Area: **Kirkland**

Status:_____

18841

DocID_____

Source: City of Kirkland – Public Works.

Local ID#1 IR-81-16

Local ID#2_____

Site Address Kingsgate Way NE & NE 132nd Street

Date 4/08 By ____MJ____

- ☑ **Title page with the following information:**
  - *Company (Author) name*
  - *Report date*
  - *Project Name*
  - *Company's job number*
  - *Site address*
- ☐ Executive Summary / Introduction of the report
- ☐ Table of contents
- ☐ Project Location Map / Vicinity Map
- ☑ **Site / Exploration Plans, Boring Location Plans**
- ☐ Cross-sections / Subsurface profiles
- ☑ **Exploration Logs**
- ☐ Monitoring Well Logs
- ☐ Cone Penetrometer Logs
- ☐ Groundwater Elevation Tables / Data

- ☐ Includes data from Previous Reports
- ☐ No new data /data review
- ☐ Missing Data /Illegible Data
  Explanation _____

Comments: _____

CORRECTED: RW

[illegible] 2008

ArcView [illegible] Layers JL GW JL

Checked MM Checked DPS Chkd DPS

ROGER LOWE ASSOCIATES INC.
EARTH SCIENCES

May 14, 1979

J. Patrick Mitchell, Architect
Suite 208
12620 120th Avenue N.E.
Kirkland, Washington 98033

Report
Site Investigation
Proposed G & B Estates Office Building
Kirkland, Washington
RLAI Project No. 513-01

Gentlemen:

INTRODUCTION

This report presents the results of our site investigation at the site of the proposed G & B Estates office building in Kirkland, Washington. The site is located at the southeast corner of the intersection of Kingsgate Way N.E. and N.E. 132nd Street, as shown on the Plot Plan, Plate 1.

We undertook this investigation in accordance with our proposal dated April 9, 1979. Authorization to proceed was received April 12, 1979.

The site slopes moderately from north to south and the northern two-thirds is currently covered with grass and low brush with occasional barren areas. The southern third of the site is a swampy area with a surface elevation 3 to 5 feet below the surrounding terrain. Scattered pools of standing water up to 1.5 feet deep exist in the swampy area with cattails and other swamp surface vegetation. Open drainage ditches currently run along the east and west boundaries of the site. The northern portion of the site is bounded by the steep roadway embankment for N.E. 132nd Street. The height of the embankment increases in an easterly direction and varies from 0 to about 16 feet above the adjacent site elevation. An existing two-story apartment building is located just east of the site.

EXHIBIT "H"
SOILS REPORT
WILLIAM VIESER
IR-81-16

RECEIVED MAY 16 1979

MAIL: P.O. BOX 3885, BELLEVUE, WA. 98009 - TELEPHONE (206) 453-8383
LOCATION: BENAROYA BUSINESS PARK, BLDG. 4, SUITE 219 - 300 120th AVE. N.E., BELLEVUE, WA.

6 to 8 feet below ground surface the fill contains occasional discontinuous thin lenses of stiff dark brown peat. Our explorations indicate that native soils underlie the fill at depths ranging from approximately 7.5 feet to 8.5 feet at test pits 1 and 2, respectively. The native soils consist of medium dense to dense mixed gray and brown medium to fine sand with some silt and fine gravel.

In the swampy area of the site our hand probes indicate that the soft silt with some fine sand existing at the ground surface varies from 1 to 2.5 feet in thickness. We expect that the underlying firm soils consist of the native soils described above.

As mentioned earlier, up to 1.5 feet of standing water exists over portions of the swampy area. Seepage was observed in our explorations at depths of 5.0 and 8.0 feet at test pits 1 and 3, respectively. No seepage was observed at Test Pit 2. We believe the water observed on the site is perched above the relatively impermeable silt layer and that the natural ground water level exists in the native soils at some depth below the bottom of our explorations.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

The native soils encountered by the test pits below the fill materials will provide good support for spread footings. The fill materials are unacceptable for footing support in the current condition but during dry weather periods could be reconditioned and used as structural fill. At the north boundary of the site we expect that temporary shoring will be necessary, and depending on the final garage floor grade, shoring may also be needed along the east and west site boundaries.

We believe the standing water in the swampy area and the water observed in the test pits is in a perched condition and could be adequately removed by sumps prior to construction. During construction perimeter drain ditches and shallow sumps should be adequate to control any inflowing surface or groundwater. Permanent perimeter subdrains will be required to maintain future perched water levels below the garage floor.

K2-5
1821

FINAL DECLARATION
OF
NON-SIGNIFICANCE

Description of proposal Intent to Rezone from Residential Single Family 35,000 to PR (Professional Residential) for construction of a two-story, approximately 12,000 sq. ft. medical clinic.

Proponent William Vieser (G&B Estates)

Location of Proposal S.E. corner of Kingsgate Way and N.E. 132nd St.

Lead Agency CITY OF KIRKLAND

This proposal has been determined to not have a significant adverse impact upon the environment. An Environmental Impact Statement is not required under RCW 43.21C.030(2)(c). This decision was made after review by the lead agency of a completed Environmental Checklist and other information on file with the lead agency.

Responsible Official Joseph W. Tovar

Position/Title Acting Director, Department of Community Development

Date: February 12, 1981 Signature Joseph Tovar

Distribution:

Original to DCD File No. IR-81-16
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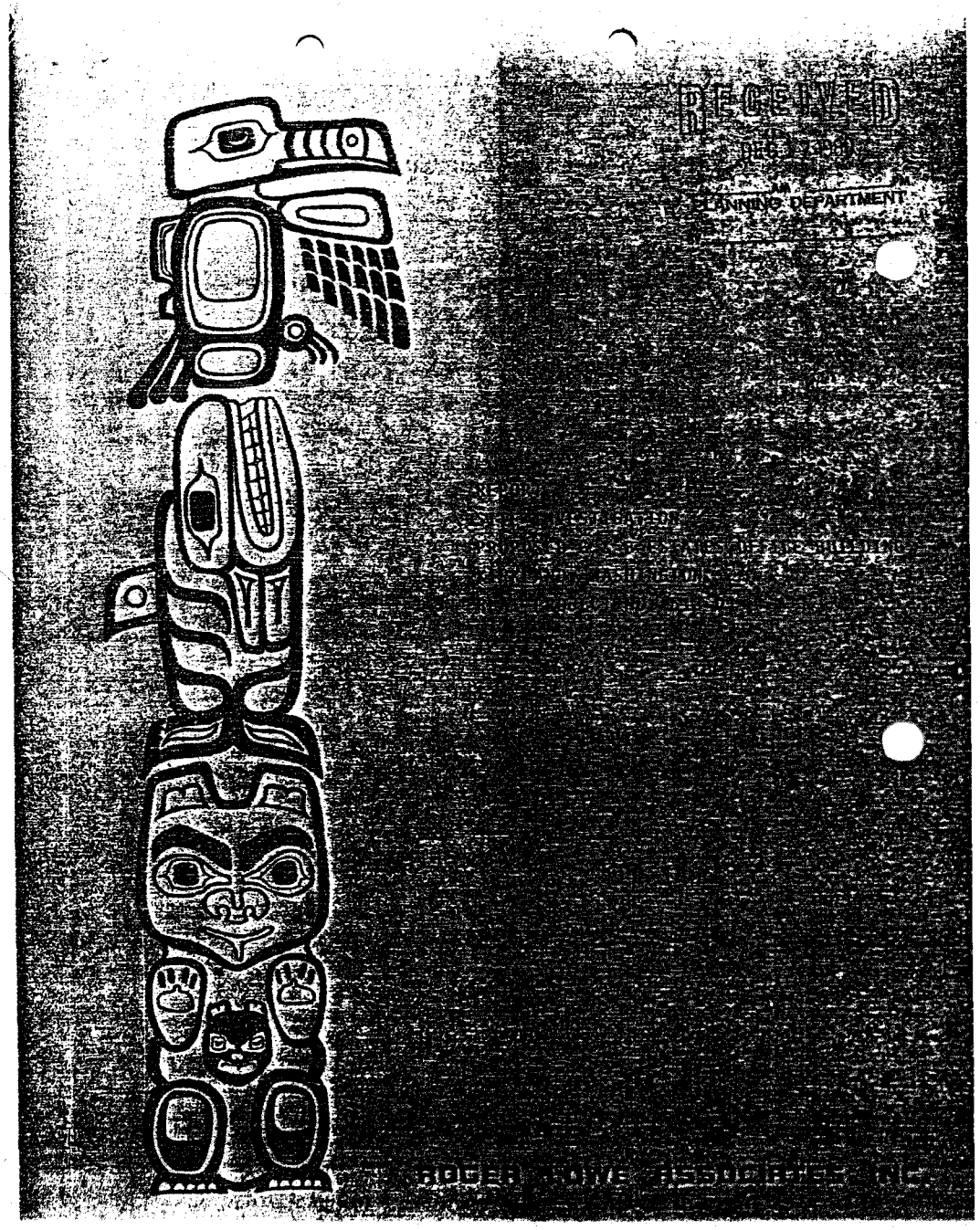


SITE PREPARATION

Initial site preparation should consist of dewatering the surface water in the swampy area with shallow sumps. When dewatering is completed the site should be stripped of organic soils and surface vegetation. In the swampy area the layer of soft silt should be removed down to the underlying native soils and wasted.

The on-site soils remaining after stripping should consist of medium to fine sand with some silt and gravel over the southern third of the site, and silty sand fill materials over the northern two-thirds of the site. If the proposed parking garage floor grade is planned to be constructed roughly at or below Elevation 160, a substantial amount of on-site fill will have to be removed from the site and the recommendations presented below for Alternative A should be followed. If the proposed parking garage floor grade is planned to be constructed above Elevation 160, on-site fill could be used to fill the lower site elevations during dry weather and the recommendations presented below for Alternative B should be followed.

Alternative A: After surface stripping is completed, the on-site fill exposed over the Northern two-thirds of the site will have to be excavated down to garage floor elevation. Recommendations for excavation temporary shoring are provided in a following section. The bottom of the excavation should be uniformly graded and compacted to 95% of the maximum dry density to a depth of approximately 12 inches. In this report, maximum density refers to the maximum dry density determined by ASTM D-1557 laboratory compaction test procedure. Portions of the excavation floor may consist of silty sand fill materials which are water sensitive and difficult, if not impossible, to compact during wet weather conditions. If any area of the excavation floor exhibits excessive weaving, rutting or other signs of softness during compaction, the area should be over-excavated and refilled with clean, compacted sand and gravel fill.

After grading and compaction of on-site soils we recommend that a 6 to 12 inch blanket of clean granular fill be placed and compacted to 95% of the maximum dry density to provide subgrade support for the garage floor slab.

It is anticipated that perched water will flow into the excavation for the Alternative A case and we recommend that perimeter sub drains around the structure and ditches be constructed to intercept any water and direct it to a storm drain system.

Alternative B: The on-site fill materials exposed over the northern two-thirds of the site after stripping can be used for filling the southern third of the site. However, since the material is silty and water sensitive, it should only be used for fill during periods of dry weather. If construction occurs during wet weather, the on-site fill materials to be excavated should be removed from the site and imported clean granular material should be used for filling.

Prior to filling, the exposed soils in fill areas should be uniformly graded and compacted to 95% of the maximum dry density to a depth of approximately 12 inches. During compaction of the natural ground, if any area exhibits excessive weaving, rutting or other signs of softness, the area should be overexcavated and filled with clean, compacted fill. During wet weather, conditioning and compaction will be impractical and overexcavation down to dense material will be necessary. Because of this expense we recommend that grading be done during periods of dry weather.

Fill should be conditioned to a moisture content suitable for compaction, placed in uniform layers approximately 8 inches in loose thickness and compacted to 95% of the maximum dry density. When fill is placed on sloping ground, the slope should be benched beginning at the toe so that the fill is placed in horizontal lifts and the fill is keyed to the natural ground.

We recommend that cut areas be excavated to a depth of 2 feet below the bottom of the garage floor. The exposed on-site fill materials should then be uniformly graded and compacted to 95% of the maximum dry density. Any areas exhibiting signs of excessive softness should be over-excavated and replaced with clean, compacted fill. At this stage, we recommend that the entire site be filled in uniform layers approximately 8 inches in loose thickness and compacted to 95% of the maximum dry density. We recommend that the final 12 inches of fill

consist of compacted clean granular fill to provide subdrainage beneath the floor slab.

Perimeter drains or ditches should be constructed in the low lying fill areas to intercept potential inflowing perched water from surrounding areas. For the alternative B case, we do not expect perched water to daylight in excavations that do not extend roughly below Elevation 164.

EXCAVATION AND TEMPORARY SHORING

We recommend that the sides of the parking garage excavation be cut no steeper than a 1 to 1 inclination to comply with OSHA regulations for unsupported cuts. The soils exposed in all cuts should consist of loose to medium dense silty sand with some gravel. This soil occasionally sloughed or caved during our test pit excavations and we recommend that you plan for slightly flatter unsupported temporary excavation slopes at a 1½ to 1 (horizontal to vertical) inclination. Where there is insufficient horizontal distance for a cut slope to extend to the bottom of the excavation shoring will be necessary. A combination of shoring and a slope could be used or the entire height of the cut shored. Normally it is more economical to shore the entire height when the cost of excavating and backfilling slopes is considered.

Unsupported portions of the excavation cut at a slope may experience minor erosion and sloughing, and should be protected from erosion from surface runoff by diverting water away from the slope, and from erosion by rainfall by placing plastic sheets on the slope. The plastic should be adequately secured and sealed at the top of the slope to prevent any water from draining on the slope.

We anticipate that shoring will be necessary for the full height of the excavation along the north boundary of the site, and for a portion of the excavations along the west and northeast site boundaries.

For vertical cuts less than 10 to 12 feet in height, we expect that cantilevered shoring can be used. For cantilevered shoring with horizontal backfills we recommend a lateral earth pressure for design be equal to that exerted by an equivalent fluid weighing 40 pounds per cubic foot. In areas where

shoring is used for a portion of the excavation, with the remainder being sloped at a maximum inclination of approximately 45 degrees, a slope above the top of the shoring is assumed to act as a surcharge. This case is also applicable at the north boundary of the site where the existing roadway embankment will impose additional lateral pressures on the shoring. We recommend a uniform lateral pressure equal to 30 times the height of the slope above the top of the shoring system in pounds per square foot be used for design. The roadw surcharge is normally assumed to be equivalent to two feet of earth. When tiebacks or internal bracing is used the lateral soil pressure will be somewhat different than for the cantilevered case.

We recommend that vertical members or piles installed for cantilevered shoring be embedded a minimum of 5 feet below the bottom of the excavation. For evaluating the required depth of pile embedment below the bottom of the excavation we recommend a passive soil resistance equivalent to that of a fluid weighing 200 pcf. This assumed that the perched water at the site has been drained and the passive resistance will be developed above the water table. The effective width of each pile on which the passive resistance occurs may be taken as 2 times the pile diameter, assuming the piles will be spaced from center to center at least 2 times the pile diameter.

We expect that lagging will be necessary between cantilevered shoring piles to prevent sloughing.

For vertical cuts greater than 10 to 12 feet in height, we recommend that temporary shoring consist of tiebacks or internal bracing. If this type of shoring is required, we recommend that we review the excavation plan to pr appropriate shoring recommendations.

FOUNDATION SUPPORT

Conventional spread footings founded on dense undisturbed native soils or compacted fill will provide satisfactory support for the proposed structure. We recommend that all footings be founded at least 2 feet below the lowest adjacent grade to provide adequate confinement. All footings should be founded on dense undisturbed native soils or fill placed and compacted under engineering supervision. If the footing subgrade is soft, such as in existing fill materials, we recommend that the support soils be overexcavated to a depth equal to the width of the footing and to a width extending 1/2 the overexcavation depth on all

sides of the footing, and replaced with clean compacted fill. Isolated and continuous footings should have a minimum width of 3 feet and 18 inches, respectively. For footings designed and constructed as recommended, we recommend an allowable soil bearing pressure of 3000 psf. The recommended bearing pressure is intended to apply to the total of all dead and real live loads and may be increased by one third for the total of all loads including wind or seismic loads.

We estimate that total settlement of footing constructed as recommended should be on the order of 3/4 inch or less. Settlement should occur rapidly as the loads are applied. Post construction settlement should be negligible. Differential settlement between adjacent footings should be less than 1/2 inch.

PERMANENT SUBSURFACE WALLS

Lateral earth pressures that develop on subsurface walls are a function primarily of height and flexibility, the type of backfill and how it is placed and compacted, the geometry of the backfill and its drainage characteristics.

We recommend that subsurface walls be waterproofed up to roughly Elevation 168 and be provided with a backfill of free draining material at least 12 inches in thickness between the wall and the adjacent soil. If you should decide to incorporate the temporary shoring in the wall, other types of drainage can be provided and we should be consulted. Backfill should consist of clean sand and gravel having a permeability greater than that of the surrounding soils.

We recommend that a perimeter drain be placed on the outside of the wall at least 6 inches below the adjacent garage floor slab level. An alternate would be to install weep holes through the foundation or stem-wall. The weep holes should be approximately 2 inches in diameter and spaced about every 3 feet. Subsurface water collected in the wall backfill and seeping through the weep holes should enter subdrains located on the interior side of the wall. Recommendations for perimeter drains are discussed in a following section.

The wall backfill should be placed in lifts approximately 12 inches in loose thickness, conditioned to a suitable moisture content prior to compaction, and compacted to approximately 90% of the maximum dry density. We recommend that the backfill be compacted with light weight equipment such as a hand operated vibratory roller or plane compactor. Heavy equipment or

overcompaction should be avoided since this increases the lateral pressures on the wall. The top two feet of backfill in paved area should be compacted to 95 of the maximum dry density described above. In unpaved areas the top two feet of fill should consist of silty fill material firmly compacted to keep surface water from entering the drain system. Roof, parking areas or other surface drainage should not be allowed to enter the subdrain system.

For drainage and backfill as recommended above, we recommend that subsurface walls be designed to resist lateral soil pressure equal to that exerted by an equivalent fluid weighing 40 pounds per cubic foot. For the subsurface wall along the north boundary of the site, an additional surcharge load should be added to the design soil pressure to account for the steep roadway embankment behind the wall. We recommend an additional uniform lateral soil pressure equal to 30 times the height of the embankment above the top of the wall in pounds per square foot be used for design.

PERMANENT SUBSURFACE DRAINAGE

A permanent subsurface perimeter drainage system will be necessary to maintain inflowing perched water from surrounding areas below the floor level of the parking garage. The drains should consist of perforated pipe placed perforations down, located adjacent to the exterior or interior sides of subsurface walls around the perimeter of the site. The pipe may be placed on the foundation or adjacent to the wall, but should be at least 6 inches below the adjacent garage floor slab level and covered with a minimum of 6 inches of filter material. If drains are placed on the interior sides of subsurface walls, the weep holes providing drainage of the backfill behind the wall should be prevented from clogging by placing a handful of large rock on the exterior side of the weep hole and surrounding the rock with about 2 cubic feet of filter material.

The filter material used at weep holes and surrounding drain pipe should be graded to prevent infiltration by the surrounding fine-grained soils. Filter material should consist of well graded, free draining sand and gravel containing no more than 3% fines (materials passing the U.S. No. 200 sieve).

USE OF THIS REPORT AND WARRANTY

We have prepared this report for use by you or your design representatives for this project. The data and report should be provided to the contractors for their bidding or estimating but not as a warranty of the subsurface conditions.

The design details are not known at the time of the preparation of this report. As your design develops, we expect that additional consultation with us to modify or adapt our recommendations will be necessary.

Within the limitations of the schedule and budget for our work, we warrant that our work has been done in accordance with generally accepted practice in this area. No other warranty, express or implied, is made.

The scope of our work did not include services related to construction safety precautions and is not intended to recommend or direct construction means, methods, techniques, sequences or procedures, except as specifically described and then only for consideration in design, not for construction guidance.

There are possible variations in subsurface conditions between the explorations and also with time. A contingency for unanticipated conditions should be included in the budget and schedule. Inspection and testing by a qualified soils engineer should be included during construction to confirm the conditions indicated by the explorations, or to provide corrective recommendations adapted to the conditions revealed during the work.

The conclusions and recommendations in this report should be applied in their entirety. We are available to review the final design and specifications to see that our recommendations are properly interpreted. If there are any questions concerning this report or if we can provide additional services, please call.

Yours very truly,

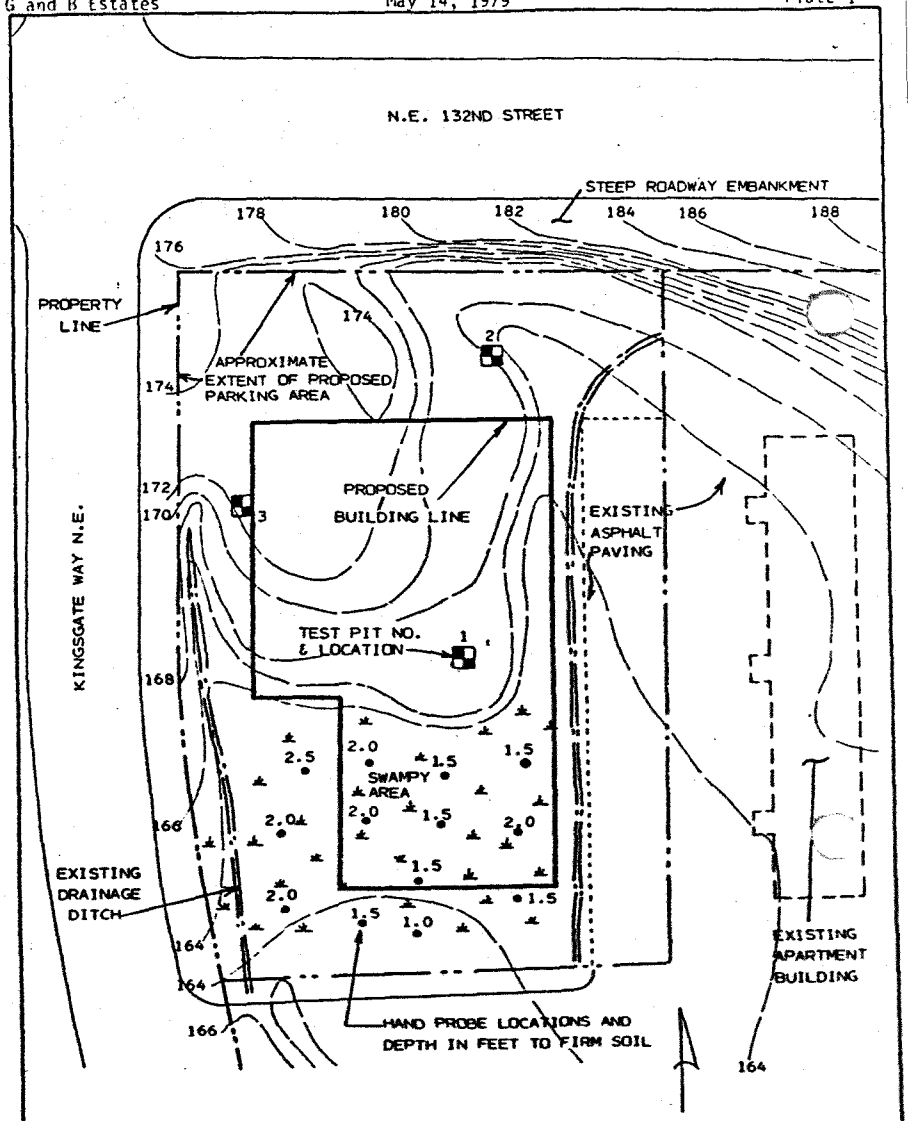
ROGER LOWE ASSOCIATES INC.

GARY W. HENDERSON STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER

Mark S. Peterson, Project Engineer

Gary W. Henderson, Associate

MSP/GWH/cg
3 copies submitted



APPENDIX

FIELD EXPLORATION AND LABORATORY TESTING
PROPOSED G & B ESTATES OFFICE BUILDING
KIRKLAND, WASHINGTON

Subsurface conditions were explored by excavating 3 test pits to depths ranging from 9.0 to 9.5 feet below ground surface and by performing a number of hand probes in the swampy area. The test pits were excavated with a tractor-mounted backhoe. The test pit and probe locations are shown on the Plot Plan.

The exploration locations were selected by our representative, who examined and classified the materials encountered, and selected intervals for obtaining representative soil samples. The soils are classified in accordance with the unified classification system which is presented on Plate A-1. The test pit logs, modified to reflect the results of laboratory examination, are presented on Plates A-2 through A-4.

Samples from the test pits were obtained either by pushing a heavy duty sampler into the soil or by taking bag samples. The three-inch outside diameter heavy duty sampler consists of a split barrel containing brass liner rings. The barrel can be dis-assembled for removal of a relatively undisturbed sample. Sample depths are indicated on the test pit logs.

All samples were sealed to prevent moisture loss, labeled and returned to our laboratory for examination and testing.

Natural moisture contents and dry densities were determined for selected samples and are noted on the test pit logs. Two strain-controlled direct shear tests were performed on submerged, consolidated samples and test results are presented on Plate A-5.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			LETTER SYMBOL	DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE		SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS, AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, MUCK, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS INDICATE BORDERLINE SOIL CLASSIFICATION

KEY TO SAMPLE DATA

25.2 | 91.7 | 35

- 35 — BLOWS REQUIRED TO DRIVE SAMPLER 12 INCHES WITH LB. HAMMER: MAXIMUM STROKE 30 INCHES. (P INDICATES PUSHED)
- 91.7 — DRY DENSITY, (PCF)
- 25.2 — MOISTURE CONTENT, (% OF DRY DENSITY)
- DEPTH OR ELEVATION (FEET)

SAMPLE RECOVERY

- UNDISTURBED
- DISTURBED
- NO RECOVERY

SAMPLER TYPE

- HD - 3 INCH SPLIT TUBE SAMPLER
- TW - 3 INCH THIN WALL SAMPLER
- SPT - 2 INCH SPLIT TUBE SAMPLER
- C - ROCK CORE
- B - BULK DISTURBED SAMPLE

GRAPHIC LOG

- SM — LETTER SYMBOL FOR SOIL TYPE
- DISTINCT CONTACT BETWEEN SOIL STRATA
- GRADUAL CHANGE BETWEEN SOIL STRATA
- BOTTOM OF BORING

ROGER LOWE ASSOCIATES INC. | UNIFIED SOIL CLASSIFICATION SYSTEM AND KEY TO SAMPLE DATA

TEST PIT ONE

DEPTH BELOW GROUND SURFACE (FEET)	UNIFIED SYMBOL	SOIL DESCRIPTION
0 - 2.0	SM	BROWN SILTY SAND WITH SOME GRAVEL (LOOSE, MOIST) (FILL)
2.0 - 4.5	ML	BROWN FINE SANDY SILT WITH SOME GRAVEL, TRACE OF CLAY AND OCCASIONAL RANDOM DEBRIS (LOOSE, WET) (FILL)
4.5 - 7.2	ML	BLUE GRAY SANDY SILT WITH SOME FINE GRAVEL AND A TRACE OF CLAY (MEDIUM STIFF, WET) (FILL)
7.2 - 7.5	PT	DISCONTINUOUS LENSE OF DARK BROWN PEAT (STIFF, WET) (FILL)
7.5 - 9.0	SM	LIGHT BROWN MEDIUM TO FINE SAND WITH SOME SILT AND FINE GRAVEL (MEDIUM DENSE, WET)

NOTE: 1) SEEPAGE OBSERVED AT 5.0 FEET

2) SLOUGHING OF TEST PIT SIDES OCCURED FROM 0 TO 4 FEET

3) BAG SAMPLES TAKEN AT 2.0 AND 8.0 FEET

4) DISTURBED TUBE SAMPLE OBTAINED AT 4.5 FEET ; DRY DENSITY = 113.0 PCF
WATER CONTENT = 16.4%

TEST PIT TERMINATED AT 9.0 FEET
ON 4/17/79

TEST PIT TWO

DEPTH BELOW GROUND SURFACE (FEET)	UNIFIED SYMBOL	SOIL DESCRIPTION
0 - 2.0	SM	BROWN SILTY SAND WITH SOME GRAVEL AND RANDOM WOOD DEBRIS (LOOSE, DAMP)(FILL)
2.0 - 5.5	ML	BLUE BLACK SANDY SILT WITH SOME GRAVEL, CLA WOOD FRAGMENTS, SAWDUST AND BOULDERS TO 3 FEET (LOOSE, MOIST)(FILL)
5.5 - 8.5	SM	RED BROWN MEDIUM TO FINE SAND WITH SOME GRAVEL AND SILT AND OCCASIONAL LAYERS OF SANDY SILT (LOOSE, MOIST)(FILL)
8.5 - 9.5	SP	GRAY SAND WITH SOME FINE GRAVEL (MEDIUM DENSE TO DENSE, MOIST)

NOTE: 1) NO SEEPAGE OBSERVED

2) BAG SAMPLE TAKEN AT 3.5 FEET

3) UNDISTURBED HEAVY DUTY SAMPLE OBTAINED AT 9.0 FEET : DRY DENSITY = 106.1 PCF
WATER CONTENT = 12.0%

TEST PIT THREE

DEPTH BELOW GROUND SURFACE (FEET)	UNIFIED SYMBOL	SOIL DESCRIPTION
0 - 5.5	SM	BROWN SILTY SAND WITH SOME GRAVEL, RANDOM WOOD DEBRIS AND A TRACE OF ORGANIC MATERIALS (LOOSE, MOIST)(FILL)
5.5 - 6.0	PT	DISCONTINUOUS LENSE OF DARK BROWN PEAT (STIFF, WET) (FILL)
6.0 - 8.0	SM	MIXED GRAY AND BROWN SILTY SAND WITH SOME GRAVEL (MEDIUM DENSE, WET) (FILL)
8.0 - 9.0	SP	GRAY SAND WITH SOME SILT AND FINE GRAVEL (DENSE, MOIST)

NOTE: 1) SEEPAGE OBSERVED AT 8.0 FEET

2) BAG SAMPLES OBTAINED AT 3.5 AND 6.5 FEET

TEST PIT TERMINATED AT 9.0 FEET ON 4/17/79

ROGER LOWE ASSOCIATES INC. | LOG OF TEST PITS

ROGER LOWE ASSOCIATES INC. | DIRECT SHEAR TEST RESULTS

EXPLORATION NUMBER	SAMPLE DEPTH (FT)	MOISTURE CONTENT %	DRY DENSITY (LBS/FT3)	NORMAL PRESSURE (LBS/FT2)	SHEAR RATE* (IN./MIN.)	INDICATED STRENGTH (LBS/FT2) YIELD	INDICATED STRENGTH (LBS/FT2) PEAK
TP-2	9.0	12.0	106.1	831		718	775
TP-2	9.0	12.0	106.1	1524		1005	1081

KEY: *ALL TESTS ARE RUN ON SATURATED SAMPLES AT A STRAIN RATE OF 0.05 INCHES PER MINUTE UNLESS NOTED OTHERWISE.