

Memorandum

UTAH DEPARTMENT OF TRANSPORTATION

TO : Those Listed Below

FROM : Heber Vlam, P.E., Engineer of Materials & Research

DATE: January 20, 1983
FOUNDATIONSUBJECT: I-84-5(7)29 - West Tremonton to Blue Creek Summit,
Foundation Report for "M" Line Over I-84 at
Station 2838+15.00

SITE CONDITIONS

A two-span prestressed concrete beam structure 255 feet long by 34 feet wide is proposed to carry "M" Line over I-84. The crossing will be at right angles. The I-84 southbound lane will be in the existing US-30 cut and will require an additional cut of approximately 5 feet, the northbound lane will require a cut of approximately 28 feet while "M" Line will have approach grade elevations 3 to 5 feet above natural ground at abutment No. 1 and close to natural ground at abutment No. 3.

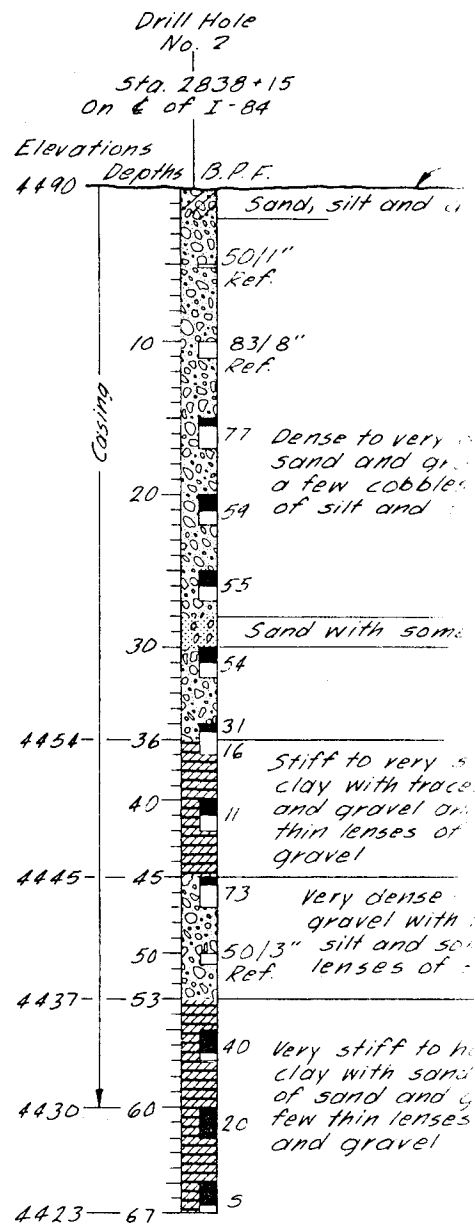
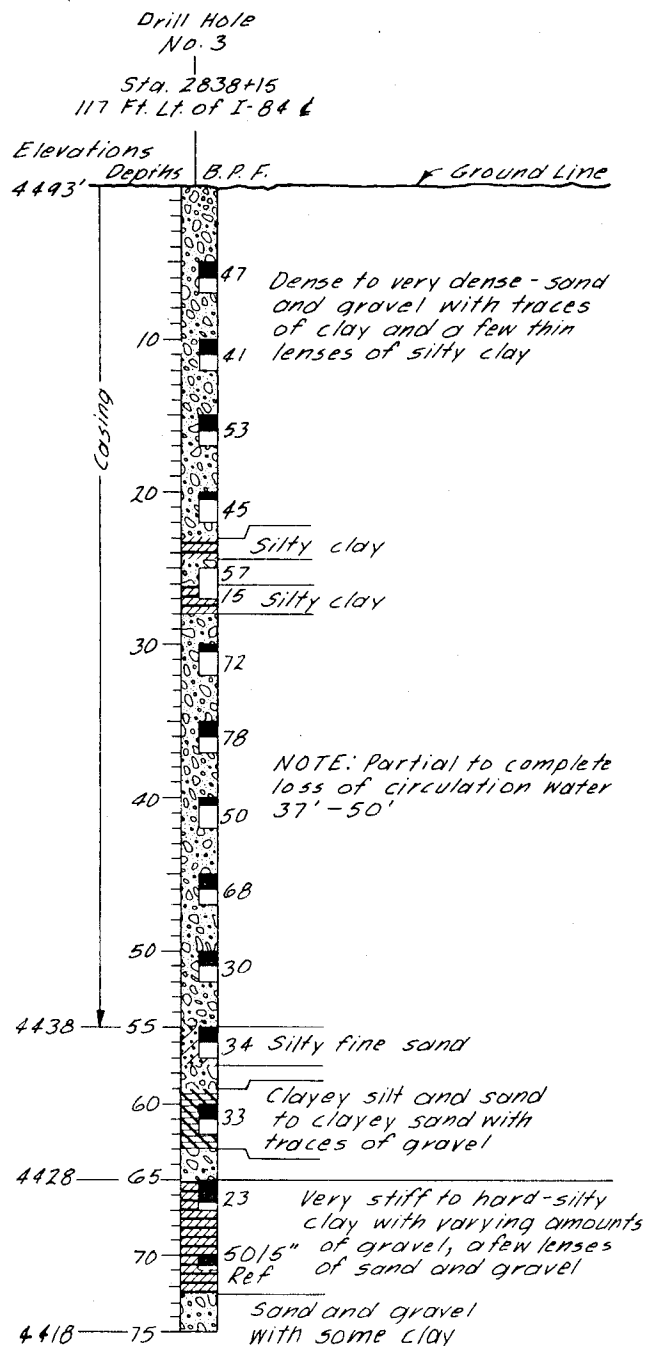
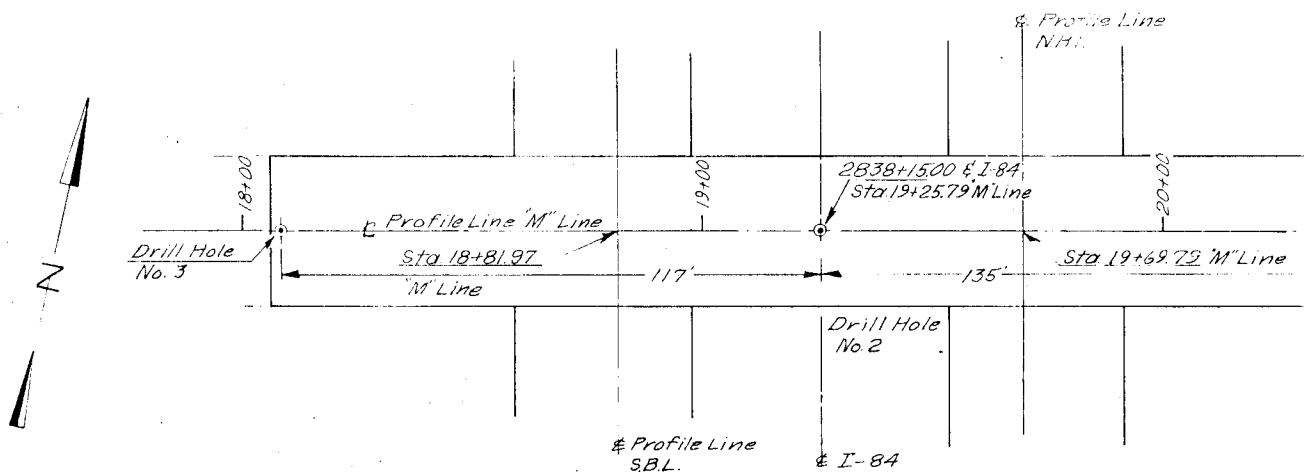
SUBSURFACE EXPLORATION

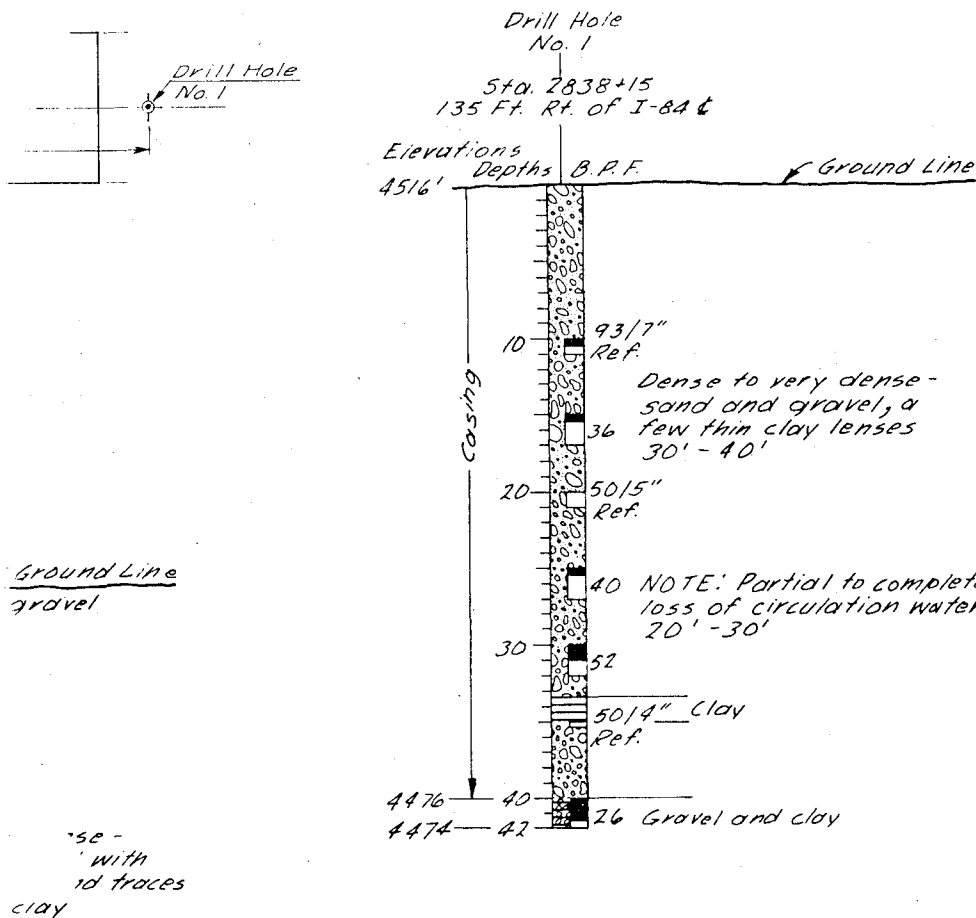
Test holes were drilled at the site of the proposed structure to depths of 42 to 75 feet. Correlation of subsoils between drill holes is fair. The subsoils profile can be generalized as follows: from the ground surface to the maximum depth of exploration - dense to very dense sand and gravel with thick layers of silty clay at lower levels in drill holes No. 2 and 3. For more detailed description of the subsurface materials and test hole locations, refer to Fig. 1, Log of borings. Partial to complete loss of circulation water was encountered in drill holes No. 1 and 3.

A ground water table was not found in any of the test holes.

FOUNDATION RECOMMENDATIONS

Spread footings are recommended for support of the abutments and the bent on this structure. Six foot wide rectangular footings at the abutments may be loaded to an allowable soil bearing pressure of 7.4 t.s.f. Seven foot wide footings at the bent may be loaded to an allowable bearing pressure of 11.0 t.s.f. (See Figure 2 for the bearing capacity of footings with other widths). The footings should be founded in the dense to very dense sand and gravel. The recommended footing base elevations are 4488 feet for abutment #1, 4473 feet for bent #2, and 4502 feet for abutment #3. The maximum expected footing settlement is one inch.





KEY TO DRILLING LOG

RELATIVE DENSITY (NON-PLASTIC SANDS)

VERY LOOSE - LESS THAN 4 BLOWS PER FOOT

LOOSE - 4 TO 10 BLOWS PER FOOT

MEDIUM - 10 TO 30 BLOWS PER FOOT

DENSE - 30 TO 50 BLOWS PER FOOT

VERY DENSE - MORE THAN 50 BLOWS PER FOOT

CONSISTENCY (PLASTIC SILT & CLAY)

VERY SOFT - LESS THAN 2 BLOWS PER FOOT

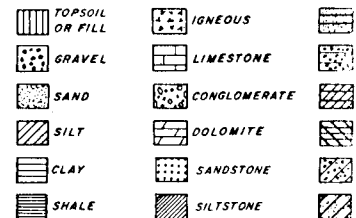
SOFT - 2 TO 4 BLOWS PER FOOT

MEDIUM - 4 TO 8 BLOWS PER FOOT

STIFF - 8 TO 15 BLOWS PER FOOT

VERY STIFF - 15 TO 30 BLOWS PER FOOT

HARD - MORE THAN 30 BLOWS PER FOOT



STATION	0+00 E OR LT OR RT IN FT	ELEVATIONS	B.P.F.	GROUND LINE
GROUND ELEVATION		DEPTHS		EXAMPLE
				SOFT - 5
				CLAY, 5'
				fine sand
				AASHTO LL - PI -
				A-6 (9) 37-14
GROUND WATER TABLE	4552			DATE
				THIN WALL S. TUBE, UNDISTURBED, SAMPLER USE
STRATA CHANGE	4546			
LOCATION OF SAMPLE				
SAMPLE NOT RECOVERED				REASON NOT RECOVERED
BOTTOM OF HOLE	4531			
NO. OF BLOWS OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO DRIVE A STD. 1 1/2" ID, 2" O.D. SAMPLE TUBE 1 FT.				

ABBREVIATIONS

L.L. - LIQUID LIMIT IN %

P.I. - PLASTIC INDEX

w - NATURAL MOISTURE CONTENT

Ref. - REFUSAL ≥ 50 BLOWS PER FOOT

PEN. - PENETRATION

G.W.T. - GROUND WATER TABLE

B.P.F. - BLOWS PER FOOT

N.P. - NON PLASTIC

AASHTO - SOIL CLASSIFICATION

NOTE: A water table was not observed in any of the test holes

Date Drilled: Sept. & Oct. 1982

NO.	BY	DATE	REVISIONS

UTAH STATE DEPARTMENT OF TRANSPORTATION
SALT LAKE CITY, UTAH

MATERIALS and RESEARCH SECTION

WEST TREMONTON TO BLUE CREEK SUMMIT
"M" LINE OVER I-84

Drawn By Kistler Checked By John T. Ryan 1-84

Checked By P. Stremore Checked By 283

Checked By Di Salvo Checked By

Approval Recommended By Lynn H. Rauscher BOX

Received Date Chief Structural Engr

Foundations File No. Drg No.