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ASSOCIATES, INC

McPHAIL ASSOCIATES, INC.

Geotechnical Engineers

PRELIMINARY FOUNDATION ENGINEERING REPORT

BELMONT PUBLIC LIBRARY

BELMONT MASSACHUSETTS

for

J. Stewart Roberts Associates, Inc.

January 6, 2005

Project No. 4307

McPHAIL ASSOCIATES, INC.
Geotechnical Engineers

January 6, 2005

J. Stewart Roberts Associates, Inc.
48 Grove Street
Somerville, MA 02144

Attention: Mr. J. Stewart Roberts

Reference: Belmont Public Library; Belmont, Massachusetts
Preliminary Foundation Engineering Report

Gentlemen:

This letter report documents the results of our subsurface exploration and preliminary foundation design study for the proposed Belmont Public Library project located in the Town of Belmont, Massachusetts. Refer to the Project Location Plan (Figure 1) for the general site location.

This preliminary report was prepared in accordance with our proposal dated December 2, 2004 and the subsequent authorization of Mr. J. Stewart Roberts on December 3, 2004. These services are subject to the limitations contained in Appendix A.

Available Information

Information provided to McPhail Associates, Inc. and prepared by the Project Architect, J. Stewart Roberts Associates, Architects, included a 50-scale site plan, entitled "Belmont Public Library" provided electronically on December 3, 2004. Additional information provided to McPhail Associates, Inc. on December 24, 2004 included 20-scale drawings entitled "Memorial Library" and "The Belmont Public Library" dated January 29, 1964 and July 1963, respectively, prepared by Kilham, Hopkins, Greeley & Brodi Architects.

Elevations as noted herein are referenced to the lowest level slab of the existing library, which is understood to be at Elevation +27.0. It is unknown what base datum the elevations are referenced to.

Existing Site Conditions

The subject site consists of an L-shaped parcel which is bounded to the north by Concord Avenue, to the east by Cottage Street, and to the south and west by residential properties. The existing 2-1/2 story library structure is located within the western site limits and occupies an approximate 13,000 square-foot plan area. An existing pool and pool house are located to the east of the existing library structure and the Wellington Brook traverses the site in an east-west direction.

The portion of the site west of the existing library generally consists of paved parking. Grassed borders abut the existing structures elsewhere. The ground surface surrounding the existing library structure generally varies from about Elevation +24 to +26, with the exception of the north side where existing site grades slope downward from south to north from about Elevation +34 to +26 across a horizontal distance of about 40 feet. The existing ground surface across the eastern portion of the site generally slopes downward from south to north, varying from about Elevation +44 to approximately Elevation +20, across a horizontal distance of about 310 feet.

30 Norfolk Street
Cambridge, Massachusetts 02139
617 / 868-1420
617 / 868-1423 (Fax)

Proposed Site Development

Tentative plans for the redevelopment of the site include the construction of a new library structure that would be benched into the hillside near the location of the existing pool and pool house. A new pool and pool house would be constructed on the western portion of the site in the vicinity of the existing library.

Investigation Procedures

Our preliminary subsurface investigation consisting of six soil borings was conducted at the site on December 15 through 17, 2004. The boreholes were performed by Carr-Dee Corp. of Medford, Massachusetts under contract to McPhail Associates, Inc. Logs of the recent soil borings are contained in Appendix B. Approximate locations of the explorations are as indicated on the enclosed Subsurface Exploration Plan, Figure 2.

The recent subsurface explorations were monitored by a representative of McPhail Associates, Inc. who performed field layout, prepared field logs, obtained and visually classified soil samples, monitored groundwater conditions in the completed explorations and the groundwater observation wells, made minor adjustments to the exploration locations and determined the required exploration depths based upon the actual subsurface conditions encountered.

Field locations of the recent subsurface explorations were determined by taping from existing site features identified on the referenced site plan. The existing ground surface elevation at each boring location was determined by a level survey performed by McPhail Associates, Inc. utilizing vertical control provided by J. Stewart Roberts Associates, Inc. The vertical control provided was the top of the existing lowest level slab of the library structure which is understood to be at Elevation +27.0.

The recent borings were generally advanced utilizing 2-1/4-inch and 3-3/4-inch hollow stem augers powered by track-mounted hydraulic drilling equipment, with the exception of boreholes B-4 and B-6 which were advanced utilizing NW casing and the wet rotary drilling technique. Standard 1-3/8-inch I.D. split-spoon samples and standard penetration tests were obtained at 5-foot intervals of depth in accordance with the standard procedures described in ASTM D1586.

To permit continued monitoring of groundwater levels across the site, groundwater observation wells were installed within completed boreholes B-1 and B-2. Groundwater Monitoring Reports are presented in Appendix C. During the subsurface investigation an existing monitoring well was observed on-site and was determined to be operational. The approximate location of the existing observation well is indicated on the enclosed Subsurface Exploration Plan and a Groundwater Monitoring Report is contained in Appendix C.

Subsurface Conditions

Detailed descriptions of the subsurface conditions encountered within each of the recent boreholes are presented on the boring logs contained in Appendix B. The information obtained from the recent subsurface investigation was supplemented with ten borings performed for the existing library which were completed by others during March, 1963. Logs of the previous borings are contained in Appendix D. The

generalized subsurface conditions across the site were inferred primarily from these explorations, but also from our knowledge of the local geology.

The recent borings indicate that the site is underlain by a 4 to 10-foot thickness of fill, which generally consists of a very loose to compact, brown to gray silt with a trace to some sand, also containing traces of brick, wood, and organics. Underlying the fill deposit, recent boring B-1 encountered a 4-foot thick organic deposit at a depth of 8.5 feet below ground surface, which generally consists of a soft, dark gray organic silt with a trace of fine sand. An organic deposit is also indicated to have been encountered within previous borings B63-3, B63-7, B63-7A, B63-8, and B63-11.

Beneath the fill and organic deposits, the explorations encountered an alluvial clay deposit with intermittent granular layers of variable thickness. The surface of the alluvial deposit was encountered within the recent borings at depths varying from 4 to 10 feet below the existing ground surface, corresponding to Elevation +24.5 at boring B-6 and Elevation +16.0 at boring B-5, respectively. The cohesive portion of the alluvial deposit generally consists of a soft to very stiff, blue silty clay varying to a silt and clay. The granular portion of the alluvial deposit generally consists of a compact to dense, brown fine sand with a trace to some gravel and a trace of clay. A granular layer consisting of a compact, silty fine sand was encountered at the top of the alluvial deposit in boring B-2 at a depth of 8 feet below the ground surface and was observed to be about 17 feet in thickness. A 4 to 14-foot thickness of hard to very stiff, yellow silty clay was encountered at the top of the alluvial deposit in recent boring B-6 and previous borings B63-11 and B63-14. With the exception of boring B-1, the recent boreholes were terminated within the alluvial deposit at depths ranging from 31.5 to 46.2 feet below the existing ground surface.

The previous boring logs, prepared by others, indicate that the alluvial deposit is underlain by a dense deposit of glacial till at depths varying from 10 to 53 feet below the ground surface corresponding to Elevation +13.5 in Boring B63-11 and Elevation -29.1 in boring B63-7, respectively. Based on the descriptions from the previous boring logs, the glacial till deposit generally consists of a sand and gravel with a trace of silt and clay, containing occasional cobbles. Where it was penetrated by the previous boreholes, the glacial till deposit was observed to vary from 2 to 7 feet in thickness.

Refusal, believed to be representative of the bedrock surface, was generally encountered in the previous soil boring explorations at depths generally ranging from 44.5 to 57.5 feet below the existing ground surface, corresponding to Elevation -21.3 at borehole B63-2 and Elevation -33.6 at borehole B63-7, respectively. Recent borehole B-1 and previous borehole B63-11 were terminated upon practical refusal at relatively shallow depths of 12.5 and 16 feet below the ground surface which correspond to Elevation +16.6 and Elevation +7.5, respectively.

Stabilized groundwater levels within the observation wells installed in completed boreholes B-1 and B-2 were observed to vary from 5.2 to 18 feet below the existing ground surface, corresponding to Elevation +23.9 and Elevation +22.5, respectively. Groundwater within the existing observation well was observed at a depth of 4.8 feet below the existing ground surface, corresponding to Elevation +17.6. It is anticipated that future groundwater levels across the site may vary from those reported herein due to factors such as normal seasonal changes, periods of heavy precipitation, and alterations of existing drainage patterns. Monitoring reports of the groundwater observation wells are contained in Appendix C.

Preliminary Foundation Design Recommendations

Based upon the anticipated subsurface conditions indicated by the preliminary subsurface investigations, the site appears to be well suited for utilization of spread footing foundations in conjunction with slab-on-grade construction for the proposed structures. Spread footings should bear directly on the undisturbed, natural alluvial deposit. Utilization of a moderate design bearing pressure on the order of 2 tons per square-foot appears to be reasonable, however, selection of the final design bearing pressure should be made during the final design period. Recommended minimum footing widths for continuous and isolated spread footings are 24 and 30 inches, respectively.

All soil bearing surfaces adjacent to unheated areas should be provided with a minimum 4-foot thickness of soil cover as frost protection. Interior footings should be located such that the top of the foundation concrete is at least 6 inches below the underside of the slab-on-grade.

We recommend that future lowest level floor slabs located above the observed groundwater level be designed as slabs-on-grade underlain by polyethylene vapor barriers. The slabs located below the adjacent exterior grade should have a minimum 9-inch thickness of 3/4-inch crushed stone underling the vapor barrier, while the slabs located above the adjacent exterior grade should have a minimum 6-inch thickness of gravel fill underlying the vapor barrier. The underslab crushed stone should be underlain by a thickness of filter fabric, such as Mirafi 140N, spread across the excavated subgrade. Future floor slabs located below the observed groundwater level must be structurally designed to resist the resulting hydrostatic uplift pressures and should include a waterproofing membrane.

It is recommended that below-grade space be provided with perimeter and underslab drainage to protect occupied below-grade areas against groundwater intrusion. Based on the groundwater levels observed at the site varying from about Elevation +17.6 to +23.2, and in the interest of minimizing the quantity of groundwater which enters the perimeter and underslab drainage systems, it is recommended that the most economical building construction would include lowest level floor slabs located at or above Elevation +25.

Given that the structures will be supported on a moderately compressible silty clay deposit, long-term building settlement may result from consolidation of the clay due to the structural load transfer from the new spread footings to the clay. A settlement analysis should be performed during the final design phase to determine that the magnitude of total settlement and angular distortion are acceptable for the proposed structures.

For purposes of determining the total lateral seismic force or base shear for earthquake design, the site is considered to be an S_2 soil site as defined by Section 1612.4.2 of the Massachusetts State Building Code. Therefore, the soil factor "S" should be 1.2. The bearing stratum is not considered to be subject to liquefaction during the design earthquake based on the criterion of Section 1805.3 of the State Building Code (6th Edition).

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Final Comments

Based on our current understanding of the project scope, a final subsurface exploration program may need to be conducted once the final location and configuration of the proposed structures are selected. In addition, a final foundation engineering report should be prepared in conjunction with the final subsurface exploration program which provides final foundation recommendations based on the specific project design.

We trust that the above preliminary information is sufficient for your present requirements. Should you have any questions concerning the recommendations presented herein, please do not hesitate to call us.

Very truly yours,

McPHAIL ASSOCIATES, INC.

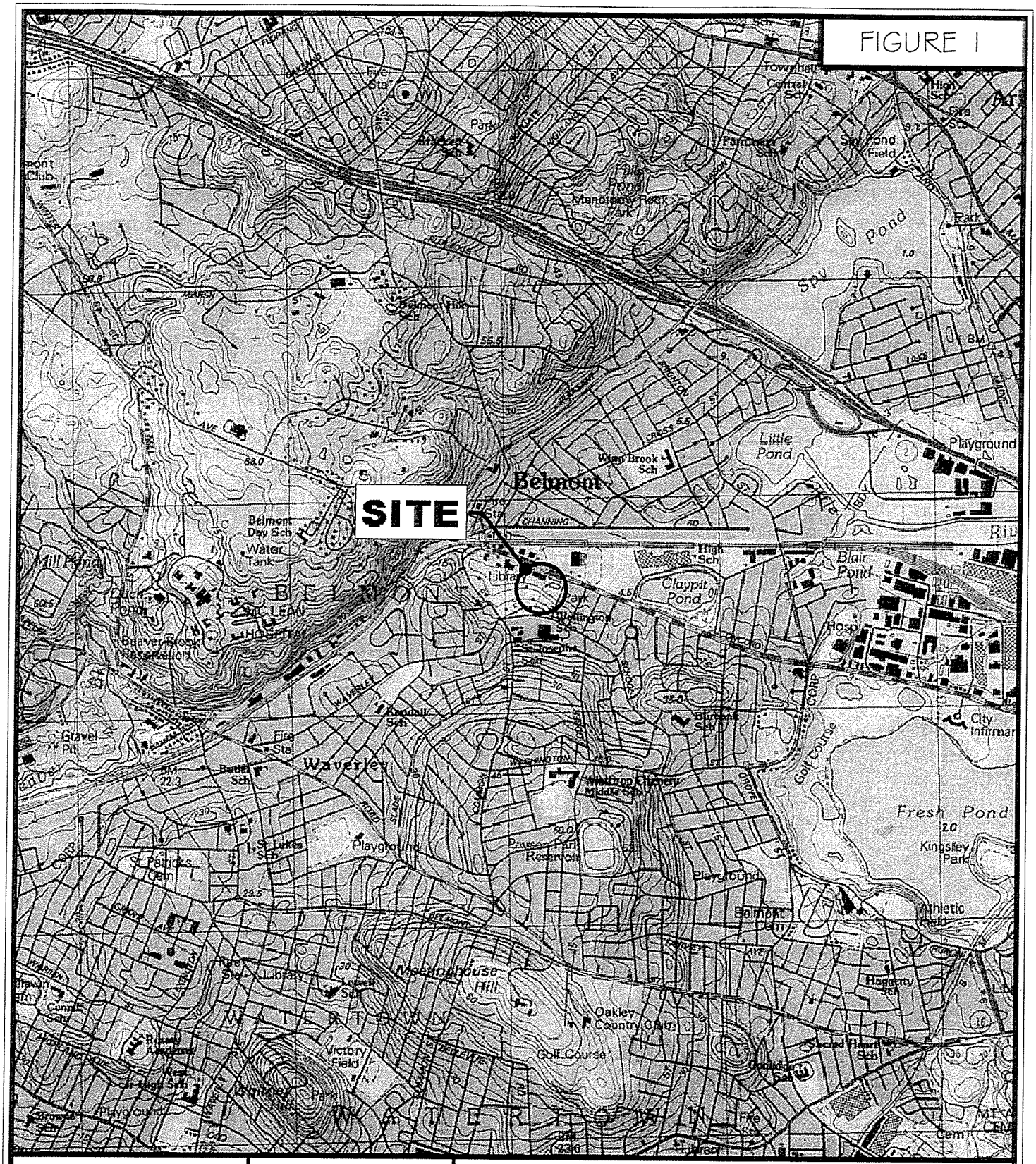
Jonathan W. Patch

Robert C. Hoyler, P.E.

Enclosures

F:\WP5\REPORTS\4307-P.wpd
JWP/rch

FIGURE 1



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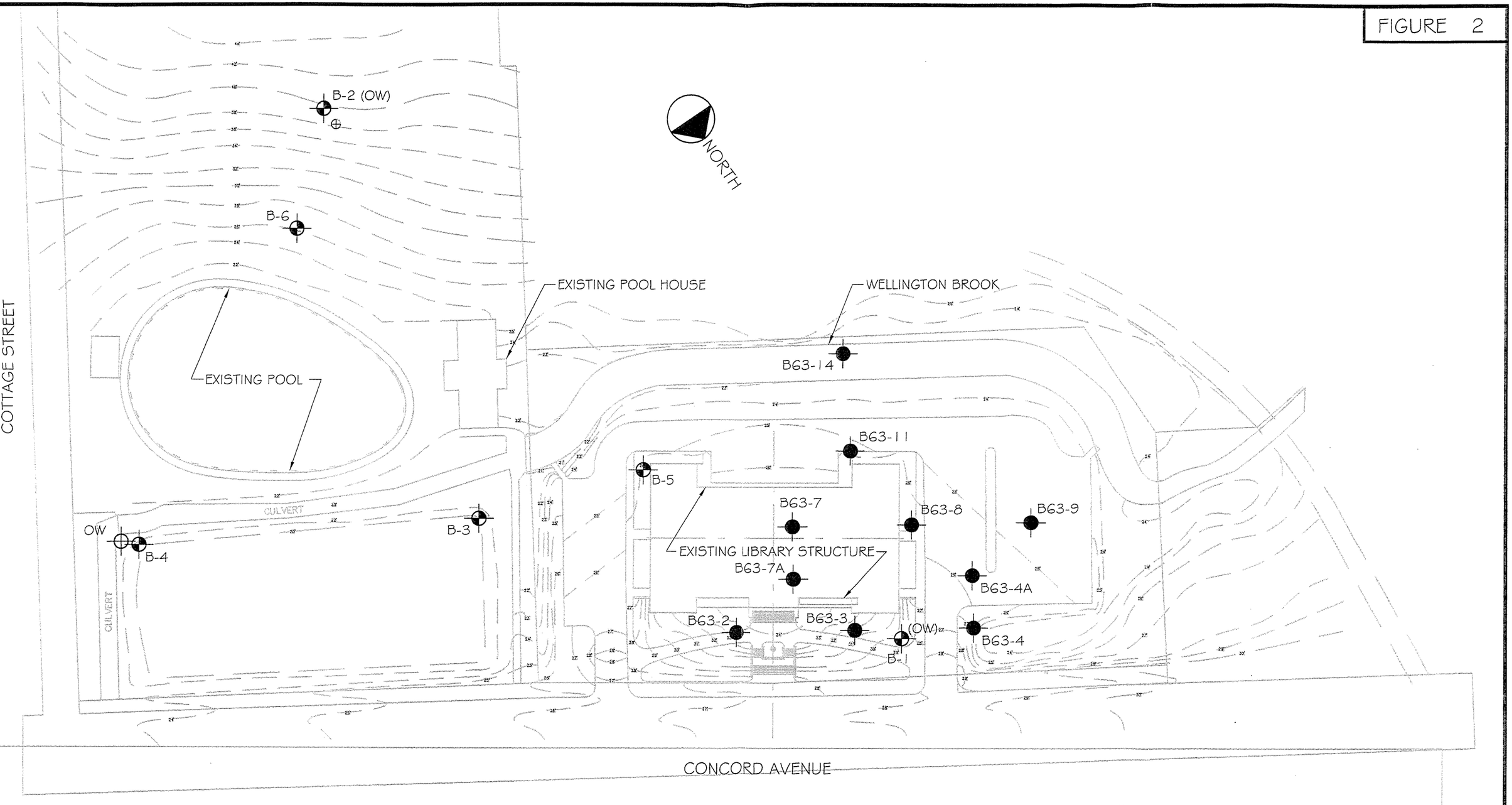
SCALE 1:25,000

PROJECT LOCATION PLAN

BELMONT LIBRARY

BELMONT MASSACHUSETTS

FIGURE 2



LEGEND

— APPROXIMATE LOCATION OF EXISTING OBSERVATION WELL INSTALLED BY OTHERS

— APPROXIMATE LOCATION OF BOREHOLE PERFORMED BY CARR-DEE CORP. DURING DECEMBER 2004 FOR McPHAIL ASSOCIATES, INC.

(OW) — INDICATES GROUNDWATER OBSERVATION WELL INSTALLED IN COMPLETED BOREHOLE

B63-1 — APPROXIMATE LOCATION OF BOREHOLE PERFORMED BY CARR-DEE CORP. DURING MARCH 1963 FOR OTHERS.

REFERENCE: THIS PLAN WAS PREPARED FROM A 50-SCALE DRAWING ENTITLED, "BELMONT PUBLIC LIBRARY" PROVIDED ELECTRONICALLY ON DECEMBER 3, 2004 BY J. STEWART ROBERTS ASSOCIATES INC. AND A 20-SCALE DRAWING ENTITLED "THE BELMONT PUBLIC LIBRARY" DATED JULY, 1963 AND PREPARED BY KILHAM, HOPKINS, GREELEY & BRODIE ARCHITECTS.

McPHAIL ASSOCIATES, INC.
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BELMONT LIBRARY

BELMONT MASSACHUSETTS

SUBSURFACE EXPLORATION PLAN

FOR

J. STEWART ROBERTS ASSOCIATES INC.

BY

McPHAIL ASSOCIATES, INC.

CONSULTING GEOTECHNICAL ENGINEERS

Date: DECEMBER 2004	Dwn: M.B.S.	Chkd: J.W.P.	Scale: 1" = 60'
Project No: 4307			

FILE NAME: 4307-F02

McPHAIL ASSOCIATES, INC.
Geotechnical Engineers

APPENDIX A

Limitations

McPHAIL ASSOCIATES, INC.

Geotechnical Engineers

Limitations

This preliminary report has been prepared on behalf of and for the exclusive use of J. Stewart Roberts Associates, Inc. for specific application to the proposed Belmont Public Library project to be located in Belmont, Massachusetts in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

In the event that any changes in nature, design or location of the proposed structure are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

The analyses and recommendations presented in this report are based upon the data obtained from the explorations performed at the approximate locations indicated on the enclosed subsurface exploration plan. If variations in the nature and extent of subsurface conditions between the widely spaced explorations become evident during the course of construction, it will be necessary for a re-evaluation of the recommendations of this report to be made after performing on-site observations during the construction period and noting the characteristics of any variations.

Based on our current understanding of the project scope, a final subsurface exploration program may need to be conducted once the location and configuration of the proposed structures are finalized. In addition, a final foundation engineering report should be prepared in conjunction with the final subsurface exploration program which provides detailed foundation recommendations based on the specific project design.

It is recommended that McPhail Associates, Inc. be retained to provide final phase geotechnical engineering services, including design assistance to the Architect and Structural Engineer during the final design phase of this project. The purpose of this involvement is to review the applicable foundation drawings and notes for conformance with the recommendations provided herein, and to review or prepare the earthwork specification section for inclusion into the Contract Documents for construction.

McPHAIL ASSOCIATES, INC.

Geotechnical Engineers

APPENDIX B

Recent Boring Logs Prepared by Carr-Dee Corp.
B-1 through B-6

CARR-DEE CORP.

37 LINDEN STREET P.O. BOX 67 MEDFORD, MA 02155-0001 Telephone (617) 391-4500

To: McPHAIL ASSOCIATES, INC., 30 NORFOLK ST., CAMBRIDGE, MA Date: _____ Job No.: 2004-245

Location: 336 CONCORD AVE, BELMONT LIBRARY, BELMONT MA Scale: 1 in. = 5 ft.

BORING 1-OW

GROUND SURFACE EL+ 29.1

FILL

SAND, GRAVEL,

BRICK, LOAM

8'6"

ORGANIC SILT

TRACE FINE SAND

12'6"

- R E F U S A L -

(100 BLOWS S.S. 140 LB, WGT., NO PENETRATION)

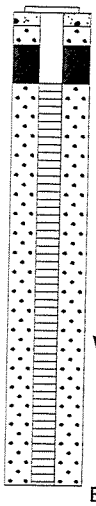
S#1, 0' to 2'
(4-7-6-9)
RECOVERED 10 in.

S#2, 5' to 7'
(7-4-3-3)
RECOVERED 15 in.

S#3, 10' to 12'
(3-2-2-1)
RECOVERED 14 in.

WATER LEVEL 7'6"
SIZE OF AUGERS 3-3/4" I.D. LENGTH 12'6"
DRILLER: JOSEPH DESIMONE, INSPECTOR: AMY KOCHAN
DATE STARTED&COMPLETED 12-15-2004

MONITORING WELL



FLUSH MOUNT COVER
CONCRETE SEAL
SAND
2" 5' PVC RISER 2'6" CUT-OFF
BENTONITE SEAL
2" PVC 10'FT SLOTTED
WELL SAND
ENDCAP

All samples have been visually classified by DRILLE:. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

CARR-DEE CORP.

37 LINDEN STREET P.O. BOX 67 MEDFORD, MA 02155-0001 Telephone (617) 391-4500

To: McPHAIL ASSOCIATES, INC., 30 NORFOLK ST., CAMBRIDGE, MA Date: _____ Job No.: 2004-245

Location: 336 CONCORD AVE, BELMONT LIBRARY, BELMONT MA Scale: 1 in. = 5 ft.

BORING 2-OW

GROUND SURFACE EL + 40.5

FILL

LOAM, SAND

8'

MEDIUM DENSE

FINE SILTY SAND

25'

DENSE

INORGANIC SILT

& CLAY

32'

S#1, 0' to 2'
(3-4-7-3)
RECOVERED 13 in.

S#2, 5' to 7'
(12-12-17-19)
RECOVERED 18 in.

S#3, 10' to 12'
(12-14-16-20)
RECOVERED 18 in.

S#4, 15' to 17'
(12-11-14-14)
RECOVERED 20 in.

S#5, 20' to 22'
(10-11-16-16)
RECOVERED 20 in.

S#6, 25' to 27'
(8-18-37-39)
RECOVERED 18 in.

S#7, 30' to 32'
(22-17-33-43)
RECOVERED 17 in.

WATER LEVEL 20'
SIZE OF AUGERS 2/1/4" I.D. LENGTH 30'0"
DRILLER: JOSEPH DESIMONE, INSPECTOR: AMY KOCHAN
DATE STARTED&COMPLETED 12-15-2004

MONITORING WELL

FFLUSH MOUNT COVER
CONCRETE SEAL
SAND
2" PVC 15'FT RISER

BENTONITE SEAL

ASSORTED CUTTINGS

2" PVC 10'FT SLOTTED

WELL SAND

ENDCAP

All samples have been visually classified by DRILLE:. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

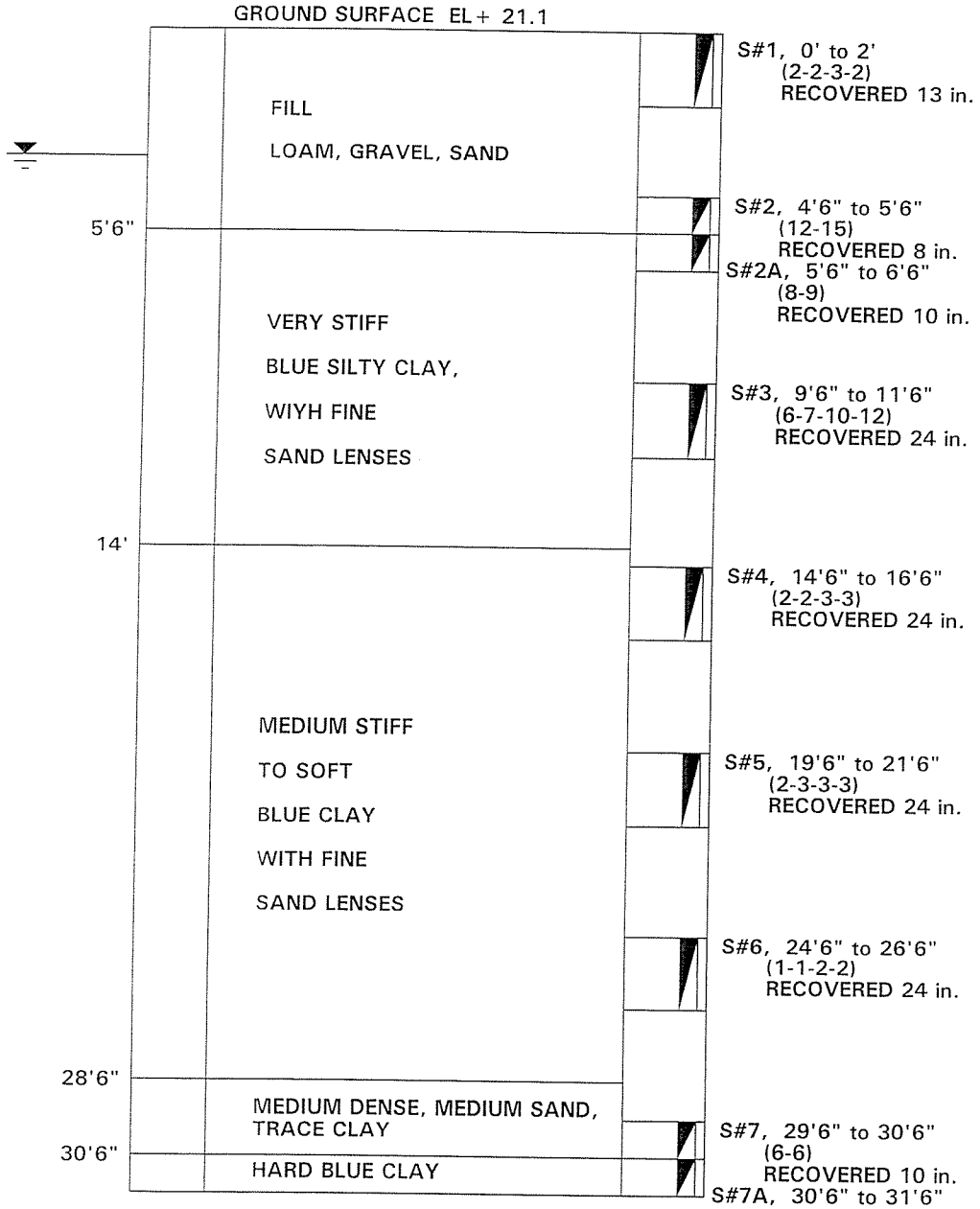
CARR-DEE CORP.

37 LINDEN STREET P.O. BOX 67 MEDFORD, MA 02155-0001 Telephone (617) 391-4500

To: McPHAIL ASSOCIATES, INC., 30 NORFOLK ST., CAMBRIDGE, MA Date: _____ Job No.: 2004-245

Location: 336 CONCORD AVE, BELMONT LIBRARY, BELMONT MA Scale: 1 in. = 5 ft.

BORING 3



WATER LEVEL 3'6"
SIZE OF AUGERS 2/1/4" I.D. LENGTH 39 6"
DRILLER: JOSEPH DESIMONE, INSPECTOR: AMY KOCHAN
DATE STARTED&COMPLETED 12-16-2004

All samples have been visually classified by DRILLE:. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

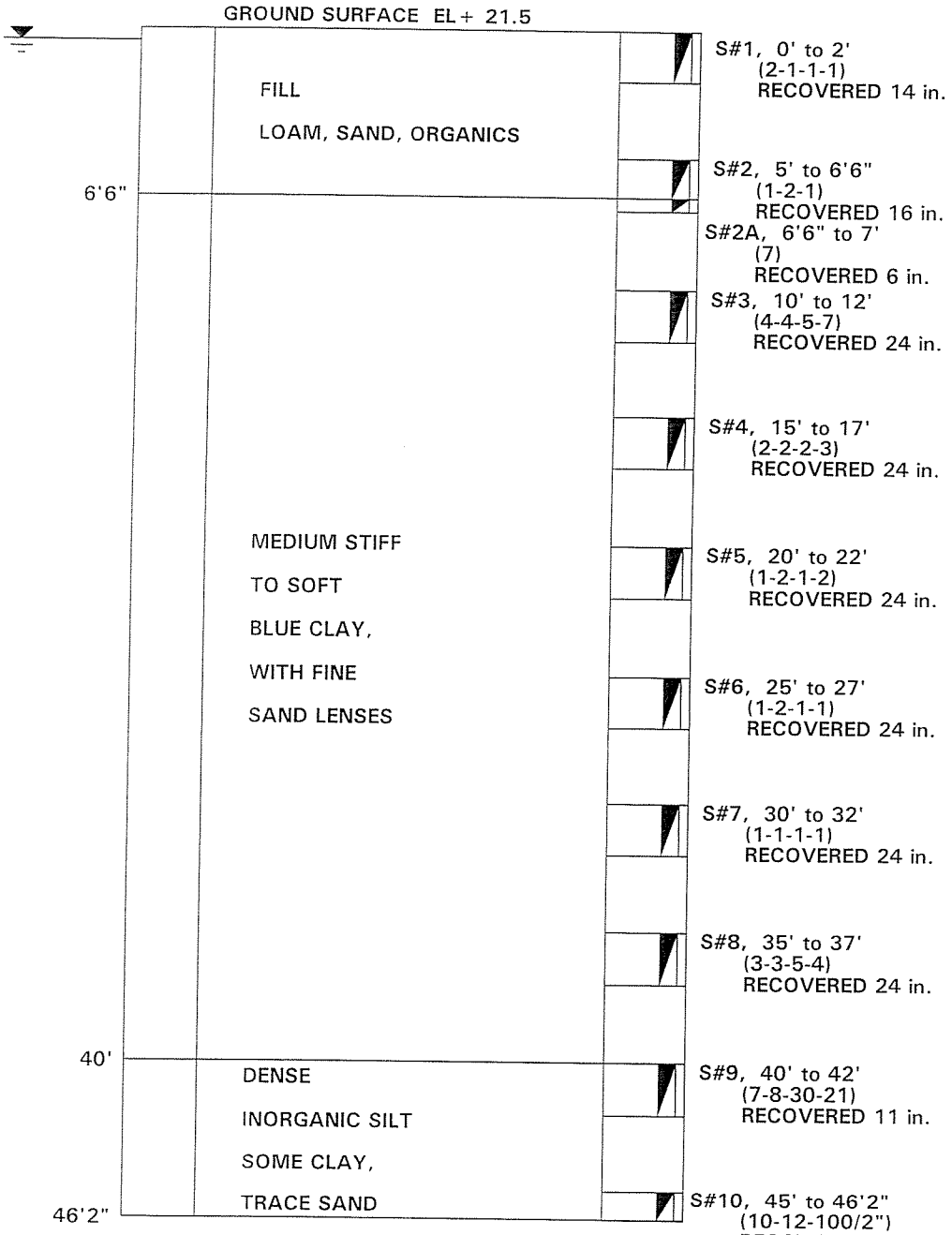
CARR-DEE CORP.

37 LINDEN STREET P.O. BOX 67 MEDFORD, MA 02155-0001 Telephone (617) 391-4500

To: McPHAIL ASSOCIATES, INC., 30 NORFOLK ST., CAMBRIDGE, MA Date: _____ Job No.: 2004-245

Location: 336 CONCORD AVE, BELMONT LIBRARY, BELMONT MA Scale: 1 in. = 7 ft.

BORING 4



WATER LEVEL 6"
SIZE OF CASING NW LENGTH 20'0"
DRILLER: JOSEPH DESIMONE, INSPECTOR: AMY KOCHAN
DATE STARTED & COMPLETED 12-16-2004

All samples have been visually classified by DRILLE:. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

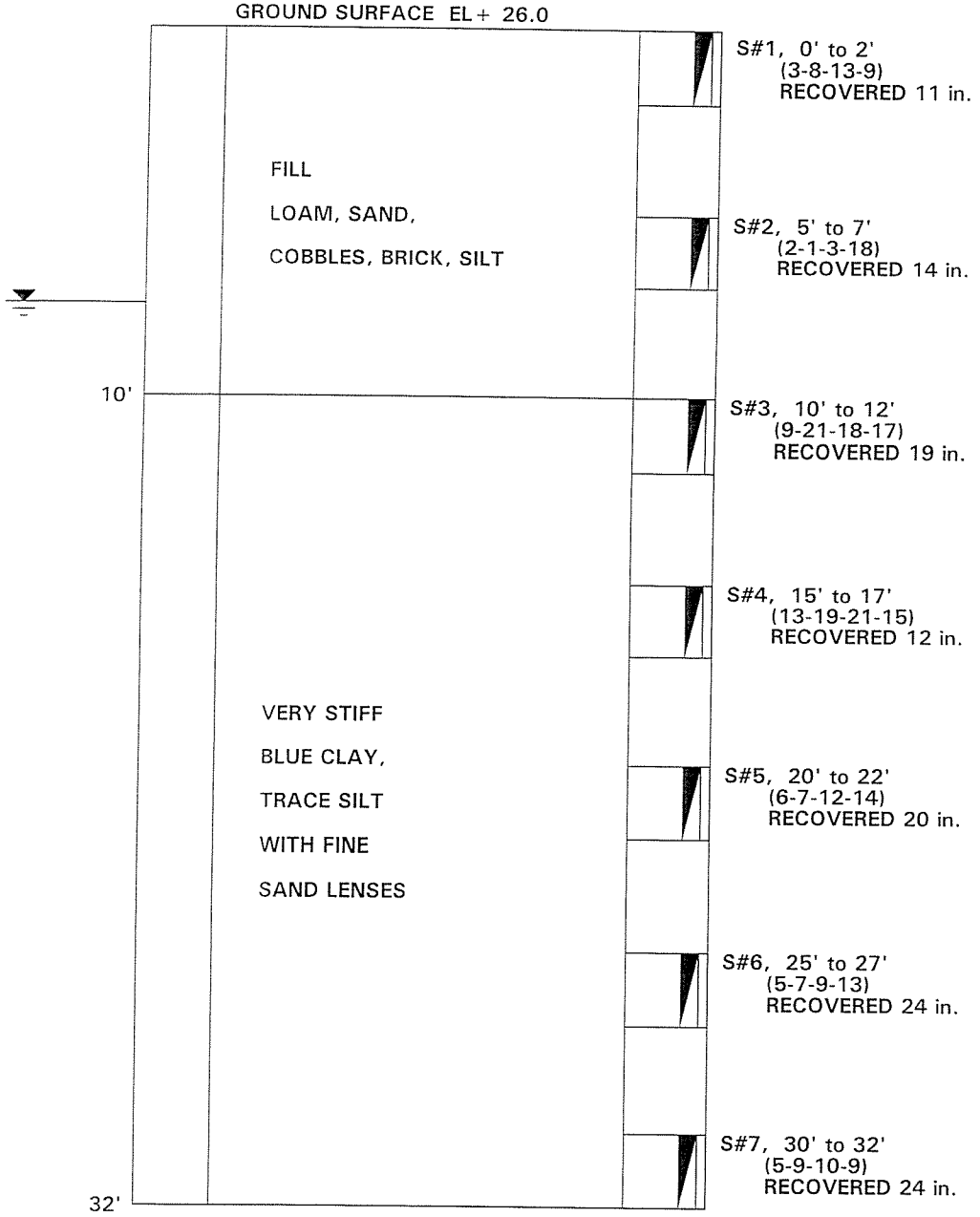
CARR-DEE CORP.

37 LINDEN STREET P.O. BOX 67 MEDFORD, MA 02155-0001 Telephone (617) 391-4500

To: McPHAIL ASSOCIATES, INC., 30 NORFOLK ST., CAMBRIDGE, MA Date: _____ Job No.: 2004-245

Location: 336 CONCORD AVE, BELMONT LIBRARY, BELMONT MA Scale: 1 in. = 5 ft.

BORING 5



WATER LEVEL 7'6"
SIZE OF AUGERS 2-1/4" I.D. LENGTH 10'0'
SIZE OF CASING NW LENGTH 15'0"
DRILLER: JOSEPH DESIMONE, INSPECTOR: AMY KOCHAN
DATE STARTED & COMPLETED 12-17-2004

All samples have been visually classified by DRILLE:. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

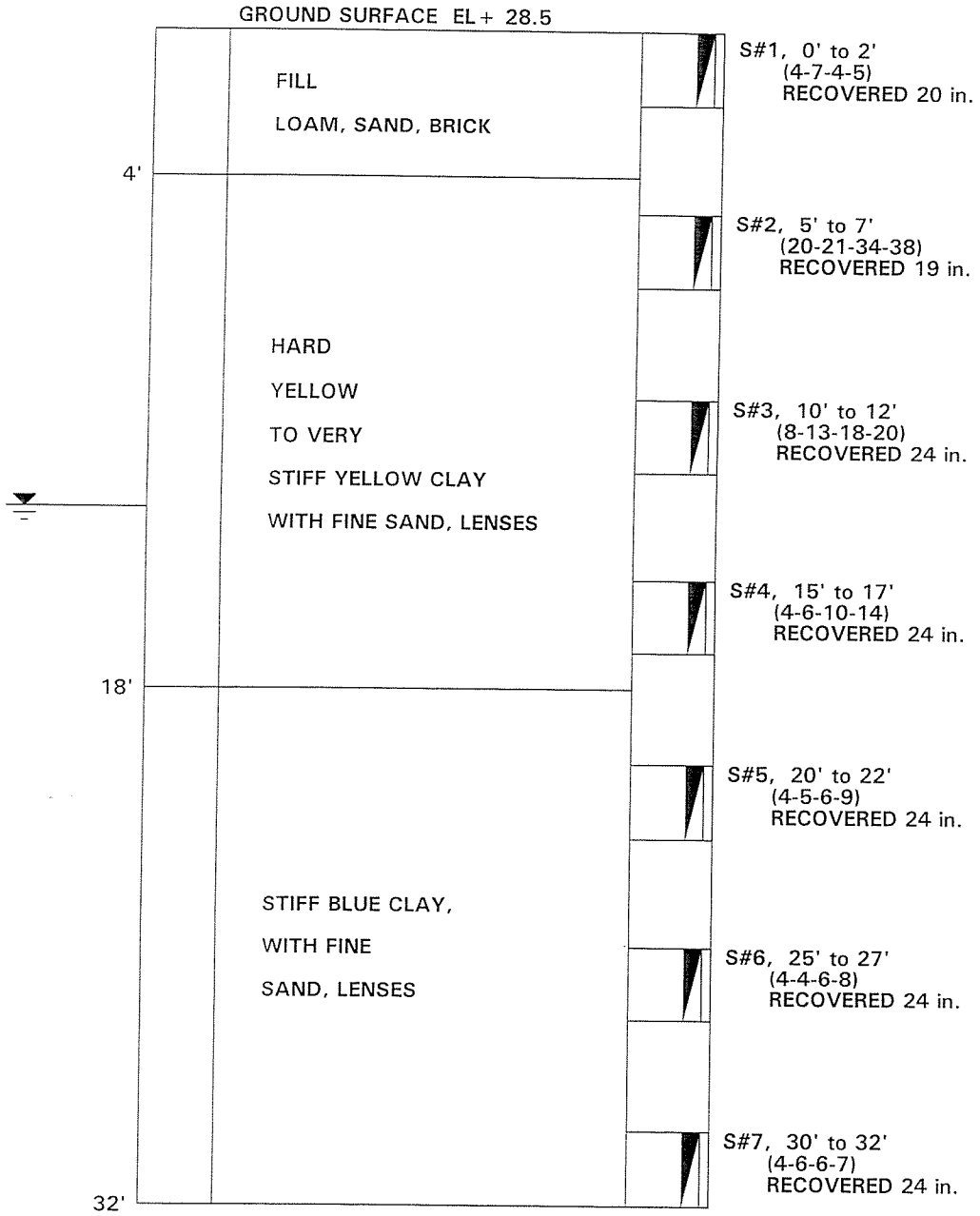
CARR-DEE CORP.

37 LINDEN STREET P.O. BOX 67 MEDFORD, MA 02155-0001 Telephone (617) 391-4500

To: McPHAIL ASSOCIATES, INC., 30 NORFOLK ST., CAMBRIDGE, MA Date: _____ Job No.: 2004-245

Location: 336 CONCORD AVE, BELMONT LIBRARY, BELMONT MA Scale: 1 in. = 5 ft.

BORING 6



WATER LEVEL 13'
SIZE OF CASING NW LENGTH 5'0"
DRILLER: JOSEPH DESIMONE, INSPECTOR: AMY KOCHAN
DATE STARTED & COMPLETED 12-17-2004

All samples have been visually classified by DRILLE:. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

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Geotechnical Engineers

APPENDIX C

Groundwater Monitoring Reports

GROUNDWATER MONITORING REPORT

Well I.D.	B-1	Elevation Subtrahend	+29.1	Job. No. Job Name	4307 - BELMONT LIBRARY	
Date	Time	Elapsed Time	Depth of Water from R-Box Top	Elevation of Water	Remarks	Read By
		Days	Feet	Feet		
12/15/04	12:40	0	7.5	+21.6	Upon Installation	AMF
12/16/04	11:15	1	5.9	+23.2		AMF
12/17/04	10:00	2	5.9	+23.2		AMF
01/06/05	1:40	22	5.2	+23.9		NMD

GROUNDWATER MONITORING REPORT

Well I.D.	B-2	Elevation Subtrahend	+40.5	Job. No. Job Name	4307 - BELMONT LIBRARY	
Date	Time	Elapsed Time	Depth of Water from R-Box Top	Elevation of Water	Remarks	Read By
		Days	Feet	Feet		
12/15/04	12:40	0	20.0	+20.5	Upon Installation	AMF
12/16/04	11:15	1	18.0	+22.5		AMF
12/17/04	10:00	2	18.0	+22.5		AMF
01/06/05	1:55	22			Could Not Locate Well Under Snow	NMD

GROUNDWATER MONITORING REPORT

Well I.D.	OW	Elevation Subtrahend	+22.4	Job. No. Job Name	4307 - BELMONT LIBRARY	
Date	Time	Elapsed Time	Depth of Water from R-Box Top	Elevation of Water	Remarks	Read By
		Days	Feet	Feet		
12/15/04	12:40	UNKNOWN	4.8	+17.6		AMF
12/16/04	11:15	UNKNOWN	4.8	+17.6		AMF
01/06/05	2:10	UNKNOWN			Could Not Locate Well Under Snow	NMD

McPHAIL ASSOCIATES, INC.

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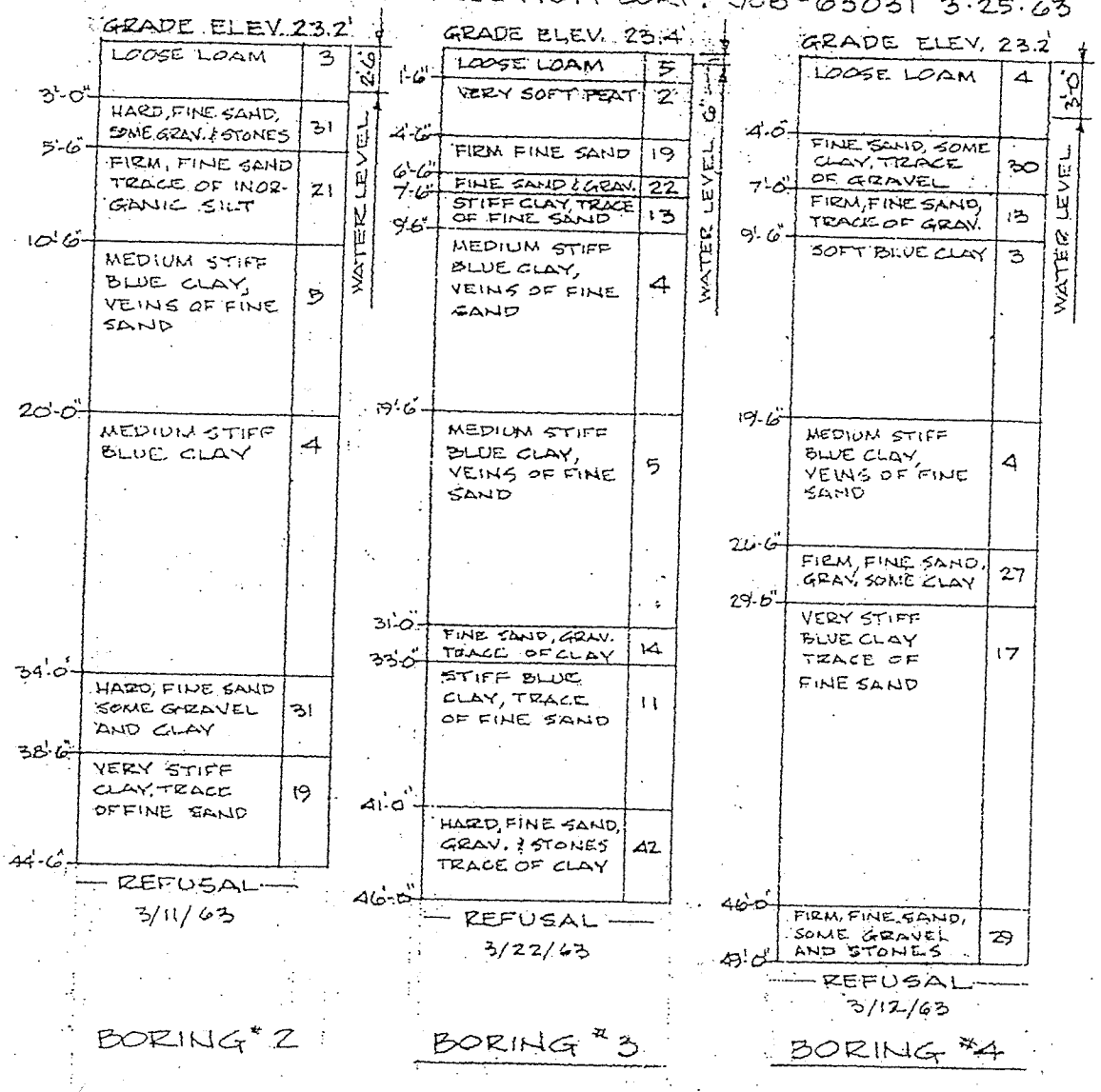
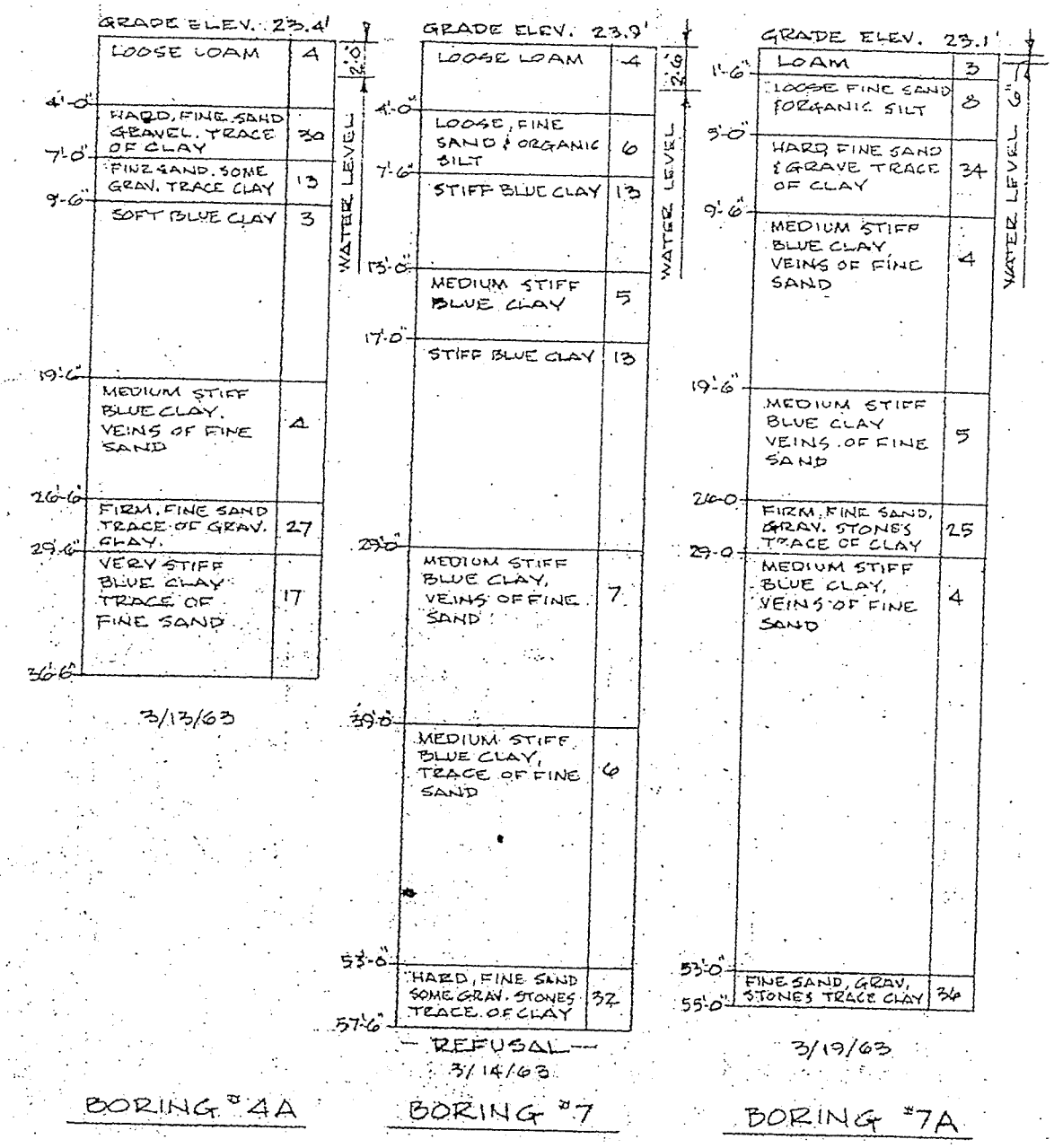
APPENDIX D

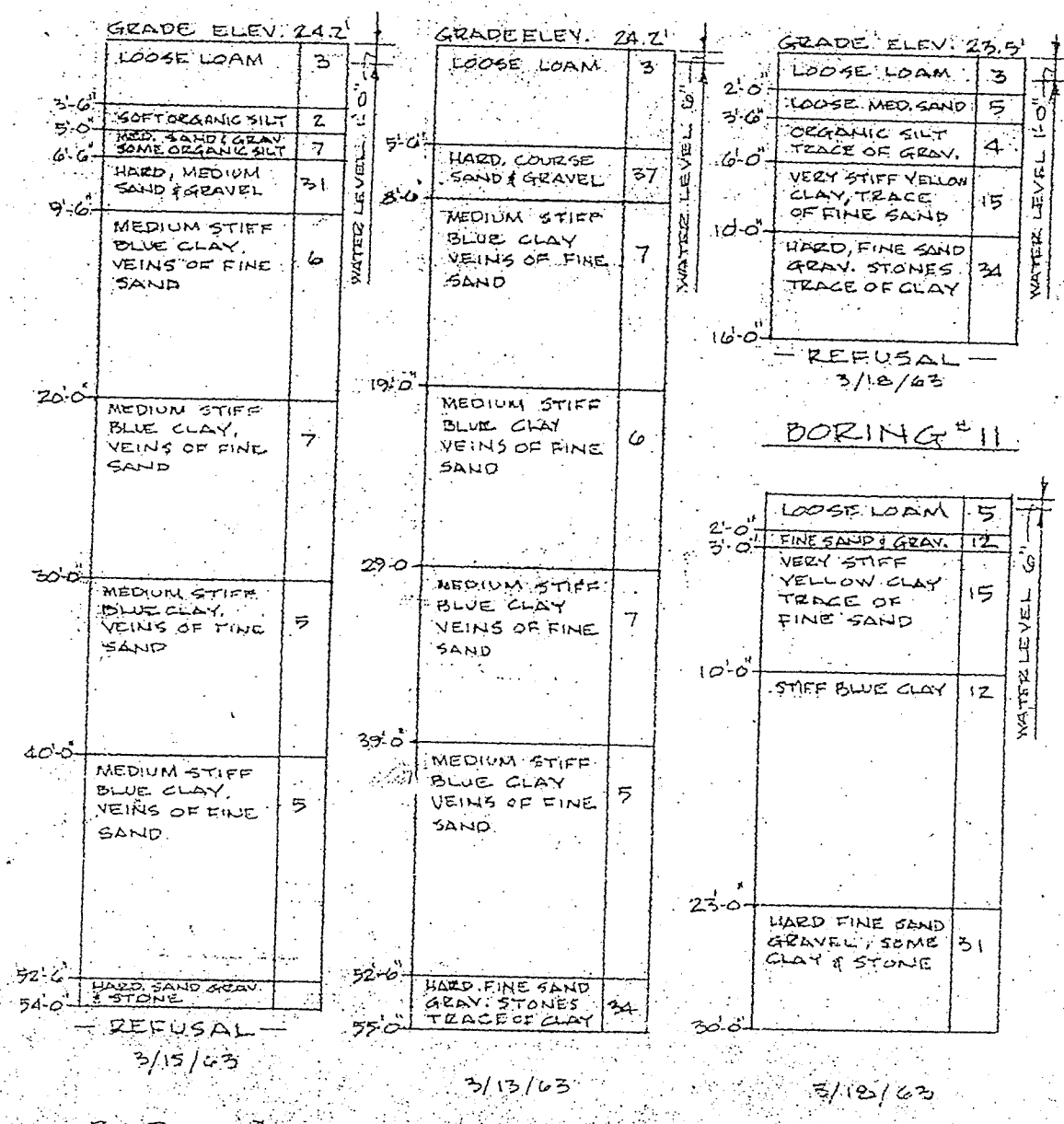
Previous Boring Logs Prepared by Others

BORING DATA

FROM BORING INFORMATION SUPPLIED BY CARR-DEE TEST BORING AND CONSTRUCTION CORP. JOB #63031 3-25-63




GRADE ELEV. 23.4'
LOOSE LOAM 4
4'-0"
HARD, FINE SAND GRAVEL, TRACE OF CLAY 30
7'-0"
FINE SAND, SOME GRAV, TRACE CLAY 13
9'-6"
SOFT BLUE CLAY 3
WATER LEVEL 2'-0"
19'-6"
MEDIUM STIFF BLUE CLAY, VEINS OF FINE SAND 4
26'-6"
FIRM, FINE SAND TRACE OF GRAV. CLAY. 27
29'-6"
VERY STIFF BLUE CLAY TRACE OF FINE SAND 17
36'-6"
3/13/63
BORING #4A
GRADE ELEV. 23.9'
LOOSE LOAM 4
WATER LEVEL 2'-6"
4'-0"
LOOSE, FINE SAND & ORGANIC SILT 6
7'-6"
STIFF BLUE CLAY 13
13'-0"
MEDIUM STIFF BLUE CLAY 5
17'-0"
STIFF BLUE CLAY 13
29'-0"
MEDIUM STIFF BLUE CLAY, VEINS OF FINE SAND 7
39'-0"
MEDIUM STIFF BLUE CLAY, TRACE OF FINE SAND 6
53'-0"
HARD, FINE SAND SOME GRAV. STONES TRACE OF CLAY 32
57'-6"
— REFUSAL —
3/14/63
BORING #7
GRADE ELEV. 23.1'
LOAM 3
WATER LEVEL 6"
1'-6"
LOOSE FINE SAND ORGANIC SILT 8
5'-0"
HARD FINE SAND & GRAVE TRACE OF CLAY 34
9'-6"
MEDIUM STIFF BLUE CLAY, VEINS OF FINE SAND 4
19'-6"
MEDIUM STIFF BLUE CLAY VEINS OF FINE SAND 5
26-0
FIRM, FINE SAND, GRAV. STONES TRACE OF CLAY 25
29-0
MEDIUM STIFF BLUE CLAY, VEINS OF FINE SAND 4
53'-0"
FINE SAND, GRAV, STONES TRACE CLAY 36
55'-0"
3/19/63
BORING #7A



FIGURES IN RIGHT HAND COLUMN INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE 2" SPLIT TUBE SAMPLER 12 INCHES USING 140 LB. WEIGHT FALLING 30 INCHES. WATER LEVELS WERE OBSERVED AT COMPLETION OF BORINGS AND DO NOT NECESSARY REPRESENT PERMANENT GROUND WATER LEVELS. BORINGS LOCATIONS #1, 5, 6, 10, 11, 12, & 15 NOT USED