T2S R4E 1316

No GW to 15.5' Sec 16C 8001-??

ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

April 29, 1980

Michael Sanders
Real Estate and Company, Inc.
1612 East 3300 South
Salt Lake City, UT 84106

ATTENTION: Devon Stone

Gentlemen:

A soils investigation has been completed at the proposed site of the Wildwood Hotel Apartments in Park City, Utah. This investigation was performed to define the characteristics of the subsurface materials throughout the soil profile, so that satisfactory substructures could be designed for the proposed facility. The work has been completed in a manner to accomplish the basic objective, and the details of the investigation, along with pertinent recommendations for foundation design, are outlined in the following sections of this report. Specifically, this report includes: (1) existing site conditions, (2) subsurface soil and water conditions, (3) foundation considerations, (4) site preparation and compacted fill requirements, and the lateral earth pressures, and (5) the results of field and laboratory tests.

1. Existing Site Conditions

The proposed site is located on the southwest side of Woodside Avenue and on the northwest side of 14th Street in Park City, Utah. At the time the drilling was performed, several feet of snow covered the site, and the vegetative cover throughout the area could not be completely defined.

The site slopes sharply downward towa[illegible]he north and east, and it was necessary to doze drilling pads throughout [illegible]ne site in order to perform the subsurface investigation. The general layout of the proposed facility is presented in Figure No. 1. The topography slopes downward toward the north and east in the vicinity of the swimming pool area. Along the northeast edge of the swimming pool, a near vertical drop of approximately 10 feet occurs in the profile through the building area. In the area where the main structure is located, the area continues to slope toward the north and east, with a total elevation difference across the building of 5 to 6 feet.

Some willows and trees exist throughout the slope at the present time. Two residential type facilities are located at the top of the slope. However, no major structures are located in the immediate vicinity of the proposed structure from which foundation performance can be inferred.

1435 WEST 820 NORTH, P.O. BOX 711, PROVO, UTAH 84601 TELEPHONE 374-5771

No water conveyance facilities or other water bodies are located in the immediate vicinity of the site which would affect the ground-water level in this area. A sump appears to exist at the top of the area where the new facility will be located, and it is possible that an old septic tank existed in this area.

Other than the information provided above, no environmental conditions appear to exist at this site which would adversely affect foundation performance.

2. Subsurface Soil and Water Conditions

The characteristics of the subsurface materials throughout the site were defined by drilling 5 test holes at the approximate locations as shown in Figure No. 1. The detailed elevations of the test holes are not presented in this report, since no topographic information was available when the subsurface investigation was performed. Test Hole No. 1 is approximately 15 feet higher than Test Hole No. 3 and No. 4, and Test Hole No. 2 and No. 5 are approximately 5 feet higher than Test Hole No. 3 and No. 4.

The logs for the 5 test holes are presented in Figure No. 2 through No. 4, and it will be observed that considerable variation occurs in the subsurface materials throughout the site. Hole No. 1, which was located at the top of the slope, consisted of a surface layer approximately 3 feet deep of brown clay, underlain by a brown sandy silt with some gravel which extended to the depth at which the hole was terminated. The boring logs for the four test holes drilled in the main building area generally had similar profiles, which consisted of a surface layer of cohesive material extending from a depth of between 4 and 10 feet below the existing ground surface, underlain by a clayey gravel which extended to the depth at which the borings were terminated. At some locations, the surface clay was relatively hard, while at other locations it appeared to be in a relatively soft condition.

The surface cohesive zone has relatively low density characteristics and is not capable of supporting high load intensities. The clayey gravel underlying the surface cohesive material appears to be in a relatively dense state and is capable of supporting significant loads.

During the subsurface investigation, sampling was performed at approximately 3-foot intervals throughout the depth investigated. Both disturbed and undisturbed samples were obtained during the field operations.

Undisturbed samples were obtained by pushing a 2.5-inch thin-walled shelby tube into the subsurface material under the action of the hydraulic pressure on the drill rig.

Disturbed samples were obtained by driving a 2-inch split sampling tube into the subsurface material using a 140-pound weight dropped from a distance of 30 inches. Where possible, the sampling spoon was driven through a distance of 18 inches. However, at some locations, it was only

possible to drive the sampling spoon through six inches because of the high blow count which was obtained in driving the spoon. The number of blows to drive the sampling spoon through each six inches of penetration is presented on the boring logs.

The sum of the blows to drive the sampling spoon through 12 inches is defined as the standard penetration value. The standard penetration value provides an indication of the relative density of sandy type materials. However, it must be used with some caution in interpreting the in-place density of granular type materials, particularly when the particle size of the granular material is larger than the inside diameter of the sampling spoon.

Significant samples were obtained during the sampling operations in the granular material at this site, even when the spoon could only be driven 6 inches. The results of the penetration tests indicate that the clayey gravel is in a medium dense state and is capable of supporting moderate load intensities.

Each sample obtained in the field was classified in the laboratory according to the Unified Soil Classification System. The symbols designating the soil type according to this system are presented on the boring logs. A description of the Unified Soil Classification System is presented in Figure No. 5, and the meaning of the various symbols shown on the boring logs can be obtained from this figure.

No groundwater was encountered in any of the test holes drilled at this site, and it is not anticipated that the zone of significant stress in this area will be saturated throughout the life of the structure, unless a significant change occurs in the environmental conditions throughout this area.

3. Foundation Considerations

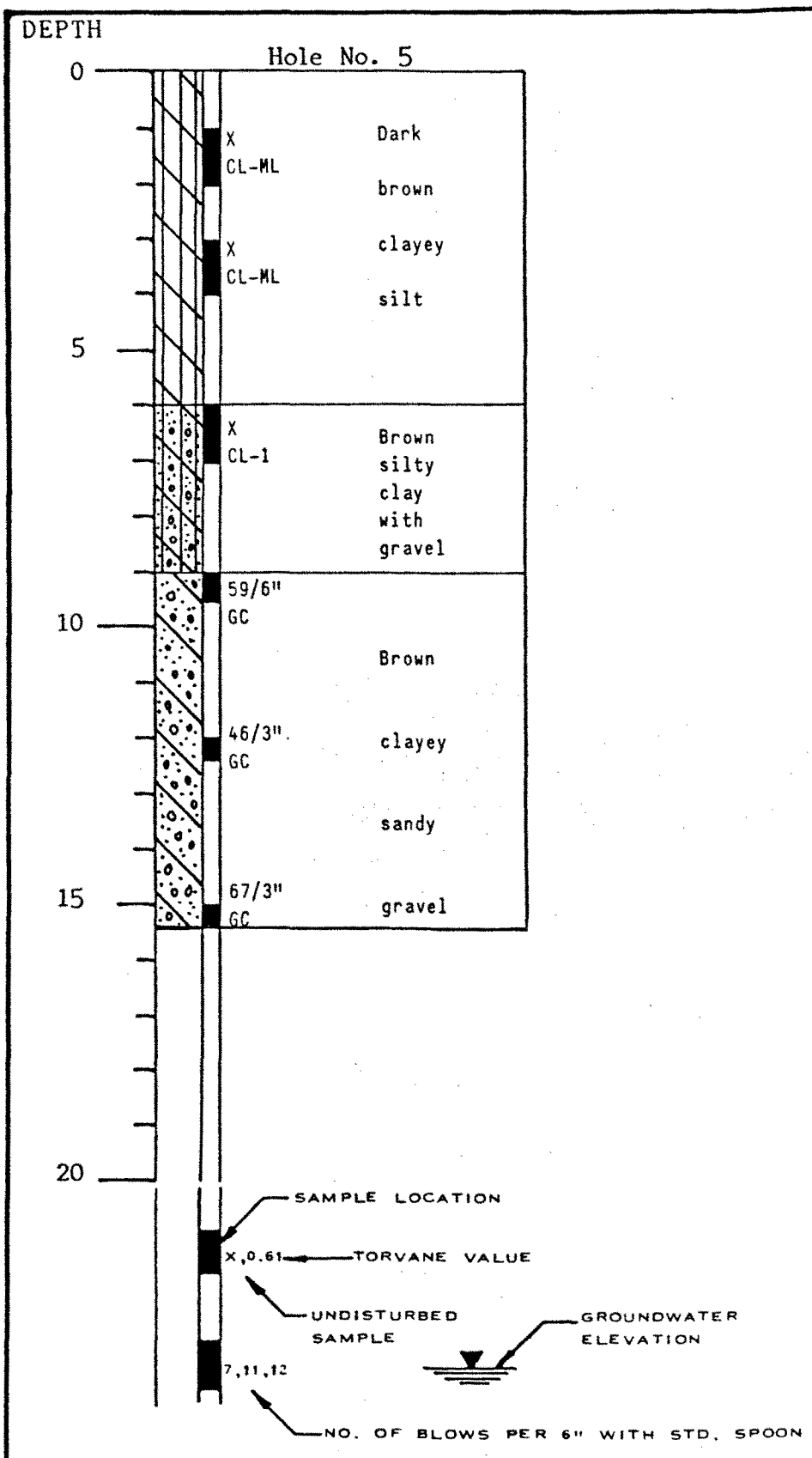
We understand that the swimming pool which will be located at the top of the hill will be approximately 32 feet w[illegible] and 65 feet long and that the main facility will be approximately 90 feet [illegible]de and 170 feet long. The general location of the swimming pool and the main structure relative to the existing streets is presented in Figure No. 1. The magnitude of the structural loads for the main facility is unknown as of the preparation of this report. It is assumed, however, that column loads for this facility will not likely exceed 50 kips and that wall loads will not likely exceed 4 to 5 kips per lineal foot.

As indicated earlier in this report, the topography where the main structure will be located slopes toward the north and east with several feet of elevation difference across the proposed structure. It will also be noted from the boring logs that the depth of the cohesive materials on the upper side of the area where the main facility will be located is approximately 9 feet deep, while on the lower side it is approximately 4 feet deep.

TABLE NO. 1 SUMMARY OF TEST DATA

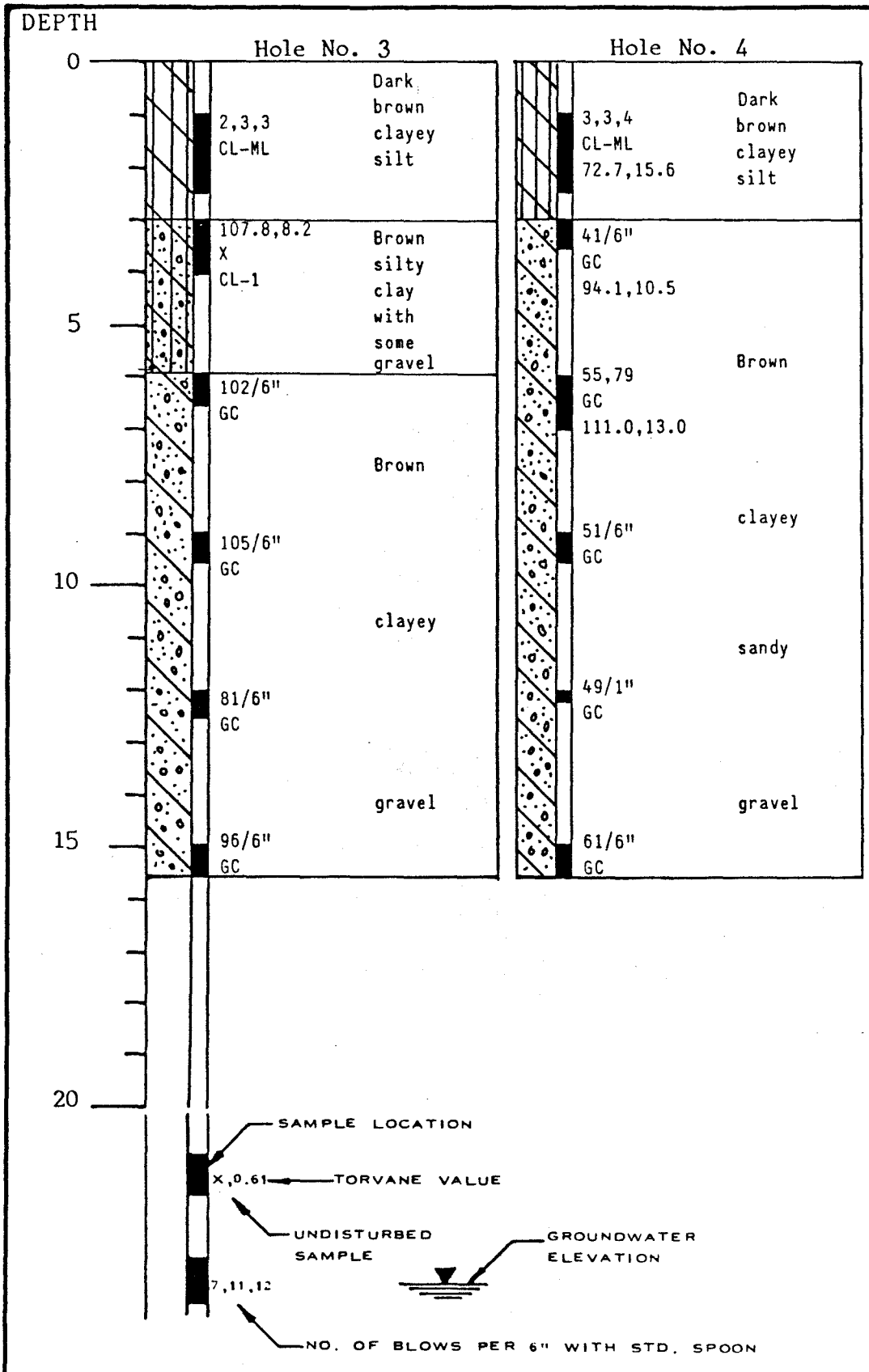
PROJECT WILDWOOD HOTEL APARTMENTS (PARK CITY CONDOMINIUMS) FEATURE FOUNDATIONS LOCATION PARK CITY, UTAH

HOLE NO.	DEPTH BELOW GROUND SURFACE	STANDARD PENETRATION BLOWS PER FOOT	IN-PLACE			UNCONFINED COMPRESSIVE STRENGTH LB/FT^2	FRICTION ANGLE ϕ	CONSISTENCY LIMITS			MECHANICAL ANALYSIS			UNIFIED SOIL CLASSIFICATION SYSTEM
			UNIT WEIGHT LB/FT^3	MOISTURE PERCENT	VOID RATIO			L.L. %	P.L. %	P.I. %	% GRAVEL	% SAND	% SILT & CLAY	
1	2-3.5	Shelby	105.2	16.6										
2	1-2.5	Shelby	108.1	14.3										
	3-4.5	Shelby	77.7	14.0				34.4	22.4	12.5				CL-1
	6-7.5	Shelby	95.1	11.0				28.4	20.3	8.1				CL-1
	9-10.5	Shelby	90.9	12.8				29.9	16.8	13.1				CL-1
	12-13.5	68						26.1	15.7	10.4				CL-1
	15-16.5	46/6						23.9	16.0	7.9				CL-1
3	3-4.5	Shelby	107.8	8.2							61.1	22.8	16.1	GC
4	3-4.5	41/6									62.7	27.0	10.3	GC
	6-7.5	134												
5	1-2	Shelby	72.7	15.6										
	3-4.5	Shelby	94.1	10.5										
	6-7.5	Shelby	111.0	13.0										



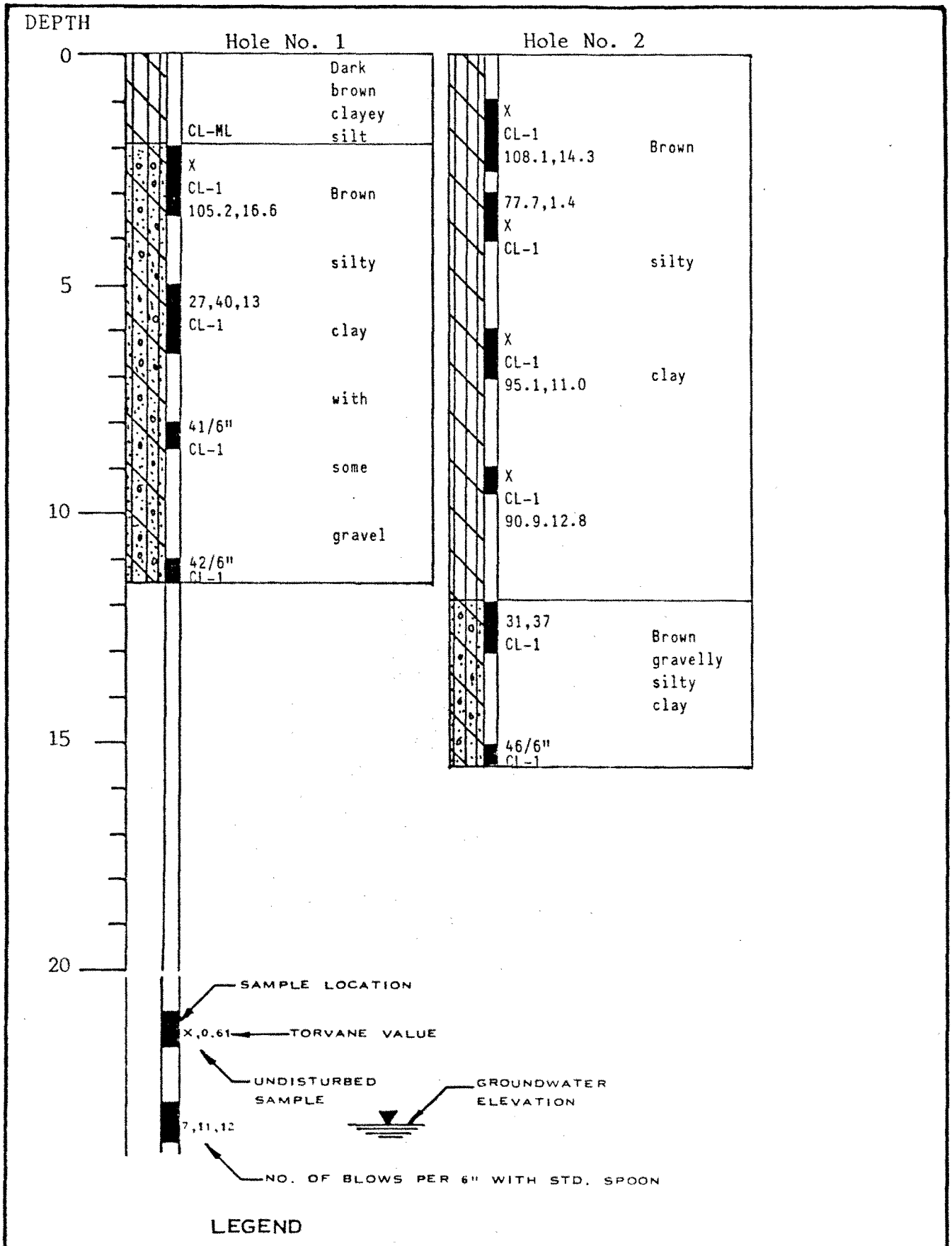
LEGEND

LOG OF BORINGS FOR: WILDWOOD HOTEL APTS. (PARK CITY CONDOMINIUMS)	ROLLINS, BROWN AND GUNNELL, INC. CONSULTING ENGINEERS	FIGURE NO. 4



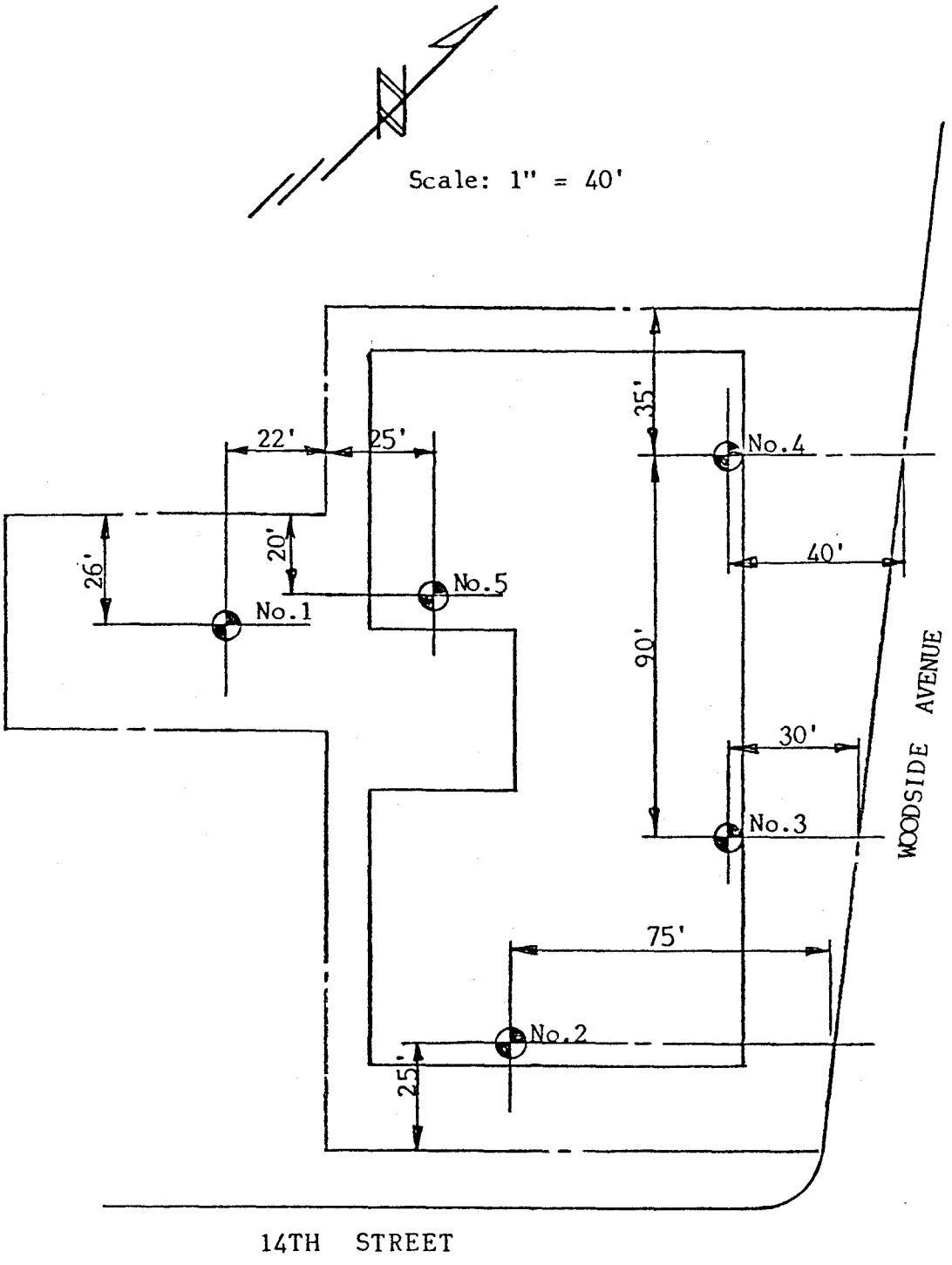
LEGEND

Log of Borings for: WILDWOOD HOTEL APTS. (PARK CITY CONDOMINIUMS)	ROLLINS, BROWN AND GUNNELL, INC. Consulting Engineers	Figure No. 3



LEGEND

Log of Borings for: WILDWOOD HOTEL APTS. (PARK CITY CONDOMINIUMS)	ROLLINS, BROWN AND GUNNELL, INC. Consulting Engineers	Figure No. 2



ROLLINS, BROWN & GUNNELL, INC. CONSULTING ENGINEERS	Location of borings WILDWOOD HOTEL APTS. PARK CITY CONDOMINIUMS	Figure No. 1

BRUNING 40-105 37146