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PROFESSIONAL ENGINEERS

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84601

MAY 21, 1975

HWY 248E

EDWARDS AND DANIELS
AND ASSOCIATES, ARCHITECTS
525 EAST 300 SOUTH
SALT LAKE CITY, UTAH 84102

GENTLEMEN:

THIS REPORT OUTLINES THE RESULTS OF A SOIL INVESTIGATION PERFORMED AT THE PROPOSED SITE OF THE PARK CITY HIGH SCHOOL NEAR PARK CITY, UTAH. THE INVESTIGATION WAS PERFORMED FOR THE PURPOSE OF DEFINING THE SUBSURFACE SOIL CONDITIONS SO THAT ADEQUATE SUBSTRUCTURES AND OTHER FACILITIES COULD BE SATISFACTORILY DESIGNED FOR THE PROPOSED FACILITY. THE DETAILS OF THE INVESTIGATION, ALONG WITH RECOMMENDED FOUNDATION TYPES AND BEARING CAPACITIES, ARE OUTLINED BELOW.

1. General Site Conditions

THE PROPOSED SITE IS LOCATED NORTHEAST OF THE TOWN OF PARK CITY AND ON THE NORTH SIDE OF STATE HIGHWAY 248. THE PROPOSED LOCATION IS SITUATED IN A VALLEY WHICH IS GENERALLY SURROUNDED BY MOUNTAINOUS TERRAIN. THE SUBSURFACE MATERIALS THROUGHOUT THE SITE ARE ALLUVIAL DEPOSITS LAID DOWN BY STREAMFLOW FROM THE SURROUNDING HIGHER TERRAIN. IT IS LIKELY THAT AT SOMETIME DURING THE PAST, THE AREA HAS BEEN INUNDATED BY WATER IN THE FORM OF A SHALLOW LAKE.

THE TOPOGRAPHY AT THE SITE SLOPES TO THE NORTHEAST WITH A TOTAL ELEVATION DIFFERENCE ACROSS THE PROPOSED STRUCTURE OF APPROXIMATELY 12 FEET. THE AREA WHERE THE STRUCTURE IS PROPOSED IS MEADOWLAND AND WAS FORMERLY USED FOR GRAZING. NO MAJOR STRUCTURES EXIST IN THE IMMEDIATE AREA OF THE PROPOSED FACILITY SO THAT FOUNDATION PERFORMANCE ON THE EXISTING SUBSURFACE MATERIALS IS UNKNOWN.

Insofar as we can ascertain, no manmade fill exists throughout the area and all subsurface materials are natural deposits. A drainage channel is located on the northeasterly part of the area and groundwater is evident in the easterly portion of the channel. It appears as if the drainage channel may be effective in lowering the groundwater table at the proposed site. It should be noted that an elevation difference of approximately 8 to 10 feet exists between the proposed building site and the area where drainage water is within a few feet of the ground surface.

2. Subsurface Soil and Water Conditions

The characteristics of the subsurface material at the proposed site were investigated by drilling eight test borings to depths of approximately 16 feet at locations as shown in Figure No. 2. The boring logs, plotted according to the relative elevation, are shown in Figures No. 1 and 2. The soil profile at the site is generally constant throughout the area with a surface zone of brown silt varying in depth from 3 to 4 feet below ground surface, underlain by a granular zone which extended to the depth at which the borings were terminated.

At the time of the drilling, the surface zone was very soft and was not capable of supporting high load intensities. Some granular material was interlayered with the surface silty zone at some locations. The granular zone underlying the brown silt is in a medium-dense state. It should be noted that the granular zone is not river-type gravels, but consists of angular rock fragments intermixed with sand- and silt-size particles. Appreciable quantities of silt is intermixed with the sand- and gravel-size particles, which generally results in a well-graded material. The subsurface granular zone is capable of supporting moderately high load intensities and should serve as the bearing strata for foundations for the proposed structure.

Inasmuch as the site has existed as pastureland, a significant root zone exists throughout the surface silty material and it is anticipated that stripping of between 6 to 12 inches will be required to eliminate the surface vegetative matter.

During the subsurface exploration, sampling was performed at three-foot intervals throughout the depth investigated and standard penetration values, which provide an indication of the density of the granular material, were recorded at each sampling location. Each sample obtained

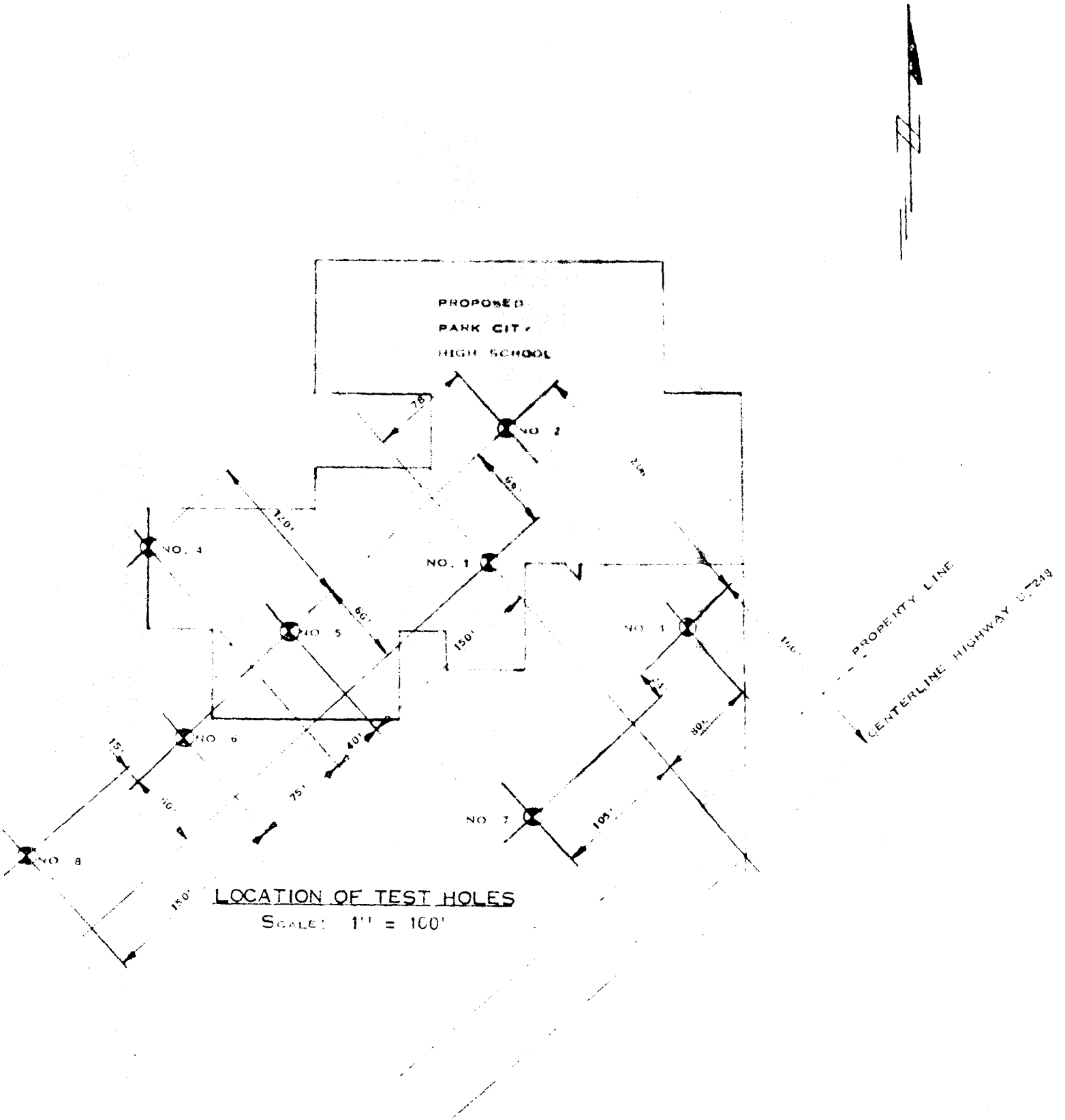
TABLE 1 SUMMARY OF TEST DATA

PROJECT Park City High School FEATURE Foundations LOCATION Park City, Utah

HOLE NO.	DEPTH BELOW GROUND SURFACE	STANDARD PENETRA. BLOWS PER FT.	IN-PLACE			UNCONFINED COMPRESSIVE STRENGTH LB/FT³	FRICTION ANGLE Φ	CONSISTENCY LIMITS			MECHANICAL ANALYSIS			SOIL CLASSIFICATION UNIFIED SYSTEM
			UNIT WEIGHT LB./FT³	MOISTURE PERCENT	VOID RATIO			L.L. %	P.L. %	P.I. %	% GRAVEL	% SAND	% SILT & CLAY	
4	0-1.5'							35.1	29.5	5.6				
	3-4.5'										42.4	30.2	27.4	
	6-7.5'										59.8	29.5	10.7	
	9-10.5'										60.3	33.2	6.5	
	12-12.5'										72.1	19.3	8.6	
	15-16.5'										65.1	26.0	8.9	
7	0-1.5'							28.5	21.8	6.7				
	3-4.5'										28.0	29.4	42.6	
	6-7.5'										73.7	19.0	7.3	
	9-10.5'										54.6	34.4	11.0	
	12-13.5'										60.3	28.7	11.(	
	15-16.5'										57.6	31.9	10.	

ROLLINS, BROWN AND

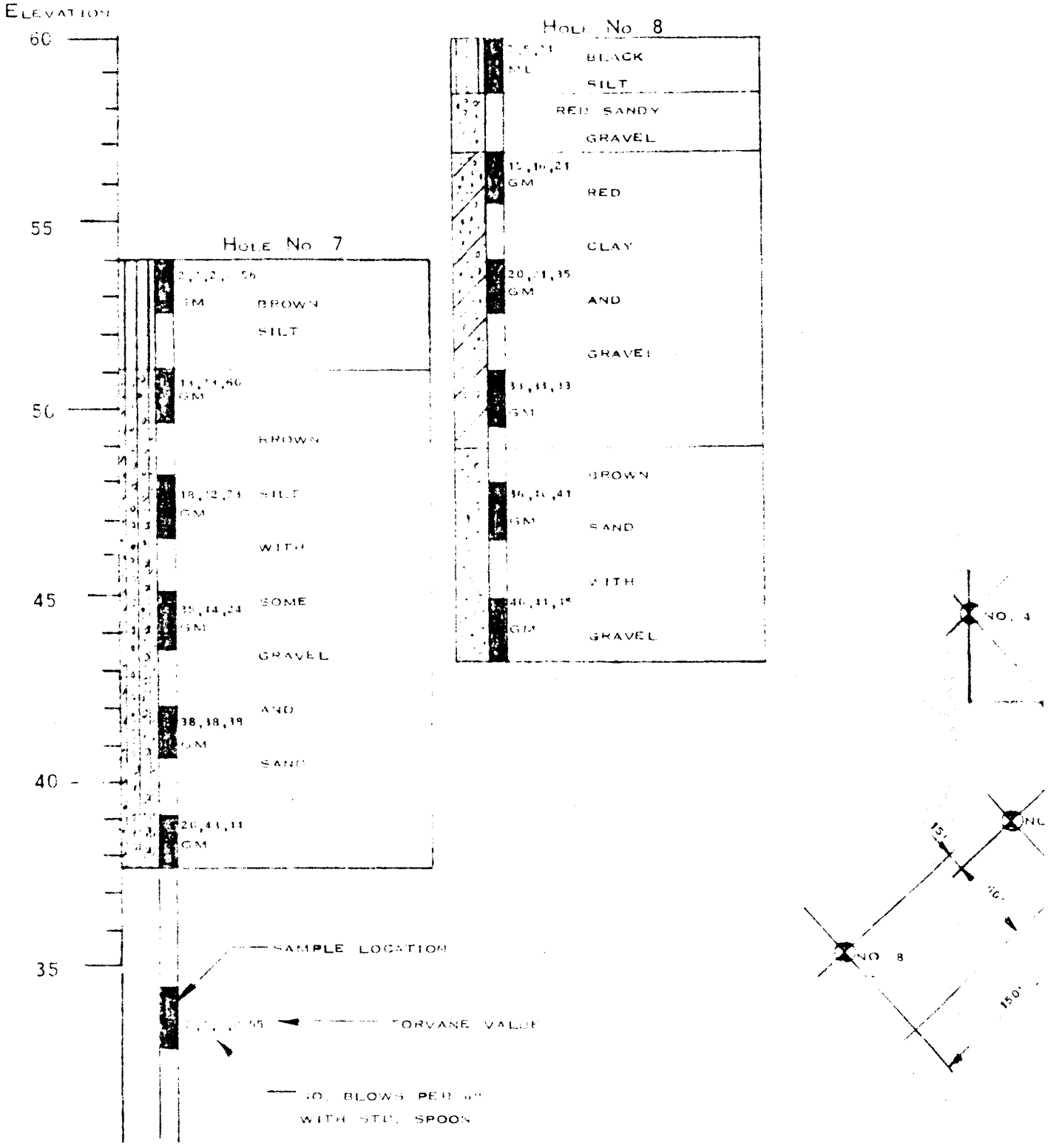
PROFESSIONAL ENGINE



LOCATION OF TEST HOLES

SCALE: 1" = 100'

Inc.	EDWARDS AND DANIELS AND ASSOCIATES ARCHITECTS SALT LAKE CITY, UTAH	LOG AND LOCATION OF TEST HOLES PARK CITY HIGH SCHOOL PARK CITY, UTAH



LEGEND

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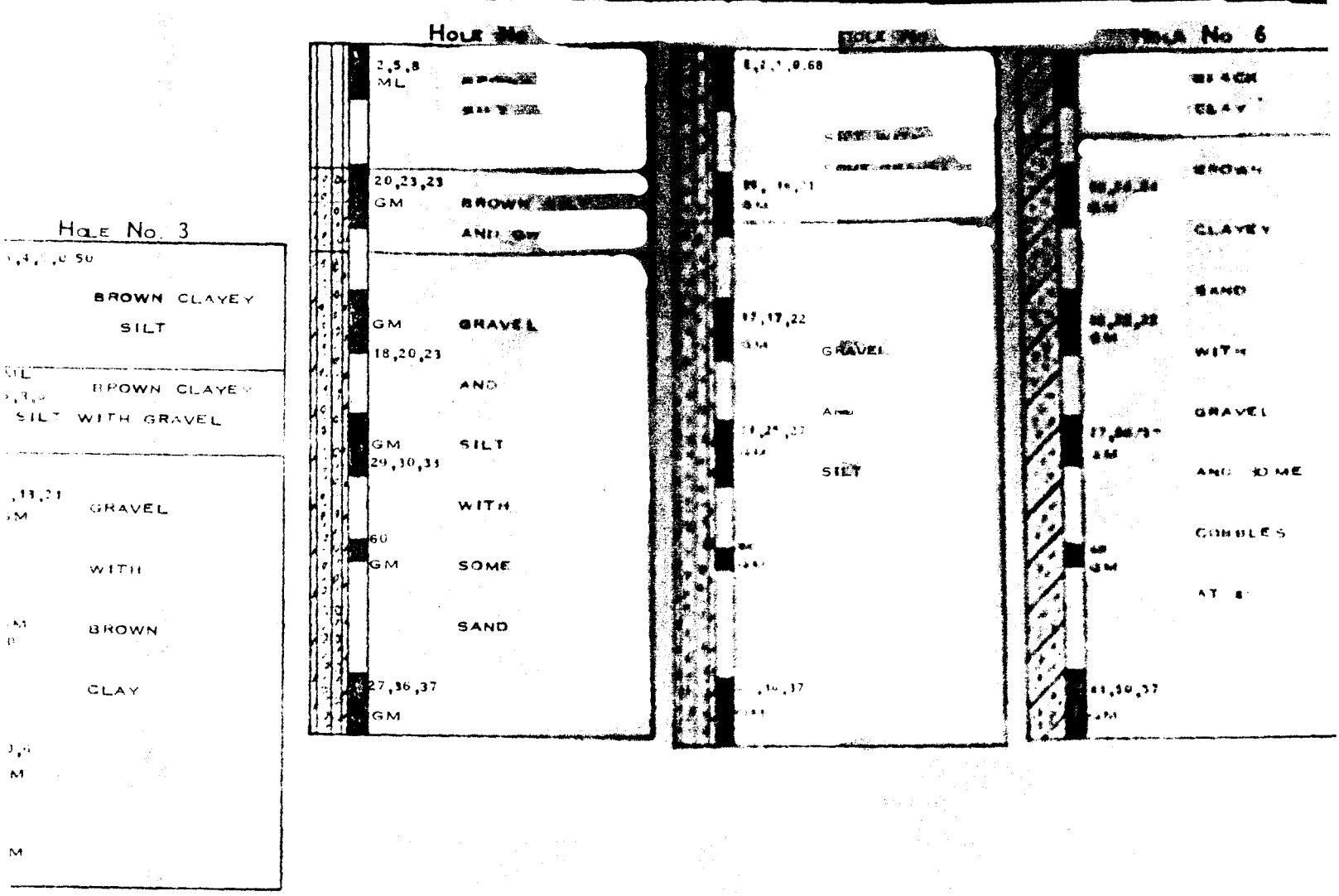
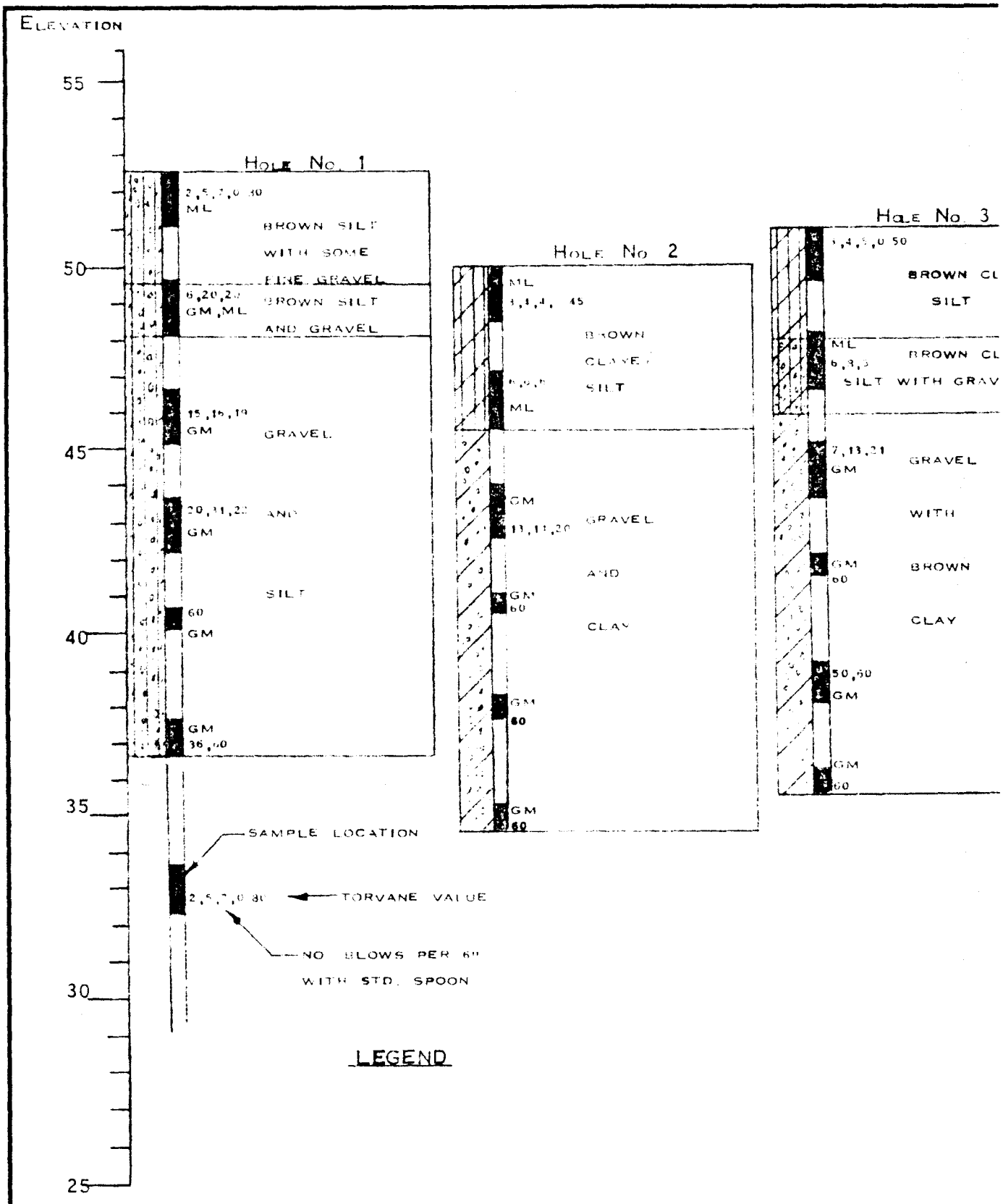


EDWARDS AND DANIELS AND ASSOCIATES
ARCHITECTS

SALT LAKE CITY, UTAH

LOGS OF TEST HOLES FOR PARK CITY HIGH SCHOOL, PARK CITY, UTAH

FIGURE NO



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DRAWN	DATE	**CONSULTING ENGINEERS**
APPROVED	LICENSE NO.	

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IN THE FIELD WAS SUBSEQUENTLY CLASSIFIED IN THE LABORATORY ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM A DESCRIPTION OF THE UNIFIED SOIL CLASSIFICATION SYSTEM IS PRESENTED IN FIGURE NO. 3. THE RESULTS OF THE STANDARD PENETRATION TESTS, ALONG WITH THE CLASSIFICATION DESIGNATION, ARE PRESENTED ON THE BORING LOGS.

DURING THE SUBSURFACE EXPLORATION, DRILLING WAS PERFORMED USING A ROTARY DRILLING RIG WITH WATER AS THE CIRCULATING FLUID. DRILLING WATER GENERALLY SEEPED OUT OF THE BORING OVER A PERIOD OF TIME AND NO STATIC GROUNDWATER LEVEL WAS OBSERVED IN ANY OF THE TEST BORINGS WITHIN THE DEPTH INVESTIGATED. IT IS POSSIBLE, HOWEVER, THAT GROUNDWATER WILL RISE TO WITHIN THE ZONE OF SIGNIFICANT STRESS SOMETIME DURING THE SUMMER MONTHS WHEN IRRIGATION IN THE AREA BECOMES HEAVY. IT IS NOT ANTICIPATED, HOWEVER, THAT THE NATURAL GROUNDWATER WILL INFLUENCE THE BEARING CAPACITY OF THE SUBSURFACE MATERIAL AT THE AT THIS SITE.

3. Foundation Considerations

IT IS OUR UNDERSTANDING THAT THE PROPOSED STRUCTURE HAS AN OVERALL LENGTH OF 475 FEET AND AN OVERALL WIDTH OF 350 FEET. WE UNDERSTAND THAT THE FLOOR LEVELS FOR THE VARIOUS COMPONENTS FOR THE PROPOSED STRUCTURE WILL BE AS FOLLOWS:

(1) ACADEMIC PORTION OF THE STRUCTURE - ELEVATION 6757

(2) AUDITORIUM AND LUNCHROOM A - ELEVATION 6754

(3) GYMNASIUM AREA - ELEVATION 6750

IT IS PRESUMED THAT THE DIFFERENCE IN THE FLOOR ELEVATION OF THE VARIOUS COMPONENTS HAVE BEEN ESTABLISHED TO ACCOMODATE THE EXISTING TOPOGRAPHY AT THE SITE.

THE EXACT MAGNITUDE OF THE COLUMN AND WALL LOADS IS NOT KNOWN AS OF THE PREPARATION OF THIS REPORT, HOWEVER, IT IS ASSUMED THAT COLUMN LOADS WILL NOT LIKELY EXCEED 200 KIPS AND THAT WALL LOADS WILL NOT LIKELY EXCEED 6 TO 7 KIPS PER LINEAL FOOT. THE RESULTS OF FIELD AND LABORATORY TESTS INDICATE THAT NO FOUNDATION SHOULD EXIST WITHIN THE SURFACE BROWN SILTY CLAY TO CLAYEY SILT ZONE, SINCE THIS MATERIAL IS RELATIVELY COMPRESSIBLE AND A BETTER BEARING STRATA EXISTS BELOW THIS MATERIAL.