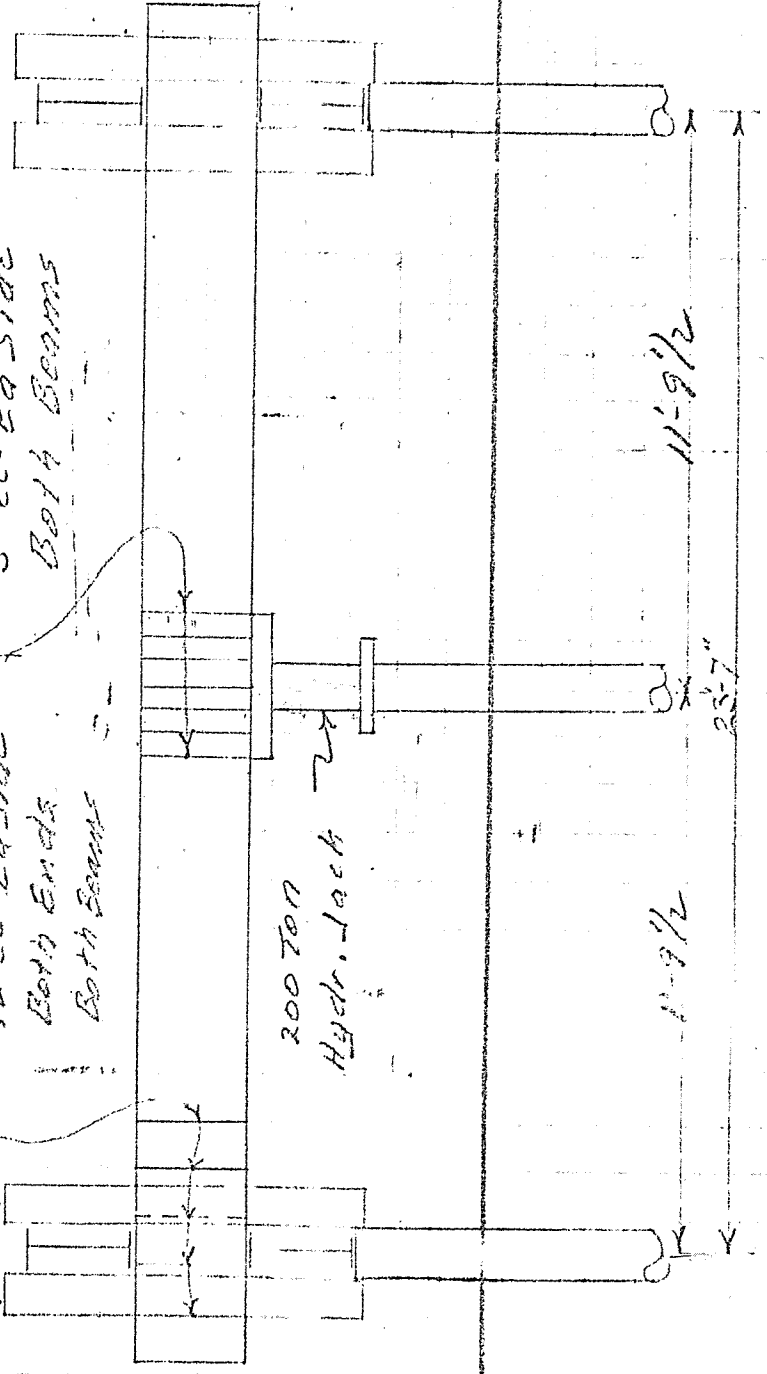


Pile Group 1-74

7-3/4" Stiffener Rs
5" cc - Ea Side
Both Beams

5-1/2" Stiffener Rs
12" cc - Ea Side
Both Ends
Both Beams

4-10EP12 x 7'-9"



200 Ton Hydr. Jack

RECEIVED

APR 1960

Perini Corp.

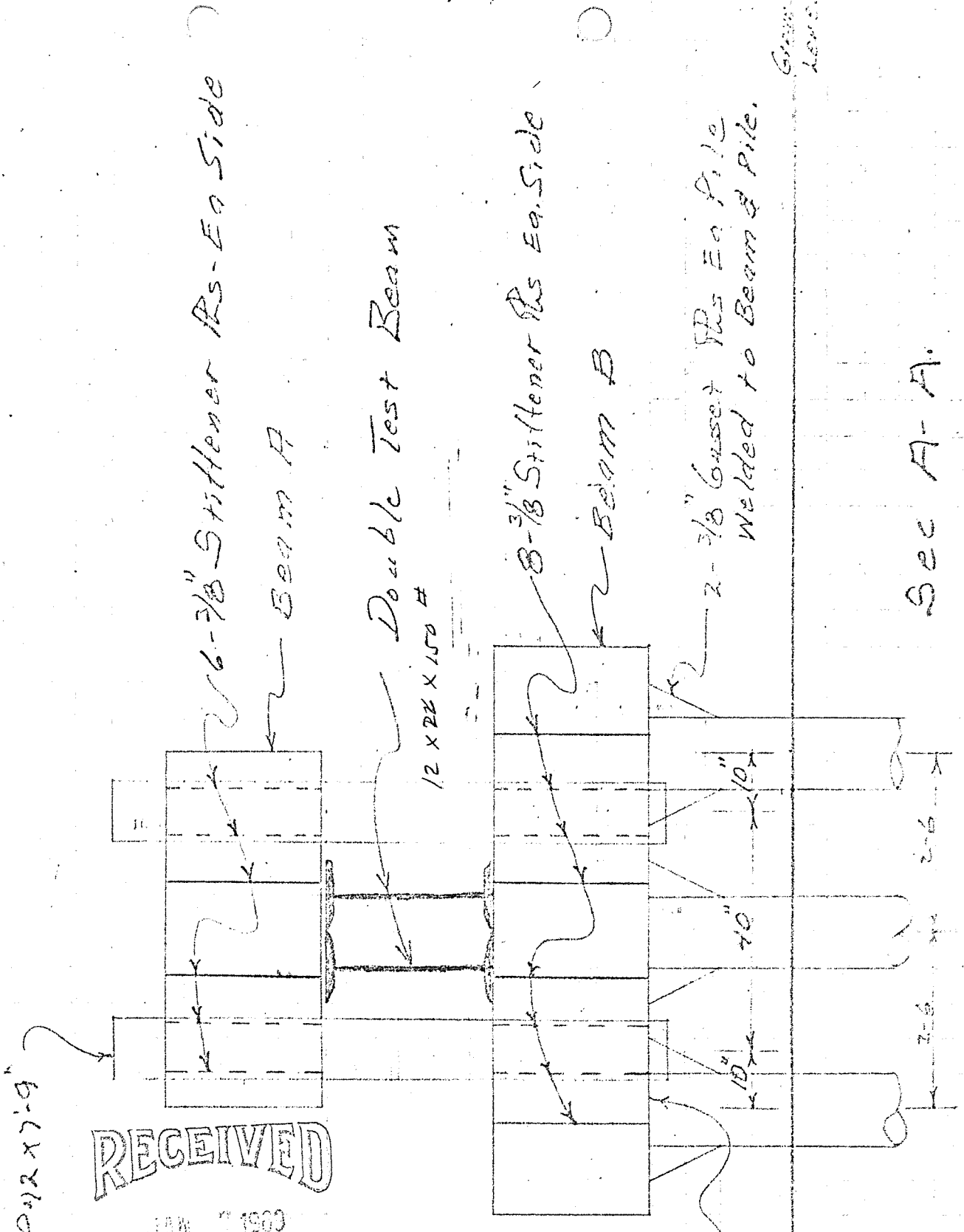
Scale - 1/4" = 1'-0"

IB FOUNDATION CO., INC.
PILE DRIVERS

LIVER STREET, WELLESLEY, MASS. 02181

SUBJECT: 180 Ton Test Load
High School

#1 EST. No. FEB-140-55
Pg. No. FM-1



4-10.BP.12 x 17'-9"

RECEIVED

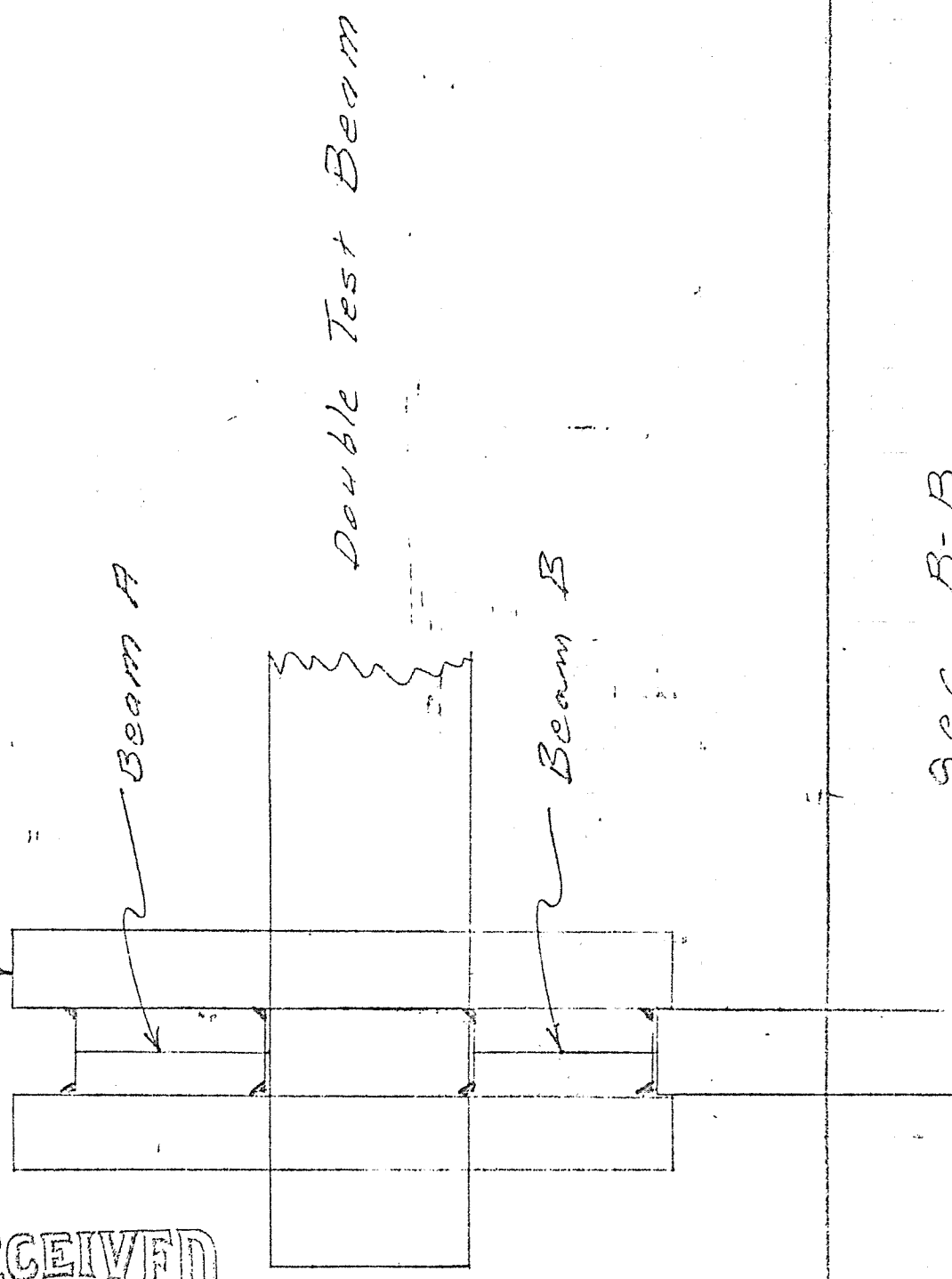
JAN 1960

Perini Corp. ... Weld Top of Piles to Bottom of Beam

Ground Level

Sec A-A

4-10SP42x7'9"
welded at all 4 Contact Points
with Beams A & B.



Double Test Beam

Leveling Level

Sec B-B.

RECEIVED

JAN 6 1969

Perini Corp.

UB FOUNDATION CO., INC.
PILE DRIVERS
RIVER STREET, WELLESLEY, MASS. 02181.

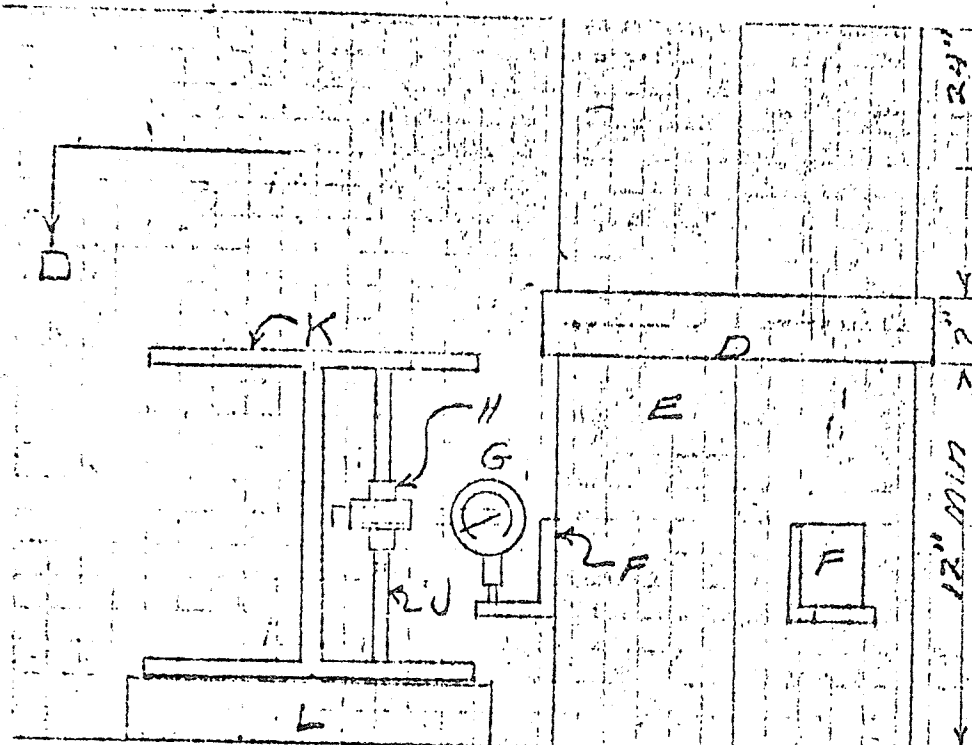
SUBJECT: 180 Ton Test Load #1
High School
Baldmont, Mass

TWP-3481 FORM H
EST. No. 68-140-55
Pg. No. FDI-2A
DATE Jan 6, 1969

RECEIVED

JAN 7 1969

Perini Corp. of ~~Massachusetts~~ ~~Inc.~~



E = Test Pile
 F = Angle Clip-Weld

G = Indicator Dial - (2)
 H = Double Sliding Coupling With Set Screws.
 J = Steel Rod - Welded
 K = Reference Beam
 L = Ref. Bm Pile Supports - Beam Welded one end

HUB FOUNDATION CO., INC.
 PILE DRIVERS
 47 RIVER STREET, WELLESLEY, MASS.
 617-237-9510 02181

Sec C-C

Showing Arrangement of Extensometer Dials - ELEVATION.

3 FOUNDATION CO., INC.
 PILE DRIVERS
 47 RIVER STREET, WELLESLEY, MASS. 02181

SUBJECT: 180 Ton Test Load
High School
Retention Wall

TWP-3481 FORM H
 EST. No. 68-140-55
 Pg. No. FD-7
 1 0 1969

PILE LOAD TEST

Pile No. and Location TEST PILE NO. 1
 Inspector & Time on job _____
D. C. ... 0500 - 2030 - 12 hrs.
D. L. ... 1900 - 0700 - 12 hrs.

File No. 69-1729
 Date 1-29-69
 Page 1 of 8

LOAD TONS	TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV. DIAL READING (IN)	SETTLEMENT (IN)	PILE READING (IN)	PILE SETTLEMENT (IN)	ENGINEER'S LEVEL				H.I. (FT)	F.S. (FT)	EL. (FT)	BEAM SETTLEMENT (FT)	TEMP	REMARKS	
			WIRE							PILE										REF. BEAM
			A	B	C					F.S. (FT)	EL. (FT)	PILE SETTLEMENT (IN)	F.S. (FT)							
0	15:43	00:00	0.981	0.966	0.942	0.963	0.000	1.31	0.00	2.000	3.402					20	Initial readings			
22.5	15:40	00:01	0.959	0.946	0.923	0.943	0.020	1.40	0.09							20	Jacked			
	15:50	00:02	0.959	0.947	0.923	0.943	0.020									20	Jacked			
	15:51	00:03	0.958	0.946	0.922	0.942	0.021	1.41	0.10							20	Jacked			
	15:53	00:05	0.958	0.946	0.922	0.942	0.021									20	Jacked			
	15:58	00:10	0.956	0.945	0.921	0.941	0.022									20	Jacked			
	16:03	00:15	0.955	0.943	0.920	0.939	0.024	1.41	0.10							20	Jacked			
	16:16	00:30	0.954	0.943	0.919	0.939	0.024	1.41	0.10							24	Pro. we jacked from 0 open 5/16" dia. closed			
	16:43	01:00	0.954	0.942	0.919	0.939	0.025	1.40	0.09							26	no further jacking			
	17:43	02:00	0.958	0.942	0.920	0.938	0.026	1.40	0.09							28	Jacked stability			
	18:48	03:00	0.952	0.943	0.919	0.937	0.025	1.40	0.09							28	Jacked			
	19:48	04:00	0.950	0.944	0.920	0.938	0.025	1.40	0.09							30	Jacked			
45	19:50	04:00	0.922	0.908	0.889	0.906	0.056	1.41												
	19:51	04:01	0.921	0.908	0.889	0.906	0.057	1.41	0.10							28	Jacked			
	19:52	04:02	0.918	0.905	0.886	0.903	0.060									30	Jacked			
	19:53	04:03	0.914	0.903	0.885	0.901	0.062													
	19:55	04:05	0.916	0.902	0.885	0.901	0.062	1.42	0.11											
	20:00	04:10	0.916	0.902	0.885	0.900	0.063	1.42	0.11											
	20:05	04:15	0.915	0.901	0.885	0.900	0.063													
	20:30	04:30	0.912	0.899	0.883	0.898	0.065	1.44	0.13											
	20:50	04:50	0.910	0.896	0.880	0.895	0.068	1.44	0.13											
	21:50	05:50	0.909	0.896	0.879	0.894	0.069	1.44	0.13											

PILE LOAD TEST

Pile No. and Location TEST PILE No. 1
 Inspector & Time on job
D. L. F. 19:00-2:00 A.M.
D. P. G. Dec-1968

File No. 68-1769
 Date 1-30-69
 Page 3 of 8

LOAD TONS	TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV. DIAL READING (IN)	PILE SETTLEMENT (IN)	ENGINEER'S LEVEL				TEMP	REMARKS	
			WIRE					PILE						
			A	B	C			READING (IN)	SETTLEMENT (IN)	H.I. (FT)	F.S. (FT)			EL. (FT)
90T	05:10	13:10	0.785	0.786	0.764	0.783	0.180	1.55	0.24				31°	
	06:10	14:10	0.794	0.783	0.760	0.779	0.187	1.56	0.25					Jacked
	07:10	15:10	0.794	0.782	0.760	0.779	0.187	1.56	0.25				36°	
	08:10	16:10	0.794	0.782	0.760	0.779	0.187	1.56	0.25				34°	
	09:10	17:10	0.794	0.782	0.757	0.778	0.185	1.56	0.25				35°	
	10:10	18:10	0.792	0.780	0.757	0.776	0.187	1.56	0.25				34°	Jacked
	11:10	19:10	0.792	0.779	0.757	0.776	0.187	1.56	0.25				36°	
	12:10	20:10	0.791	0.779	0.756	0.775	0.188	1.56	0.25				36°	
	13:10	21:10	0.791	0.779	0.756	0.775	0.188	1.56	0.25				36°	
	14:10	22:10	0.792	0.780	0.756	0.776	0.187	1.56	0.25				36°	
	15:10	23:10	0.792	0.780	0.756	0.776	0.187	1.56	0.25				38°	
	16:10	24:10	0.792	0.780	0.756	0.776	0.187	1.56	0.25				39°	
	17:10	25:10	0.792	0.780	0.756	0.776	0.187	1.56	0.25				39°	
	18:10	26:10	0.792	0.780	0.756	0.776	0.187	1.56	0.25				39°	
	19:10	27:10	0.792	0.780	0.756	0.776	0.187	1.56	0.25				39°	
	20:10	28:10	0.792	0.780	0.756	0.776	0.187	1.56	0.25					
	21:10	29:10	0.792	0.780	0.756	0.776	0.187	1.56	0.25					
	22:10	30:10	0.792	0.780	0.756	0.776	0.187	1.56	0.25				38°	
	23:10	31:10	0.792	0.780	0.756	0.776	0.187	1.56	0.25				39°	
	00:10	32:10	0.792	0.779	0.756	0.776	0.187	1.56	0.25				38°	
	01:10	33:10	0.790	0.777	0.754	0.774	0.189	1.57	0.26				38°	
	02:10	34:10	0.791	0.777	0.754	0.774	0.189	1.56	0.25				38°	Jacked

PILE LOAD TEST

Pile No. and Location Test Pile No. 1
 Inspector & Time on job
D.L.F. 20.00 - 7.00

CHECK SETTLEMENT

File No. 65-1969
 Date 1-31-69
 Page 4 of 8

LOAD TONS	TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV. DIAL READING (IN)	SETTLEMENT (IN)	READING (IN)	PILE SETTLEMENT (IN)	H.I. (FT)	ENGINEER'S LEVEL			TEMP	REMARKS	
			WIRE								PILE					REF. BEAM
			A	B	C						F.S. (FT)	EL. (FT)	PILE SETTLEMENT (IN)			
90	03:10	35:10	0.791	0.776	0.754	0.774	0.189	1.56	0.25							
	04:10	36:10	0.790	0.775	0.753	0.773	0.190	1.57	0.26							
112.5	04:11	37:11	0.763	0.747	0.725	0.745	0.218	1.60	0.29				41°	Jacked		
	04:12	37:12	0.761	0.746	0.724	0.744	0.219	1.60	0.29							
	04:13	37:13	0.765	0.745	0.723	0.743	0.220	1.60	0.29							
	04:15	37:15	0.760	0.745	0.722	0.742	0.221	1.60	0.29							
	04:20	37:20	0.760	0.745	0.722	0.742	0.221	1.60	0.29							
	04:25	37:25	0.759	0.744	0.722	0.741	0.222	1.60	0.29				42°			
	04:30	37:30	0.753	0.738	0.716	0.735	0.228	1.60	0.29					Jacked		
	05:10	37:10	0.752	0.737	0.715	0.734	0.227	1.60	0.29				40°			
	06:10	38:10	0.751	0.737	0.714	0.734	0.229	1.60	0.29				40°			
	07:10	39:10	0.751	0.737	0.714	0.734	0.229	1.60	0.29				40°			
	08:10	40:10	0.749	0.734	0.710	0.732	0.232	1.61	0.30				40°			
125	08:11	40:11	0.702	0.686	0.661	0.683	0.280	1.66	0.35				41°	Jacked		
		40:12	0.700	0.685	0.661	0.682	0.281	1.66	0.35				41°			
		40:13	0.700	0.685	0.660	0.682	0.281	1.66	0.35							
		40:15	0.698	0.683	0.659	0.680	0.283	1.67	0.35							
		40:20	0.694	0.679	0.655	0.676	0.287	1.67	0.36					Jacked		
		40:25	0.693	0.678	0.654	0.675	0.288	1.67	0.36				39°			
		40:40	0.692	0.677	0.653	0.674	0.289	1.67	0.36				39°			
	09:10	41:10	0.691	0.676	0.652	0.673	0.290	1.67	0.36				39°			
	10:10	42:10	0.693	0.680	0.656	0.676	0.287	1.66	0.35				39°			

PILE LOAD TEST

Pile No. and Location TEST PILE No. 1
 Inspector & Time on job
D.P.C. 07:00-19:00

File No. 68-1969
 Date 1-31-69
 Page 5 of 8

LOAD TONS		TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV. DIAL READING (IN)	SETTLEMENT (IN)	READING (IN)	PILE SETTLEMENT (IN)	ENGINEER'S LEVEL					TEMP	REMARKS	
				WIRE							PILE							REF. BEAM
				A	B	C					H.I. (FT)	F.S. (FT)	EL. (FT)	PILE SETTLEMENT (IN)	F.S. (FT)			
135	11:10	45:10	0.692	0.677	0.653	0.674	0.289	1.66	0.35						39°			
	12:10	47:10	0.690	0.677	0.651	0.673	0.290	1.66	0.35						39°			
157.5	12:13	47:13	0.639	0.625	0.598	0.621	0.342	1.71	0.40						39°	Jacked		
	13	47:13	0.637	0.625	0.597	0.620	0.343	1.71	0.40						39°			
	14	47:14	0.635	0.624	0.596	0.618	0.345	1.72	0.41						39°			
	15	47:15	0.630	0.620	0.591	0.613	0.350	1.72	0.41						39°			
	17	47:17	0.630	0.618	0.590	0.613	0.350	1.72	0.41						39°			
	22	47:22	0.628	0.617	0.586	0.612	0.351	1.72	0.41						39°	Jacked		
	27	47:27	0.628	0.617	0.587	0.611	0.352	1.72	0.41						39°			
	42	47:42	0.625	0.614	0.586	0.608	0.355	1.72	0.41						39°	Jacked		
	13:12	45:12	0.624	0.613	0.585	0.608	0.355	1.72	0.41						39°			
	14:12	46:12	0.616	0.607	0.580	0.601	0.362	1.73	0.42						39°	Jacked		
	15:12	47:12	0.615	0.606	0.578	0.600	0.363	1.73	0.42						38°			
	16:12	48:12	0.615	0.606	0.577	0.599	0.364	1.74	0.43						38°			
180	16:15	48:15	0.569	0.559	0.529	0.552	0.411	1.80	0.49						37°	Jacked		
	16	48:16	0.569	0.559	0.528	0.552	0.411	1.80	0.49						36°			
	17	48:17	0.568	0.557	0.527	0.551	0.412	1.80	0.49						36°			
	18	48:18	0.563	0.552	0.523	0.546	0.417	1.80	0.49						36°	Jacked		
	20	48:20	0.562	0.551	0.522	0.545	0.418	1.80	0.49						36°	Jacked		
	25	48:25	0.556	0.546	0.517	0.540	0.423	1.80	0.49						36°			
	30	48:30	0.554	0.544	0.514	0.537	0.426	1.80	0.49						36°	Jacked		
	35	48:35	0.550	0.539	0.511	0.533	0.430	1.80	0.49						37°			

PILE LOAD TEST

Pile No. and Location TEST PILE No. 1
 Inspector & Time on job
D.P.C. 07:00 - 19:00
D.L.F. 19:00 - 07:00

File No. 68-1269
 Date 1-31-69 of 2-1-69
 Page 6 of 8

CHECK SETTLEMENT														
LOAD TONS	TIME HRS:MIN	DIAL READING (IN)			AV. DIAL READING (IN)	PILE SETTLEMENT (IN)	H.I. (FT)	ENGINEER'S LEVEL			REF. BEAM EL. (FT)	BEAM SETTLEMENT (FT)	TEMP	REMARKS
		A	B	C				F.S. (FT)	EL. (FT)	PILE SETTLEMENT (IN)				
180	17:05	0.549	0.539	0.510	0.533	0.430	1.80	0.49					37°	
	18:05	0.544	0.532	0.505	0.527	0.436	1.81	0.50					38°	Jacked
	19:05	0.547	0.531	0.504	0.526	0.437	1.81	0.50					32°	Jacked
	20:05	0.542	0.531	0.503	0.525	0.438	1.81	0.50					36°	Jacked
	21:05	0.544	0.531	0.504	0.526	0.437	1.81	0.50					30°	Jacked - burner out
	22:05	0.543	0.530	0.503	0.525	0.438	1.81	0.50					32°	
	23:05	0.540	0.525	0.500	0.521	0.442	1.81	0.50					34°	
	00:05	0.538	0.522	0.498	0.519	0.444	1.82	0.51					36°	Jacked
	01:05	0.539	0.526	0.499	0.521	0.442	1.82	0.51					28°	Jacked - burner out
	02:05	0.543	0.524	0.498	0.522	0.441	1.82	0.51					30°	
	03:05	0.544	0.522	0.496	0.521	0.442	1.83	0.52					30°	
	04:05	0.534	0.520	0.494	0.516	0.447	1.83	0.52					29°	Jacked
	05:05	0.532	0.519	0.494	0.515	0.448	1.83	0.52					30°	
	06:05	0.531	0.518	0.493	0.514	0.449	1.83	0.52					32°	Jacked
	07:05	0.532	0.518	0.492	0.514	0.449	1.83	0.52					32°	Jacked
	08:05	0.531	0.517	0.492	0.513	0.450	1.83	0.52					30°	Jacked
	09:05	0.530	0.516	0.491	0.512	0.451	1.83	0.52					36°	
	10:05	0.530	0.516	0.490	0.512	0.451	1.83	0.52					38°	
	11:05	0.529	0.515	0.490	0.511	0.452	1.83	0.52					38°	
	12:05	0.529	0.515	0.490	0.511	0.452	1.83	0.52					38°	
	13:05	0.528	0.515	0.490	0.511	0.452	1.83	0.52					38°	
	14:05	0.529	0.515	0.490	0.511	0.452	1.83	0.52					39°	

PILE LOAD TEST

Pile No. and Location T157 Plot No. 1
 Inspector & Time on job
D.P.C. 07:00 - 19:00 / 1900
D.L.C. 19:00 - 22:00 / 1900

File No. 68-1769
 Date 2-1-69
 Page 7 of 8

LOAD TONS		ELAPSED TIME HRS:MIN		DIAL READING (IN)			AV. DIAL READING (IN)	SETTLEMENT (IN)	ENGINEER'S LEVEL				TEMP	REMARKS		
									WIRE		PILE				REF. BEAM	
									PILE READING (IN)	PILE SETTLEMENT (IN)	M.I. (FT)	F.S. (FT)			EL. (FT)	PILE SETTLEMENT (IN)
185T	15:05	71:05	0.517	0.519	0.989	0.510	0.453	1.84	0.53					40°		
	16:05	72:05	0.527	0.514	0.988	0.510	0.453	1.84	0.53					41°		
	17:05	73:05	0.526	0.513	0.988	0.509	0.454	1.84	0.53					41°		
	18:05	74:05	0.526	0.513	0.988	0.509	0.454	1.84	0.53					41°		
135T	19:06	74:06	0.559	0.546	0.519	0.541	0.422	1.79	0.48					41°		
	19:07	74:07	0.561	0.546	0.520	0.542	0.421	1.79	0.48					42°		
	19:08	74:08	0.561	0.547	0.520	0.542	0.421	1.79	0.48					42°		
	19:10	74:10	0.562	0.547	0.524	0.544	0.419	1.79	0.48					42°		
	19:15	74:15	0.562	0.547	0.524	0.544	0.419	1.79	0.48					42°		
	19:20	74:20	0.562	0.547	0.524	0.544	0.419	1.79	0.48					42°		
	19:40	75:40	0.565	0.550	0.526	0.547	0.416	1.79	0.48					42°		
	20:00	76:00	0.566	0.551	0.527	0.546	0.417	1.79	0.48					42°		
90T	20:01	76:01	0.652	0.636	0.612	0.633	0.330	1.71	0.40					42°		
	20:02	76:02	0.653	0.637	0.613	0.634	0.329	1.71	0.40					42°		
	20:03	76:03	0.653	0.638	0.615	0.635	0.328	1.71	0.40					42°		
	20:05	76:05	0.654	0.638	0.616	0.636	0.327	1.71	0.40					42°		
	20:10	76:10	0.658	0.642	0.620	0.640	0.323	1.70	0.39					42°		
	20:15	76:15	0.659	0.644	0.621	0.641	0.322	1.70	0.39					42°		
	20:20	76:20	0.660	0.645	0.622	0.642	0.321	1.70	0.39					42°		
	21:00	77:00	0.660	0.645	0.622	0.642	0.321	1.70	0.39					42°		
	22:00	78:00	0.662	0.647	0.624	0.644	0.319	1.70	0.39					38°		
45T	22:01	78:01	0.644	0.748	0.728	0.747	0.216	1.59	0.28					40°		

PILE LOAD TEST

Pile No. and Location Test Pile No. 1
 Inspector & Time on job D.P.C. 07:00-19:00 AM
D.L.F. 19:00-05:00 AM

File No. 68-1767
 Date 2-18-59 of 2-2-59
 Page 8 of 8

LOAD TIME TONS HRS:MIN		DIAL READING (IN)			AV. DIAL READING (IN)	PILE SETTLE- MENT (IN)	ENGINEER'S LEVEL				TEMP	REMARKS	
		WIRE					PILE						
		ELAPSED TIME	A	B			C	READING (IN)	H.I. (FT)	FS. (FT)			EL. (FT)
45	22:02	0.770	0.754	0.734	0.753	0.210	1.59	0.28				40°	
	1:03	0.771	0.755	0.735	0.754	0.209	1.59	0.28				90°	
	1:05	0.772	0.755	0.735	0.754	0.209	1.59	0.28				90°	
	1:10	0.773	0.756	0.736	0.755	0.208	1.59	0.28				40°	
	1:15	0.773	0.756	0.736	0.755	0.208	1.58	0.27				40°	
	1:30	0.774	0.757	0.737	0.756	0.207	1.58	0.27				40°	
	23:00	0.776	0.757	0.739	0.757	0.206	1.58	0.27				40°	
	00:00	0.777	0.759	0.740	0.758	0.205	1.58	0.27				38°	
0T	00:01	0.894	0.881	0.859	0.878	0.085							
	1:02	0.900	0.887	0.864	0.884	0.079	1.46	0.15				37°	
	1:03	0.903	0.890	0.865	0.885	0.077	1.46	0.15					
	1:05	0.905	0.891	0.868	0.888	0.075	1.45	0.14					
	1:10	0.908	0.895	0.869	0.891	0.072	1.45	0.14					
	1:15	0.910	0.897	0.871	0.893	0.070	1.44	0.13				38°	
	1:30	0.912	0.900	0.873	0.895	0.068	1.44	0.13					
	01:00	0.916	0.904	0.877	0.899	0.064	1.44	0.13				38°	
	02:00	0.919	0.906	0.879	0.901	0.062	1.44	0.13				38°	
	03:00	0.920	0.907	0.880	0.902	0.061	1.44	0.13				35°	
	04:00	0.922	0.909	0.882	0.904	0.059	1.43	0.12				33°	
	07:00	0.926	0.916	0.888	0.910	0.053	1.43	0.12				29°	

APPENDIX B
Test Pile No. 2

PILE DRIVING RECORD

Project: Belmont High School File No. 68-1969
 Architect: Korslund, LeNormand & Ouann Page of
 General Contractor: Perini Corporation
 Pile Contractor: Hub Foundation Co. Pile No.
 Pile Type: Concrete Filled Pipe Piles Cap No. TEST PILE NO. 2
 Pile Hammer Vulcan 80c Rated Energy 24,450 ft. lbs. Pile Design Load 90T

Weld Approved	Concrete	Ident. No.	Section	Length	Date Driven
Date	By	Date:	<u>Bottom</u>	<u>58.58</u>	<u>1-22-69</u>
		Approv. by:			
		Volume, cu. yd.	<u>Top</u>	<u>58.67</u>	<u>1-22-69</u>

HEAVE MEASUREMENT

	Date	Elevation	Movement
End of Driving			
Prior to Concrete			
Re-Drive Check			

Pile Length C.O. (1) 117.25
 (2) -40.62
 (3) -8.20 Tot. C.O. 48.82
 Total Length 117.25
 117.25
 26.63
 40.62

NECESSARY TO RE-DRIVE YES NO Pile Elevations

Deviation From Final Inspect. Date: 1-23-69 Initial: El. Top 24.32 Check Tip Elev. 52.31
 Design Location (in) Pile Accepted Yes Pile Length 76.63 Final: El. Tip -52.31 Redrive Final pay 68.43
 N S Pile Rejected Remarks:
 E W Pay Length 68.43 + = 68.43

Depth (feet)	Blows	Depth (feet)	Blows	Depth (feet)	Blows	Depth (feet)	Blows	Depth (feet)	Blows	Depth (INCHES)	Blows PER INCH
1	3	41	4	81		121		161		1	6
2	7	42	4	82		122		162		2	7
3	5	43	4	83		123		163		3	5
4	9	44	4	84		124		164		4	9
5	8	45	4	85		125		165		5	12
6	9	46	4	86		126		166		6	13
7	10	47	5	87		127		167		7	21
8	10	48	5	88		128		168		8	
9	8	49	5	89		129		169		9	
10	6	50	4	90		130		170		10	
11	6	51	6	91		131		171		11	
12	6	52	5	92		132		172		12	
13	6	53	5	93		133		173		13	
14	5	54	5	94		134		174		14	
15	6	55	5	95		135		175		15	
16	4	56	4	96		136		176		16	
17	5	57	4	97		137		177		17	
18	5	58	4	98		138		178		18	
19	5	59	3	99		139		179		19	
20	4	60	4	100		140		180		20	
21	5	61	4	101		141		181		21	
22	5	62	4	102		142		182		22	
23	4	63	6	103		143		183		23	
24	4	64	4	104		144		184		24	
25	4	65	5	105		145		185		25	
26	4	66	12	106		146		186		26	
27	3	67	34	107		147		187		27	
28	4	68	43	108		148		188		28	
29	3	69	46	109		149		189		29	
30	4	70	53	110		150		190		30	
31	4	71	40	111		151		191		31	
32	3	72	60	112		152		192		32	
33	4	73		113		153		193		33	
34	4	74		114		154		194		34	
35	4	75		115		155		195		35	
36	4	76		116		156		196		36	
37	4	77		117		157		197		37	
38	4	78		118		158		198		38	
39	3	79		119		159		199		39	
40	4	80		120		160		200		40	

Blows For Final 6 in. 7, 8, 9, 12, 13, 21 Blows/in. Av. 11 Inspector R. P. [Signature]
 Between (1-50 and 1-49) Complete

FORM HQA OCT 67 22

COLLEGE UNIVERSITY IN THE CITY OF NEW YORK
DEPARTMENT OF CIVIL ENGINEERING AND ENGINEERING MECHANICS

Brooklyn Materials Laboratory
(212) 280-3522, 280-3145

Engineering Terrace Bldg.
Amsterdam Ave. & 120th St

Date: January 6, 1969

Machine Used 600,000 lb. Southwark-Emery

Made for: Richard Dudgeon Inc.

Tested By: J. Horton

789 Bergen Street, Brooklyn, New York 11238

REPORT OF CALIBRATION OF HYDRAULIC JACK UNIT

UNIT CALIBRATED: 200 Ton Dudgeon Hydraulic Jack Unit

LABORATORY TEST NO.: 79404

TEST UNIT: 200 ton, 8" stroke, hydraulic jack S/N RJ-241, 10,000 psi
pressure gauge S/N B7766-2 pump S/N - with 12 ft. hose.

HOW TESTED: The jack unit was calibrated in compression at three different runouts of the ram as reported in the following "Log of Test". The ram was loaded by jacking against the head of the testing machine, and gauge pressures were read at predetermined increments of indicated machine load.

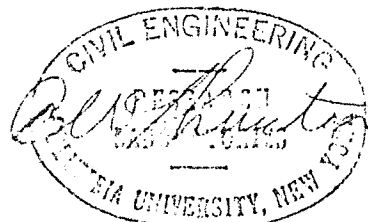
LOG OF TEST:

Testing Machine Load, Lbs.	Gauge Readings		
	2" runout	4" runout	6" runout
40,000	650	650	650
80,000	1,250	1,250	1,250
120,000	1,900	1,900	1,850
160,000	2,500	2,600	2,460
200,000	3,100	3,100	3,050
240,000	3,700	3,700	3,700
280,000	4,350	4,320	4,300
320,000	4,950	4,950	4,900
360,000	5,550	5,550	5,550
400,000	6,300	6,300	6,300

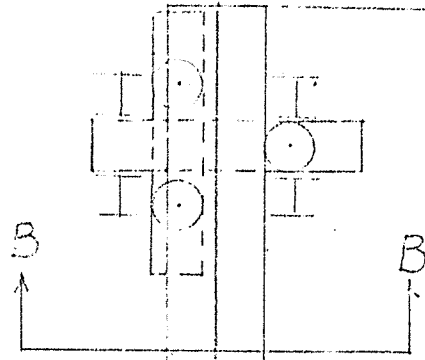
RECEIVED

JAN 12 1969

Richard Dudgeon Inc.

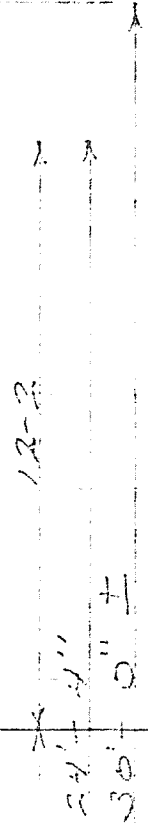
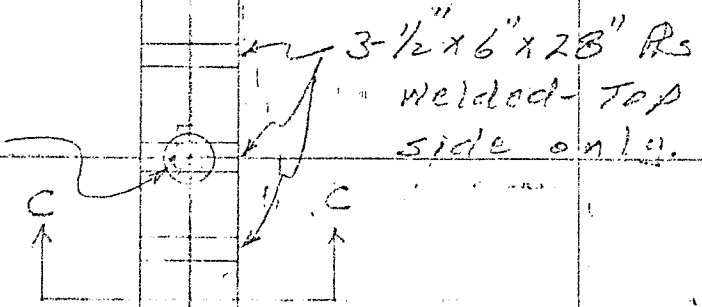


File Group 1-47
 3-30 Ton Tension Piles

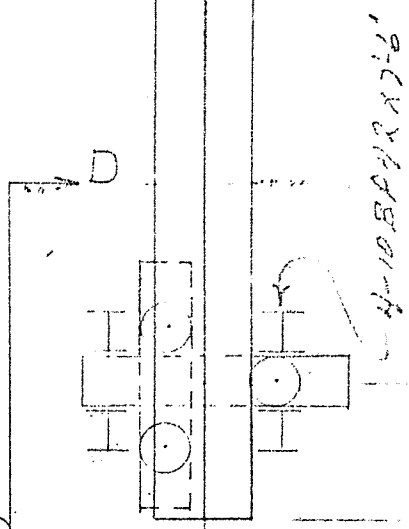


Double Test Beams
 Approx 14 x 26 x 160 lb

Extra Pile by HUB
 for 180 Ton Test Load

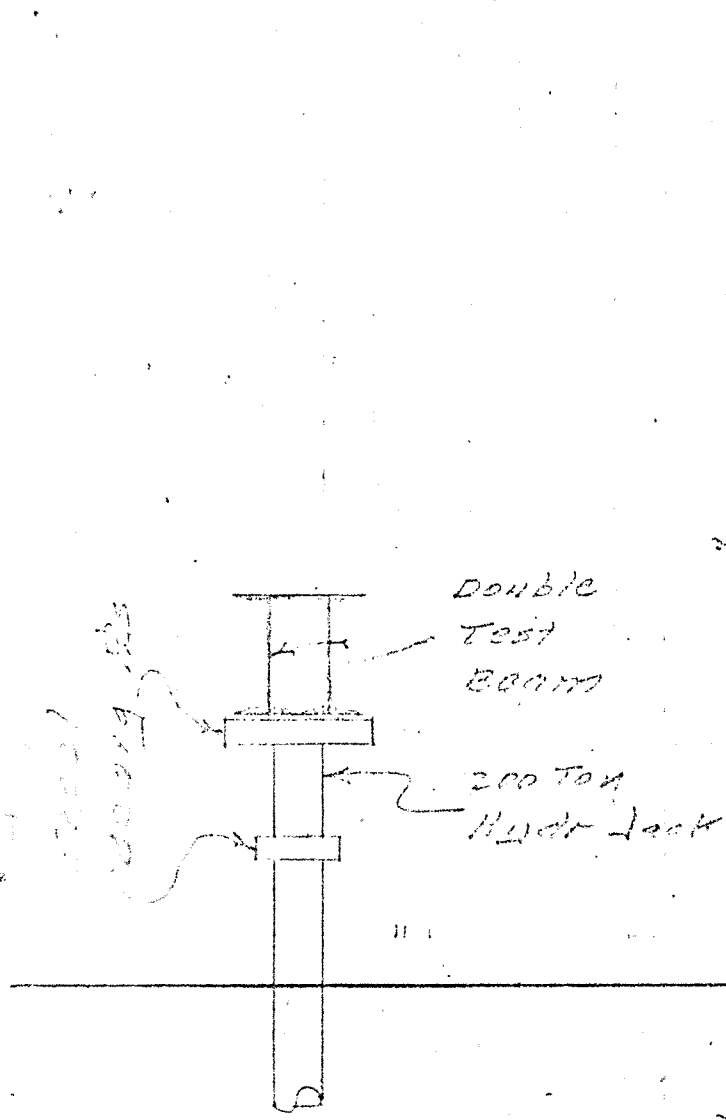


File Group 1-50
 3-30 Ton Tension Piles.



RECEIVED

Partial Corp. ...

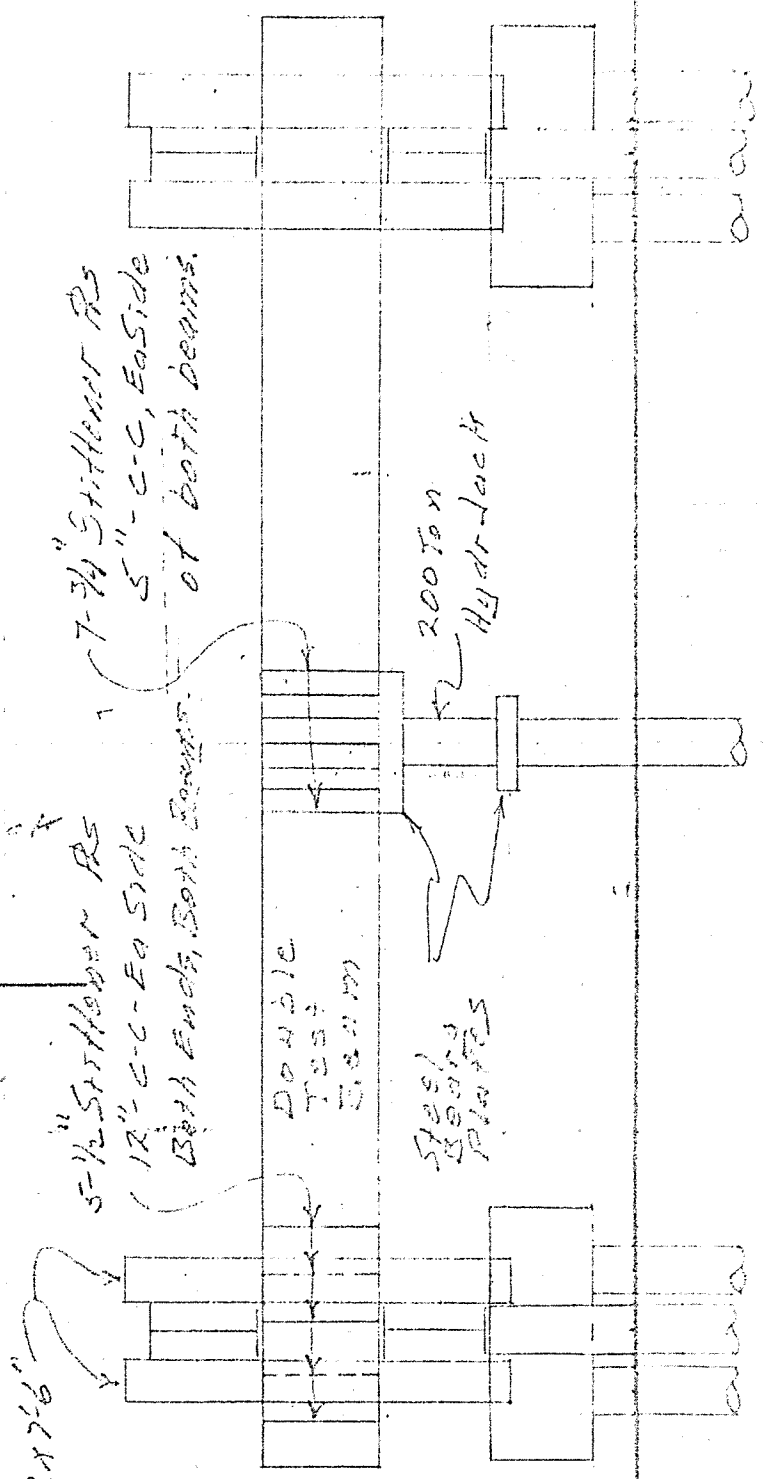


SEC C-C

RECEIVED

1962

Perini Corp.



SEC A-A

4 Beams - in line of Double T & B and
 100# x 2 1/2"
 Weld all 4 Beams at all 4 contact
 points with Beams A & B.

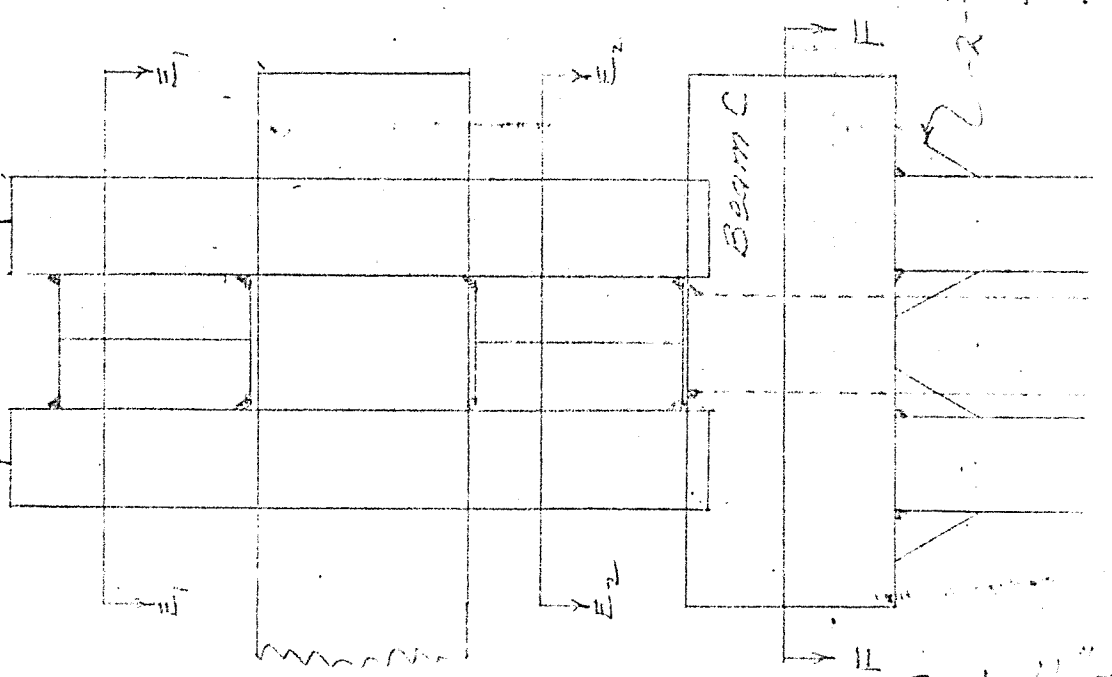
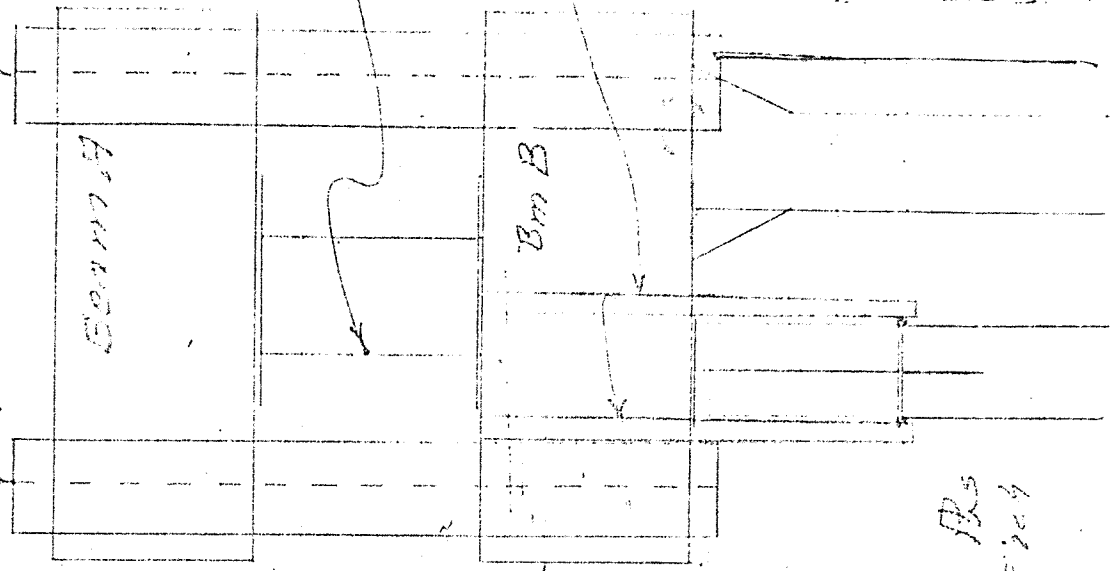
Double
 T-Beam

4-7/8" x 2 1/2"
 Welded to
 Bms B & C

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Perini Corp.



2-7/8" Gusset B's
 welded to Pile

JB FOUNDATION CO., INC.
 PILE DRIVERS

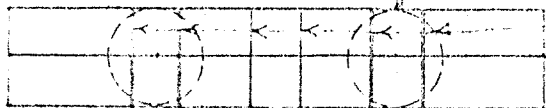
RIVER STREET, WELLESLEY, MASS. 02181.

SUBJECT: 180 Ton Test Load #2
 High School
 Belmont, Mass

EST. No. FAR-100-55
 Pg. No. FM-5
 DATE Jan 6, 1989

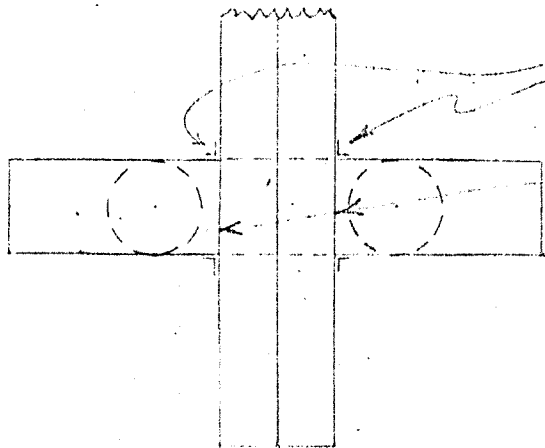
TWP-3461 FORM H

Weld ground Pile tops
to underside of
Beam.



Sec F-F

2-6-3/8 Stiffener Bars
Ea Side of Beam C

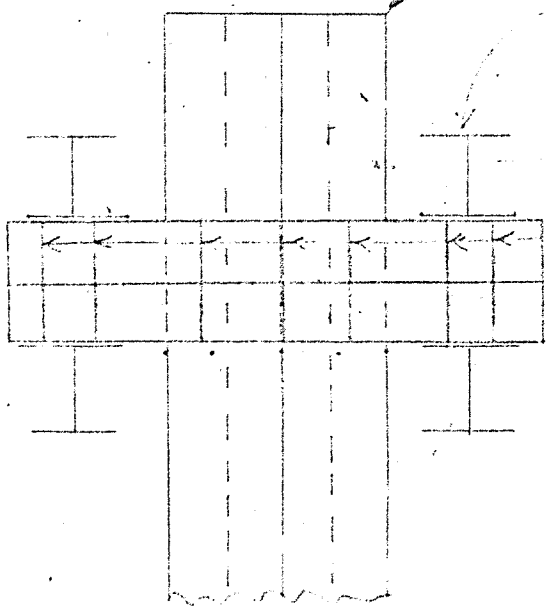


4-3/8 x 2 x 2 Angle Irons
Welded to Beams B & C

Weld Adjoining Flanges
of Beams B & C

Sec E₁-E₂

Double Test Beam



4-10 BPA 2 x 7-6"

7- Stiffener Bars - 3/8" Thick
Each side of
Beams A, B.

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Perini Corp.

Sec E₁-E₂

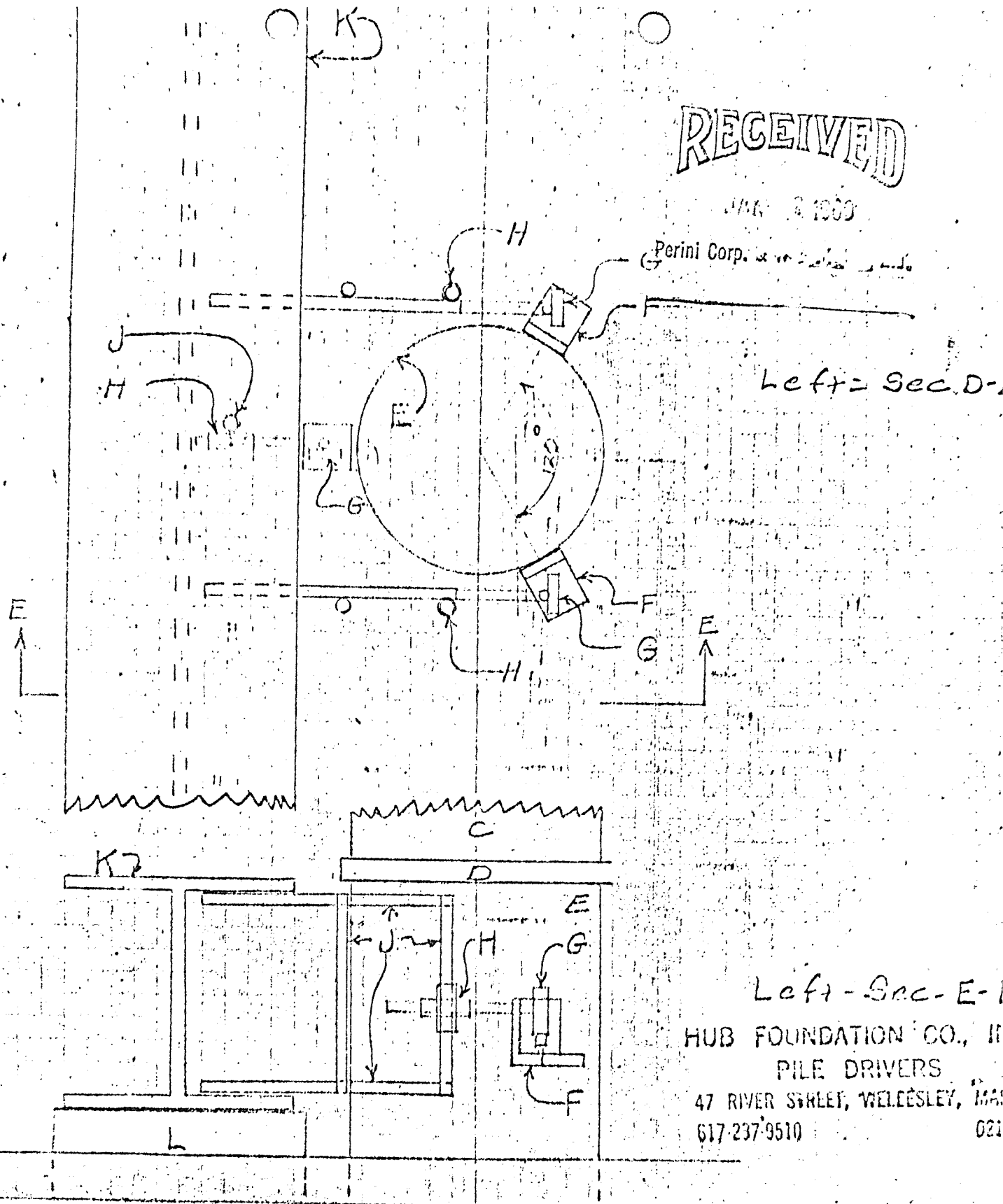
Scale 1/2" = 1'-0"

RECEIVED

JAN 8 1969

Perini Corp. of Massachusetts

Left - Sec. D.



Left - Sec. E - 1

HUB FOUNDATION CO., INC.
 PILE DRIVERS
 47 RIVER STREET, WELLESLEY, MASS.
 617-237-9510 021

Showing Arrangement of Extensometer Dials - PLAN

HUB FOUNDATION CO., INC.
 PILE DRIVERS

47 RIVER STREET, WELLESLEY, MASS. 02181

SUBJECT: 180 Ton Testload -
High School
Belmont, Mass.

TWP-3481 FORM H
 EST. No. 65-140-55

Pg. No. FM 8

DATE Jan 9, 1969

PILE LOAD TEST

Pile No. and Location TEST PILE NO. 2
 Inspector & Time on job D. Goulet 0200-1900 hrs.
D. F. ... 10:00 - 0200 - hrs.

File No. 68-1969
 Date 1-30-69
 Page 1 of 4

LOAD TONS	TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV. DIAL SETTL. READING (IN)	PILE SETTLEMENT (IN)	ENGINEER'S LEVEL				BEAM SETTLEMENT (FT)	TEMP	REMARKS			
			WIRE		PILE			REF. BEAM									
			A	B	C			READING (IN)	H.I. (FT)	F.S. (FT)	EL. (FT)				PILE SETTLEMENT (IN)	F.S. (FT)	EL. (FT)
0T	12:00	00:00	0.015	0.045	0.052	0.037	0.000	2.25	4.690	2.095	2.595	0.000	4.690	1.568	0.000	32°	10:28 0.762
32.5	13:11	01:01	0.035	0.069	0.075	0.060	0.023	2.25								34°	10:37 0.762
	13:12	01:02	0.035	0.069	0.075	0.060	0.023	2.25								36°	10:28 0.765
	13:13	01:03	0.035	0.069	0.075	0.060	0.023	2.25								36°	9:83 0.713
	13:15	01:05	0.036	0.069	0.076	0.060	0.023	2.27								38°	9:83 0.714
	13:20	01:10	0.028	0.072	0.078	0.062	0.035	2.27								37°	9:83 0.714
	13:25	01:15	0.038	0.072	0.078	0.062	0.035	2.27								37°	9:83 0.714
	13:40	01:30	0.039	0.072	0.079	0.063	0.026	2.27								36°	9:83 0.714
	14:10	01:00	0.041	0.075	0.081	0.065	0.028	2.28								36°	9:84 0.714
	15:10	02:00	0.042	0.076	0.082	0.067	0.030	2.28								36°	9:84 0.713
	16:10	03:00	0.042	0.076	0.082	0.067	0.030	2.28								38°	9:84 0.713
	17:10	04:00	0.042	0.076	0.082	0.067	0.030	2.28								39°	9:84 0.713
45	17:11	04:01	0.098	0.100	0.125	0.108	0.071	2.32	4.690	2.095	2.595	0.000	4.690	1.568	0.000	39°	9:84 0.713
	17:12	04:02	0.099	0.100	0.125	0.108	0.071	2.32								39°	9:84 0.713
	17:13	04:03	0.099	0.101	0.125	0.108	0.071	2.32								39°	9:84 0.713
	17:15	04:05	0.100	0.101	0.125	0.108	0.071	2.32								39°	9:85 0.714
	17:20	04:10	0.100	0.101	0.125	0.108	0.071	2.32								39°	9:85 0.714
	17:26	04:16	0.100	0.102	0.126	0.109	0.072	2.32								39°	9:86 0.714
	17:31	04:21	0.100	0.102	0.126	0.109	0.072	2.32								39°	9:86 0.714
	17:41	04:31	0.102	0.103	0.128	0.111	0.074	2.33								39°	9:86 0.714
	17:48	04:38	0.106	0.109	0.132	0.115	0.078	2.33								39°	9:87 0.713
	17:50	04:40	0.105	0.110	0.132	0.116	0.079	2.33								39°	9:89 0.713

(New readings - ground freezing)

PILE LOAD TEST

Pile No. and Location TEST PILE NO. 2
 Inspector & Time on job
Blair 1900 - 0700 hrs.

File No. 68-1968
 Date 1-20-69 to 1-31-69
 Page 2 of 4

LOAD TONS	TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV DIAL READING (IN)	PILE SETTLEMENT (IN)	READING (IN)	PILE SETTLEMENT (IN)	ENGINEER'S LEVEL				TEMP	REMARKS			
			WIRE		PILE					REF. BEAM		H.I. (FT)	F.S. (FT)			EL. (FT)	BEAM SETTLEMENT (FT)	
			A	B	C					F.S. (FT)	EL. (FT)							PILE SETTLEMENT (IN)
45	21:11	08:00	0.107	0.111	0.123	0.117	0.080	2.33	0.08				39°	9.84 0.773				
67.5	21:12	08:01	0.148	0.162	0.183	0.164	0.127	2.37	0.12				42°					
	21:13	08:02	0.149	0.163	0.184	0.165	0.128	2.37	0.12									
	21:14	08:03	0.150	0.164	0.184	0.166	0.129	2.37	0.12					9.69 0.742				
	21:15	08:05	0.150	0.164	0.185	0.166	0.129	2.37	0.12					9.68 0.743				
	21:16	08:10	0.151	0.164 ⁵	0.185	0.166 ⁵	0.129 ⁵											
	21:26	08:15	0.157	0.165	0.185	0.167	0.130											
	21:41	08:30	0.156	0.170	0.190	0.172	0.125	2.38	0.13				41°					
	22:11	09:00	0.158	0.172	0.192	0.174	0.127	2.38	0.13				43°	9.67 0.746				
130	23:11	10:00	0.160	0.175	0.195	0.176	0.139						43°	9.67 0.746				
131	00:10	11:00	0.161	0.176	0.195 ⁵	0.178	0.141	2.38	0.13				44°	9.68 0.746				
	01:10	11:59	0.162	0.177	0.197	0.179	0.142	2.38	0.13					9.67 0.746				
20	01:11	12:00	0.206	0.224	0.247	0.226	0.189	2.43	0.18					9.67 0.748				
	:12	:01	0.207	0.225	0.247	0.226	0.189											
	:13	:02	0.209	0.227	0.249	0.228	0.191	2.44	0.19									
	:14	:03	0.211	0.229	0.251	0.230	0.193	2.44	0.19									
	:16	:05	0.212	0.229	0.252	0.231	0.194											
	:21	:10	0.212	0.229	0.252	0.231	0.194	2.44	0.19									
	:26	:15	0.213	0.229	0.253	0.232	0.195	2.44	0.19									
	01:30	:30	0.213	0.230	0.253	0.232	0.195	2.44	0.19									
	02:11	12:00	0.215	0.231	0.254	0.233	0.196	2.44	0.19					9.73 0.746				
	03:11	12:00	0.216	0.232 ⁵	0.256	0.233 ⁵	0.196	2.44	0.19					45°				

PILE LOAD TEST

Pile No. and Location TEST PILE NO. 2
 Inspector & Time on job
D. F. 1900 - 0700 - 12 hrs.

File No. 68-1969
 Date 1-31-62
 Page 3 of 4

0.963

LOAD TONS	TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV. DIAL SETTLE-READING (IN)	PILE SETTLE-READING (IN)	ENGINEER'S LEVEL				TEMP	REMARKS				
			CHECK SETTLEMENT					H.I. (FT)	F.S. (FT)	EL. (FT)	PILE SETTLE-MENT (IN)			F.S. (FT)	EL. (FT)	BEAM SETTLE-MENT (FT)	
			A	B	C												WIRE
907	04:11	15:00	0.218	0.234	0.258	0.237	0.200	2.44	0.19				45°	9.68 0.760			
	05:11	16:00	0.218	0.234	0.258	0.237	0.200	2.44	0.19				46°	9.67 0.760			
	06:11	17:00	0.222	0.238	0.262	0.241	0.204	2.44	0.19					9.67 0.760			
	07:11	18:00	0.224	0.240	0.262	0.243	0.206	2.44	0.19				46°	9.69 0.760			
	08:11	19:00	0.225	0.239	0.262	0.241	0.204	2.45	0.20				46°	9.69 0.760			
	09:11	20:00	0.222	0.239	0.262	0.241	0.204	2.45	0.20				46°	9.69 0.760			
	10:11	21:00	0.222	0.238	0.262	0.240	0.203	2.45	0.20				46°	9.69 0.760			
	11:11	22:00	0.223	0.238	0.262	0.240	0.203	2.45	0.20				48°	9.69 0.759			
	12:11	23:00	0.224	0.239	0.263	0.242	0.205	2.45	0.20				48°	9.69 0.759			
	13:11	24:00	0.224	0.238	0.263	0.242	0.205	2.45	0.20				46°	9.69 0.759			
	14:11	25:00	0.226	0.238	0.265	0.243	0.206	2.46	0.21				44°	9.69 0.759			
	15:11	26:00	0.225	0.237	0.265	0.242	0.205	2.45	0.20				42°	9.69 0.759			
	16:11	27:00	0.225	0.237	0.264	0.242	0.205	2.45	0.20				42°	9.69 0.759			
	17:11	28:00	0.225	0.239	0.266	0.243	0.205	2.06	0.21				40°	9.67 0.762			
	18:11	29:00	0.230	0.244	0.271	0.248	0.211	2.47	0.22				42°	9.66 0.764			
	19:11	30:00	0.231	0.246	0.272	0.247	0.210	2.47	0.22				46°	9.65 0.765			
	20:11	31:00	0.231	0.246	0.272	0.247	0.210	2.48	0.23				46°	9.65 0.765			
	21:11	32:00	0.231	0.246	0.272	0.247	0.210	2.48	0.23				40°	9.65 0.765			
	22:11	33:00	0.230	0.245	0.271	0.248	0.211	2.48	0.23				36°	9.64 0.765			
	23:11	34:00	0.231	0.246	0.272	0.247	0.210	2.48	0.23				38°	9.64 0.765			
	00:11	35:00	0.230	0.245	0.271	0.248	0.211	2.48	0.23				34°	9.64 0.765			
	01:11	36:00	0.231	0.246	0.272	0.247	0.210	2.48	0.23				34°	9.65 0.765			

PILE LOAD TEST

Pile No. and Location TEST PILE NO. 2
 Inspector & Time on job
D.L.F. 1900 - 1900 - 12 hrs.

File No. 68-1969
 Date 2-1-69
 Page 4 of 4

LOAD TONS	TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV. DIAL SETTL. READING (IN)	PILE SETTLEMENT (IN)	READING (IN)	ENGINEERS LEVEL					TEMP	REMARKS	
			WIRE						PILE			REF. BEAM				
			A	B	C				H.I. (FT)	F.S. (FT)	EL. (FT)	PILE SETTLEMENT (IN)	F.S. (FT)			EL. (FT)
90 ^T	02:11	37:00	0.231	0.246	0.272	0.247	0.210	2.48								
112.5 ^T	02:12	37:01	0.267	0.281	0.309	0.286	0.249	2.52							34°	
	02:13	:02	0.268	0.282	0.310	0.287	0.256	2.52								
	02:14	:03	0.271	0.285	0.313	0.290	0.252	2.52								
	02:16	:05	0.277	0.291	0.319	0.296	0.259	2.53							34°	Jacked
	02:21	:10	0.278	0.293	0.321	0.298	0.261	2.53								Jacked
	02:24	:15	0.290	0.306	0.322	0.306	0.269	2.54								Jacked
80 ^T	02:56	:45	0.256	0.269	0.303	0.276	0.239	2.50								
80 ^T	03:00	35:00	0.245	0.262	0.283	0.265	0.228	2.49								
	04:05	39:00	0.239	0.255	0.280	0.258	0.221	2.48								34°
	05:00	40:00	0.229	0.245	0.270	0.248	0.211	2.49								34°
	06:00	41:00	0.222	0.238	0.263	0.244	0.204	2.48								32°
	07:00	42:00	0.219	0.235	0.260	0.238	0.201	2.48								31°
	08:00	43:00	0.229	0.243	0.270	0.247	0.210									
	09:00	44:00	0.236	0.251	0.278	0.255	0.218	2.50								

}

Piston packing (sand) broke on ramp, pressure lost. Continued jacking is not recommended at this point. Load rebounded to 80T which appears to have stabilized at this point.

pressure decreased due to continued jacking at seal. Now at 61.5 tons and still decreasing.

load rebounded to 0 tons new jack and ramp ordered.

PILE LOAD TEST

Pile No. and Location TEST PILE No. 2

Inspector & Time on job

D. Corbett 07:00 - 15:30 hrs.

W. V. Smith 14:30 - 22:00 hrs.

CHECK SETTLEMENT

File No. 68-1969

Date 2/2/59

Page 1 of 6

LOAD TONS	TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV. DIAL READING (IN)	SETTLEMENT (IN)	READING (IN)	PILE SETTLEMENT (IN)	ENGINEER'S LEVEL					TEMP °F	REMARKS		
			WIRE							PILE							REF. BEAM	
			A	B	C					H.I. (FT)	F.S. (FT)	EL. (FT)	PILE SETTLEMENT (IN)	F.S. (FT)			EL. (FT)	BEAM SETTLEMENT (FT)
0	08:30	00:00	0.043	0.067	0.082	0.064	0.000	2.24	0.00									
90	08:31	00:01	0.201	0.247	0.253	0.233	0.169	2.42	0.18									
	08:32	00:02	0.201	0.247	0.253	0.233	0.169	2.42	0.18									
	08:33	00:03	0.201	0.248	0.253	0.234	0.170	2.42	0.18									
	08:35	00:05	0.202	0.249	0.254	0.235	0.171	2.42	0.18									
	08:40	00:10	0.202	0.249	0.254	0.235	0.171	2.42	0.18									
	08:45	00:15	0.202	0.249	0.254	0.235	0.171	2.42	0.18									
	09:00	00:30	0.203	0.249 ⁵	0.254 ⁵	0.236	0.172	2.42	0.18	24.260	1.246	23.014	0.000	1.218	23.042	0.000		
	09:30	01:00	0.207	0.253	0.258	0.239	0.175	2.43	0.19									
	10:30	02:00	0.213	0.259	0.264	0.245	0.181	2.44	0.20									
	11:30	03:00	0.215	0.260 ⁵	0.267	0.247	0.183	2.44	0.20									
	12:30	04:00	0.217	0.262	0.270	0.250	0.186	2.44	0.20									
112.5	12:31	04:01	0.262	0.309	0.311	0.294	0.230	2.50	0.26									
	12:32	04:02	0.263	0.310	0.316	0.296	0.232	2.50	0.26									
	12:33	04:03	0.264	0.310	0.316	0.296	0.232	2.50	0.26									
	12:35	04:05	0.264	0.310	0.316	0.296	0.232	2.50	0.26	24.270	1.248	23.022	0.008	1.230	23.040	0.002		
	12:40	04:10	0.264	0.310	0.317	0.297	0.233	2.50	0.26									
	12:45	04:15	0.264	0.310	0.317	0.297	0.233	2.50	0.26									
	13:00	04:30	0.264	0.310	0.317	0.297	0.233	2.50	0.26									
	13:30	05:00	0.266	0.311	0.318	0.299	0.234	2.50	0.26									
	14:30	06:00	0.271	0.315	0.323	0.303	0.239	2.50	0.26									
	15:30	07:00	0.268	0.313	0.320	0.300	0.236	2.50	0.26									

PILE LOAD TEST

Pile No. and Location TEST PILE No. 2
 Inspector & Time on job
R. LESSEE 11:30 - 22:00
D. V. 11:30 - 12:30

CHECK SETTLEMENT

ENGINEER'S LEVEL

File No. 08-1969
 Date 2/2/69
 Page 3 of 6

LOAD TONS	TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV. DIAL SETTLE-READING (IN)	PILE HEAD SETTLE-MENT (IN)	WIRE				PILE				REF. BEAM			TEMP	REMARKS	
			A	B	C			READING (IN)	SETTLE-MENT (IN)	H.I. (FT)	F.S. (FT)	EL. (FT)	PILE SETTLE-MENT (IN)	F.S. (FT)	EL. (FT)	EL. (FT)	SETTLE-MENT (FT)				
112.5	15:50	05:00	0.269	0.315	0.322	0.302	0.258	2.50	0.26										40		
155.0	16:31	02:21	0.322	0.368	0.378	0.356	0.292	2.55	0.31												
	16:32	05:02	0.322	0.369	0.378	0.356	0.292	2.55	0.31												
	16:33	06:53	0.322	0.369	0.378	0.356	0.292	2.55	0.31												
	16:35	08:45	0.323	0.370	0.378	0.357	0.293	2.55	0.31												
	16:40	09:40	0.323	0.370	0.379	0.357	0.293	2.55	0.31											39	
	16:45	10:35	0.323	0.370	0.379	0.357	0.293	2.55	0.31											39	
	17:00	05:50	0.323	0.370	0.379	0.357	0.293	2.55	0.31	24.272	1.250	23.022	0.008	1.235	23.037	0.005				38	
	17:30	09:00	0.326	0.375	0.384	0.362	0.298	2.55	0.31												38
	18:20	10:00	0.323	0.380	0.388	0.367	0.303	2.56	0.32												38
	19:20	11:00	0.324	0.382	0.390	0.369	0.305	2.56	0.32												38
	20:20	12:00	0.335	0.383	0.391	0.370	0.306	2.56	0.32												38
157.5	20:31	12:01	0.331	0.438	0.448	0.426	0.362	2.61	0.37												JACKED
	20:32	12:02	0.391	0.439	0.449	0.426	0.362	2.61	0.37												
	20:33	12:03	0.392	0.440	0.449	0.427	0.363	2.61	0.37												
	20:36	12:05	0.393	0.440	0.450	0.427	0.363	2.61	0.37												
	20:40	12:10	0.393	0.441	0.451	0.428	0.364	2.61	0.37												
	20:45	12:15	0.394	0.441	0.451	0.429	0.365	2.62	0.38												
	21:00	12:30	0.393	0.441	0.451	0.428	0.364	2.62	0.38												
	21:30	13:00	0.394	0.441	0.453	0.429	0.365	2.62	0.38												
	22:30	14:00	0.395	0.443	0.454	0.430	0.366	2.62	0.38												
	23:30	15:00	0.402	0.451	0.461	0.437	0.373	2.62	0.38												

* 100 Ft shot to levelings Rod on B.M. INSTEAD of 6" rule

PILE LOAD TEST

Pile No. and Location Test Pile No. 2
 Inspector & Time on job
D. Ferry 22:00 - 22:30
E. Lamb 12:30 - 20:00

File No. 63-1969
 Date 2/3/69
 Page 3 of 6

LOAD TONS		ELAPSED TIME		DIAL READING (IN)		AV. DIAL READING (IN)	PILE SETTLEMENT (IN)	CHECK SETTLEMENT					TEMP	REMARKS	
								ENGINEERS LEVEL							
								WIRE			PILE				REF. BEAM
TIME HRS:MIN	A	B	C	READING (IN)	SETTLEMENT (IN)	H.I. (FT)	F.S. (FT)	EL. (FT)	PILE SETTLEMENT (IN)	F.S. (FT)	EL. (FT)	BEAM SETTLEMENT (FT)			
1575	00:20	16:00	0.404	0.453	0.463	0.439	0.375	2.62	0.38					38	
1800	00:31	16:01	0.461	0.509	0.520	0.497	0.433	2.69	0.45					38	
	00:32	16:02	0.462	0.510	0.521	0.498	0.434	2.69	0.45					38	
	00:33	16:03	0.462	0.510	0.521	0.498	0.434	2.69	0.45					38	
	00:35	16:05	0.462 ^s	0.510 ^s	0.521 ^s	0.498 ^s	0.434 ^s	2.69	0.45					38	
	00:40	16:10	0.464	0.512	0.523	0.500	0.436	2.70	0.46					38	
	00:45	16:15	0.464	0.513	0.523	0.500	0.436	2.70	0.46					38	
	01:00	16:30	0.464	0.513	0.523	0.500	0.436	2.70	0.46					38	
	01:30	17:00	0.476	0.526	0.535	0.512	0.448	2.71	0.46					37	JACKED
	02:30	18:00	0.476	0.525	0.535	0.512	0.448	2.71	0.47					37	
	03:30	19:00	0.476	0.524	0.536	0.513	0.449	2.71	0.47					38	JACKED
	04:30	20:00	0.476	0.524	0.536	0.513	0.449	2.71	0.47					38	JACKED
	05:30	21:00	0.478	0.527	0.538	0.515	0.451	2.71	0.47					35	JACKED
	06:30	22:00	0.480	0.530	0.540	0.517	0.453	2.71	0.47					35	JACKED
	07:30	23:00	0.481	0.531	0.541	0.518	0.454	2.72	0.48					36	
	08:30	24:00	0.483	0.532	0.543	0.519	0.455	2.72	0.48					36	
	09:30	25:00	0.482	0.532	0.543	0.519	0.455	2.74	0.50					35	
	10:30	26:00	0.482	0.532	0.543	0.519	0.455	2.74	0.50					38	
	11:30	27:00	0.485	0.534	0.545	0.521	0.457	2.74	0.50					31	JACKED
	12:30	28:00	0.487	0.537	0.547	0.524	0.460	2.74	0.50					38	JACKED
	13:30	29:30	0.488	0.538	0.547	0.524	0.460	2.74	0.50					37	
	14:30	30:00	0.484	0.534	0.544	0.521	0.457	2.73	0.48					37	JACKED

PILE LOAD TEST

Pile No. and Location TEST PILE No. 2
 Inspector & Time on job 12:30-2:00
E.L.
 D.L.F. 2000

File No. 68-1969
 Date 2-3-69 to 2-5-69
 Page 4 of 6

CHECK SETTLEMENT															
ENGINEER'S LEVEL															
LOAD TONS	TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV. DIAL READING (IN)	SETTLEMENT (IN)	PILE			REF. BEAM				
			A	B	C			H.I. (FT)	F.S. (FT)	EL. (FT)		PILE SETTLEMENT (IN)	F.S. (FT)	EL. (FT)	BEAM SETTLEMENT (FT)
150T	15:30	31:00	0.484	0.534	0.543	0.520	0.456	2.73	0.49					37°	Jacked
	16:30	32:00	0.483	0.534	0.544	0.520	0.456	2.73	0.49					38°	Jacked
	17:30	33:00	0.483	0.532	0.543	0.519	0.455	2.73	0.49					35°	water went out relight
	18:30	34:00	0.488	0.536	0.547	0.524	0.460	2.74	0.50					36°	
	19:30	35:00	0.495	0.543	0.555	0.531	0.467	2.75	0.51					40°	reg. start heater to a lower temp.
	20:30	36:00	0.490	0.541	0.550	0.527	0.463	2.74	0.50					34°	
	21:30	37:00	0.490	0.541	0.550	0.527	0.463	2.75	0.51					36°	
	22:30	38:00	0.490	0.540	0.550	0.527	0.463	2.76	0.52					36°	Jacked
	23:30	39:00	0.490	0.540	0.550	0.527	0.463	2.76	0.52					36°	Jacked
	00:30	40:00	0.490	0.540	0.550	0.527	0.463	2.76	0.52					35°	
	01:30	41:00	0.490	0.541	0.551	0.527	0.463	2.76	0.52					33°	
1350T	01:31	41:01	0.447	0.493	0.505	0.482	0.418	2.72	0.48					33°	
	:32	:02	0.447	0.493	0.505	0.482	0.418	2.72	0.48						
	:33	:03	0.447	0.492	0.504	0.482	0.418	2.71	0.47						
	:35	:05	0.446	0.492	0.504	0.482	0.418	2.71	0.47						
	:40	:10	0.498	0.483	0.496	0.474	0.410	2.70	0.46					35°	
	:45	:15	0.439	0.483	0.497	0.474	0.410	2.70	0.46					35°	
	02:00	:30	0.439	0.484	0.497	0.474	0.410	2.70	0.46					36°	
	02:30	42:00	0.490	0.485	0.498	0.474	0.410	2.70	0.46					36°	
	03:00	43:00	0.490	0.485	0.498	0.474	0.410	2.70	0.46					36°	
90T	03:31	43:01	0.356	0.398	0.410	0.388	0.324	2.62	0.38					36°	
	:32	:02	0.355	0.398	0.409	0.387	0.323	2.62	0.38						

- REBOUND -

PILE LOAD TEST

Pile No. and Location Test Pile No. 2
 Inspector & Time on job D.L.F. 2:00
 D.L.F.

File No. 68-1767
 Date 2-2-69
 Page 5 of 6

LOAD TONS		CHECK SETTLEMENT										TEMP	REMARKS				
		WIRE					ENGINEER'S LEVEL										
		TIME HRS:MIN	ELAPSED TIME	DIAL READING (IN)			AV. DIAL SETTLE-READING (IN)	PILE SETTLE-READING (IN)	H.I. (FT)	F.S. (FT)	EL. (FT)			PILE SETTLE-MENT (IN)	F.S. (FT)	EL. (FT)	BEAM SETTLE-MENT (FT)
A	B	C															
90	03:33	03:03	0.354	0.397	0.409	0.386	0.372	2.62	0.38							36°	
	03:35	03:05	0.351	0.393	0.405	0.383	0.379	2.61	0.37								
	03:40	03:10	0.350	0.392	0.404	0.382	0.378	2.61	0.37								
	03:45	03:15	0.350	0.391	0.404	0.382	0.378	2.61	0.37								
	04:00	03:30	0.349	0.390	0.403	0.381	0.377	2.61	0.37								
	04:30	04:00	0.348	0.389	0.402	0.380	0.376	2.61	0.37							36°	
	05:30	05:00	0.348	0.389	0.402	0.380	0.376	2.61	0.37							36°	
45	05:31	05:01	0.250	0.284	0.296	0.277	0.273	2.57	0.27							36°	
	05:32	05:02	0.248	0.282	0.294	0.275	0.271	2.50	0.26							36°	
	05:33	05:03	0.248	0.282	0.294	0.275	0.271	2.50	0.26							36°	
	05:35	05:05	0.244	0.278	0.290	0.271	0.267	2.50	0.26							36°	
	05:40	05:10	0.243	0.277	0.290	0.270	0.266	2.50	0.26							36°	
	05:45	05:15	0.242	0.276	0.289	0.269	0.265	2.50	0.26							36°	
	06:00	05:30	0.239	0.273	0.286	0.266	0.262	2.50	0.26							36°	
	06:30	06:00	0.239	0.272	0.285	0.265	0.261	2.49	0.25							36°	
	07:30	07:00	0.237	0.271	0.284	0.264	0.260	2.49	0.25							39°	
0	07:31	07:01	0.122	0.149	0.166	0.146	0.082	2.37	0.13								
	07:32	07:02	0.115	0.147	0.160	0.141	0.077	2.37	0.13								
	07:33	07:03	0.112	0.144	0.157	0.138	0.074	2.37	0.13								
	07:35	07:05	0.110	0.142	0.155	0.136	0.072	2.37	0.13								
	07:40	07:10	0.108	0.141	0.154	0.134	0.070	2.37	0.13							34°	
	07:45	07:15	0.107	0.140	0.153	0.133	0.069	2.36	0.12								

