ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

February 3, 1981

Edwards and Daniels, Architects
525 East 300 South
Salt Lake City, UT 84102

Gentlemen:

A soil and foundation investigation has been completed at the proposed site of the American Fork Training School Laundry in American Fork, Utah. The investigation was performed to define the characteristics of the subsurface material throughout the soil profile so that satisfactory substructures could be designed to support the proposed facility. The work has been completed in accordance with a proposal submitted to your organization for the work in December of 1980. The details of the investigation, along with pertinent recommendations for foundation design, are outlined in the following sections of this report. The information contained in the report is discussed under the following headings: (1) Existing Site Conditions, (2) Subsurface Soil and Water Conditions, (3) Foundation Considerations, (4) Site Preparation and Compacted Fill Requirements, and (5) Results of Field and Laboratory Tests.

1. Existing Site Conditions

The proposed laundry facility is located a few hundred feet southwest from the Women's Home Living building at the American Fork Training School in American Fork, Utah. The subsurface materials throughout this general area are alluvial deposits laid down when the American Fork River dumped its sediments into ancient Lake Bonneville. The subsurface materials throughout this general area frequently consist of granular materials in the lower portion of the soil profile with cohesive material of varying depths overlying the granular soils. Previous investigations have indicated that the surface cohesive soils frequently have collapsible type structures and are not capable of supporting significant load intensities.

The topography at the proposed site is generally flat, and the area has been used as pastureland during past periods of time. The southwest corner of the proposed facility is located relatively close to the bluffs overlooking the American Fork River. Insofar as we can determine, no man-made fill has been placed throughout this site and all of the subsurface materials are natural deposits.

No irrigation canals or other water bodies are located in the immediate vicinity of the proposed site which would affect the groundwater level in this area. Some trees are located on the northwesterly portion of the area which will require removal prior to the construction of the proposed facility.

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

2. Subsurface Soil and Water Conditions

As indicated earlier in this report, the surface silt layer throughout the soil profile frequently exhibits collapsible type characteristics. Since satisfactory undisturbed samples of collapsible type materials can best be obtained in test pits, the characteristics of the subsurface material throughout the proposed site was defined by excavation three test pits to depths of approximately 13 feet at locations as shown in Figure No. 1. The logs for the three test pits are presented in Figures Nos. 2 and 3.

It will be noted that the surface cohesive material extended to a depth of about 4 feet in all four test holes, and that the remainder of the material throughout the depth investigated consisted of a gray to brown sandy gravel.

During the subsurface investigation, sampling was performed at 3-foot intervals throughout the depth investigated. In-place density tests and the natural moisture content were determined at each sampling location, and the results of these tests are presented on the test pit logs. It will be noted that the in-place density of the silty material range from about 88 to 90 pounds per cubic foot, while the in-place density of the gravelly type soils vary from about 124 to 126 pounds per cubic foot.

Each sample obtained in the field was classified in the laboratory according to the Unified Soil Classification System, and the symbol designating the soil type according

to this system is shown on the test pit logs. A description of the Unified Soil Classification System is presented in Figure No. 4, and the meaning of the various symbols shown on the test pit logs can be obtained from this figure. It will be noted from the test pit logs that the material in the upper 4 feet of the soil profile generally consists of CL-ML and ML type soils, while the remainder of the profile consists of GP type soils.

No groundwater was encountered in any of the test pits excavated at this site and it is not anticipated that the zone of significant stress for the proposed facility will be saturated throughout the life of the structure unless a considerable change occurs in the environmental conditions in this area.

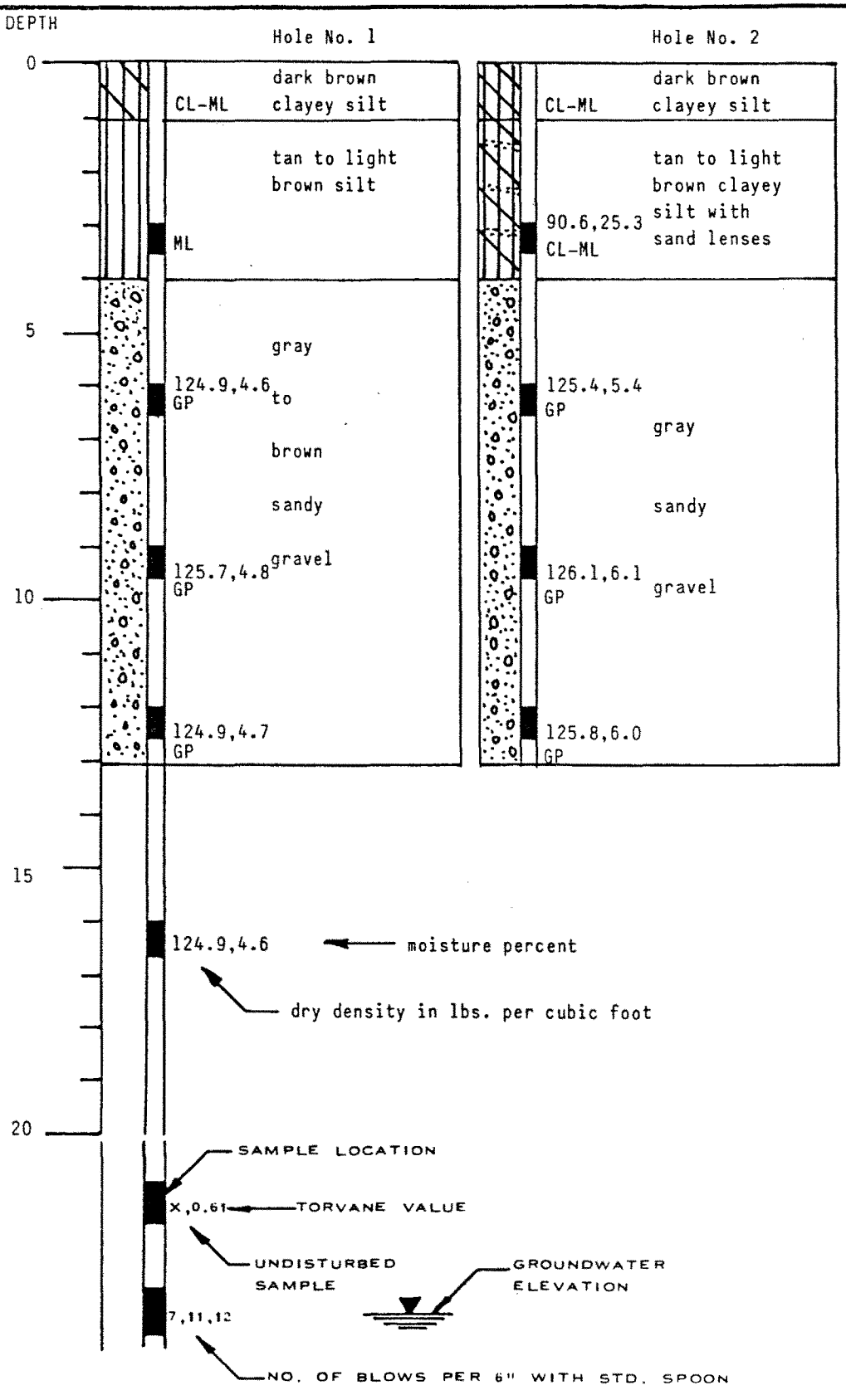
3. Foundation Considerations

It is our understanding that the proposed facility will be approximately 100 feet wide and 145 feet long with walls 20 feet high. The structural loads for the proposed facility are not known as of the preparation of this report, however, it is assumed that column loads will not likely exceed 50 kips and that wall loads will not likely exceed 3 to 4 kips per lineal foot.

If the foundations for the proposed facility are located at a depth below ground surface just sufficient to provide frost protection, which is about 3 feet in this area, it is apparent that approximately 1 foot of the cohesive material will exist beneath the foundations.

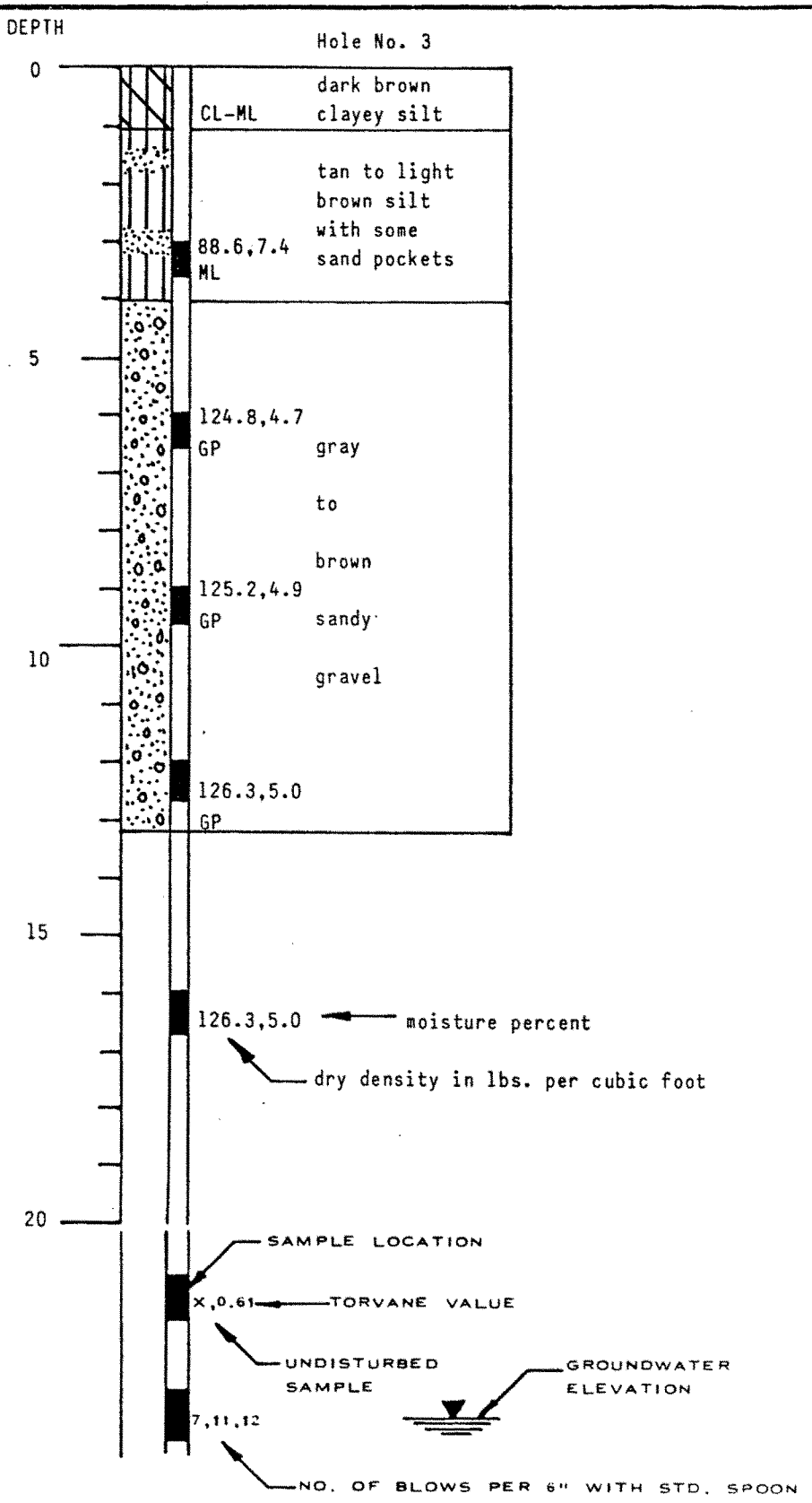
The results of consolidation tests performed on the cohesive material in the upper portion of the soil profile did not indicate any significant collapse of the structure of this material on wetting. Since the granular layer is only located at a depth of about 1 foot below the required foundation elevation, we recommend that all foundations extend to the granular layer. If this action is taken, the risk of collapsible type soils existing beneath any portion of the structure is essentially eliminated, and foundation performance for the proposed facility will be more secure.

Assuming that the foundations for the proposed facility will be located on the granular material, a bearing capacity chart as shown in Figure No. 5 has been prepared for this site. In preparing the bearing capacity chart shown in Figure No. 5, consideration has been given to both shear failure and differential settlement. The lines sloping



LEGEND

Log of Borings for: American Fork Training School Laundry Facility	ROLLINS, BROWN AND GUNNELL, INC. Consulting Engineers	Figure No. 2



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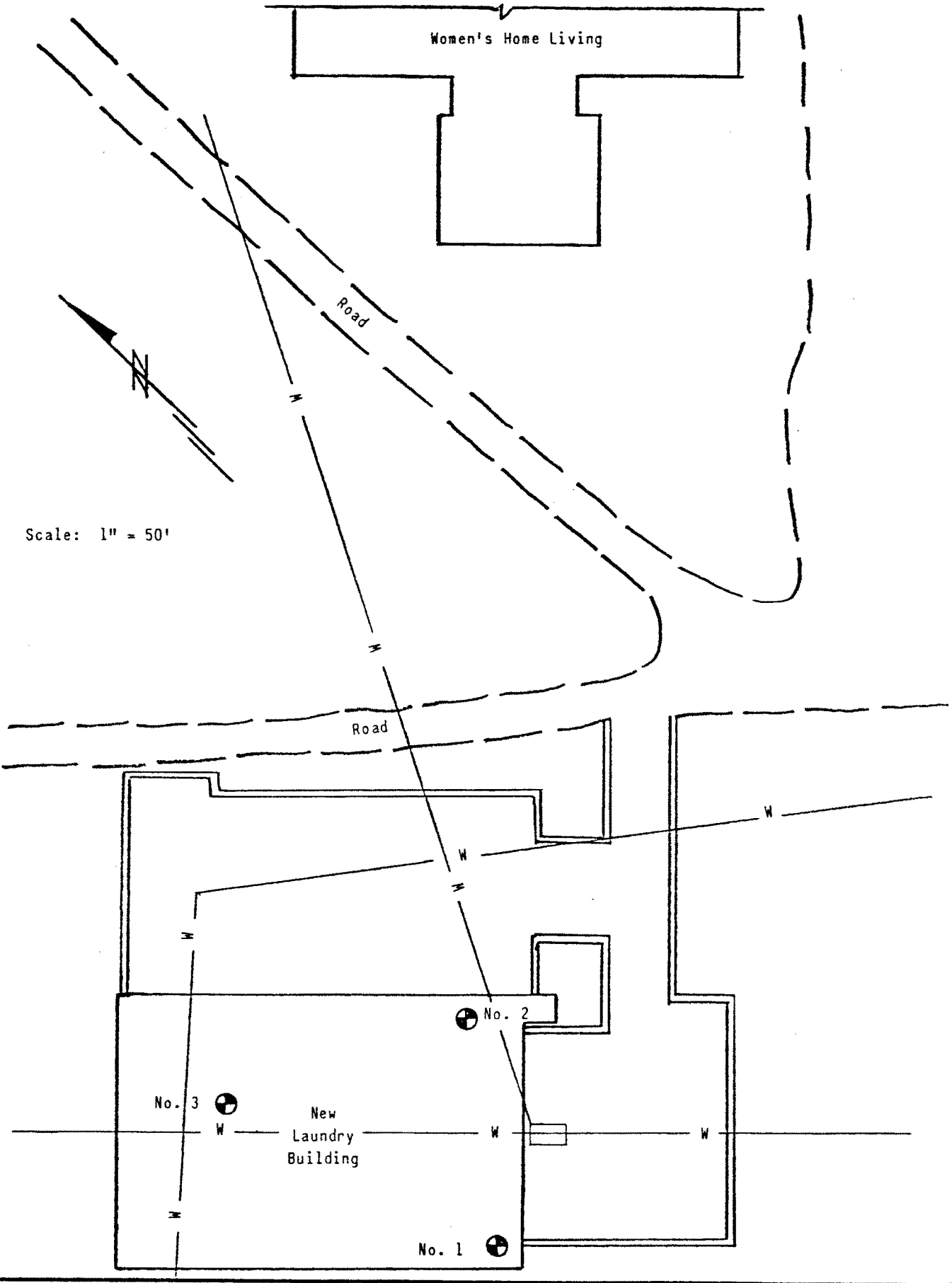
Log of Borings for: American Fork Training School Laundry Facility	ROLLINS, BROWN AND GUNNELL, INC. Consulting Engineers	Figure No. 3

TABLE NO. 1 SUMMARY OF TEST DATA

PROJECT American Fork Training School Laundry Facility FEATURE Foundations LOCATION American Fork, 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	
2	3'		90.6	25.3				24.9	19.7	5.2				CL-ML
	6'										80.7	18.1	1.2	GP
	9'										80.9	17.5	1.6	GP
	12'										80.2	18.8	1.7	GP.
3	3'		88.6	7.7				24.2	20.4	3.8				ML

(336) 5S-1E-12R



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CONSULTING ENGINEERS

LOCATION OF TEST HOLES
American Fork Training
School Laundry Facility

Figure
No.1