

Memorandum

UTAH DEPARTMENT OF TRANSPORTATION

 FOUNDATIONS
 DATE: January 17, 1983

TO : Those Listed Below

 FROM : Heber Vlam, P.E., Engineer of Materials and Research *H.V.*

 SUBJECT: I-84-5(7)29 - West Tremonton to Blue Creek Summit - Foundation Report
 for "J" Line Over I-84 at Station 2705+00

SITE CONDITIONS

A two-span prestressed concrete beam structure 250 feet long by 34 feet wide is proposed to carry "J" Line over I-84. The crossing will be at right angles. The southbound I-84 roadway will be in the existing US-30 cut and will require an additional cut of 1 to 3 feet, northbound I-84 will require a cut of approximately 22 feet, and "J" line will have approach grades about 2 feet above the natural ground.

Surface drainage in the area is good.

SUBSURFACE EXPLORATION

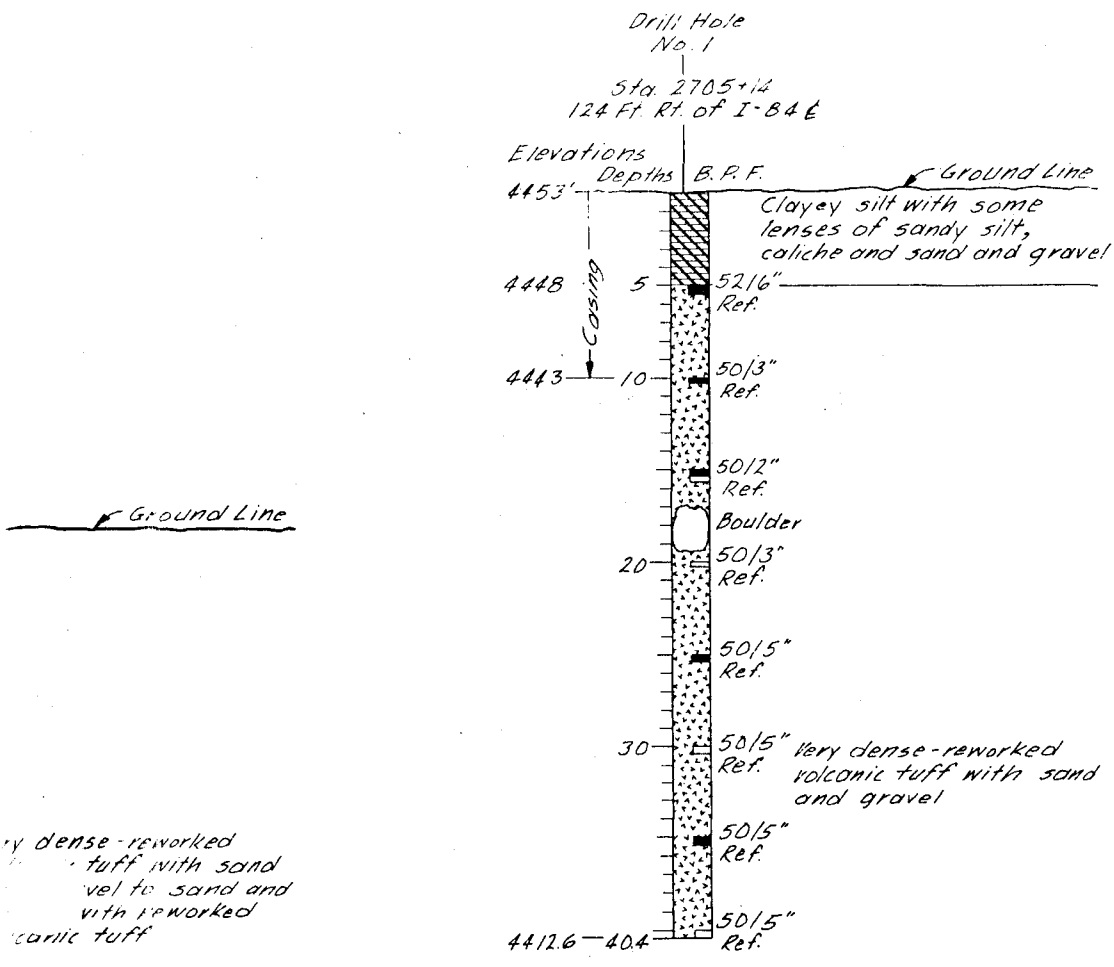
Three test holes were drilled at the site of the proposed structure to depths of 40, 40, and 25 feet. Correlation of subsoils between drill holes is fair. The subsoils profile can be generalized as follows: from the ground surface to the maximum depth of exploration - very dense weathered, reworked volcanic tuff with sand and gravel. For more detailed description of the subsurface materials and test hole locations, refer to Fig. 1, Log of Borings.

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

FOUNDATION RECOMMENDATIONS

Spread footings founded in the very dense reworked tuff with sand and gravel are recommended to support 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 10.5 t.s.f. See Figure 2 for the bearing capacity of footings with other widths. The recommended footing base elevation is 4442 feet for abutment #1 and for abutment #3. The maximum expected footing settlement is one inch.

A spread footing is also recommended for support of bent #2. An eight foot wide rectangular footing at the bent may be loaded to an allowable soil bearing pressure of 10.1 t.s.f. See Figure 2 for the bearing capacity of footings with other widths. The recommended footing base elevation is 4420 feet. The maximum expected footing settlement is one inch.



Very dense - reworked volcanic tuff with sand and gravel to sand and gravel with reworked volcanic tuff

KEY TO DRILL
RELATIVE DENSITY (NON-PLASTIC)
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

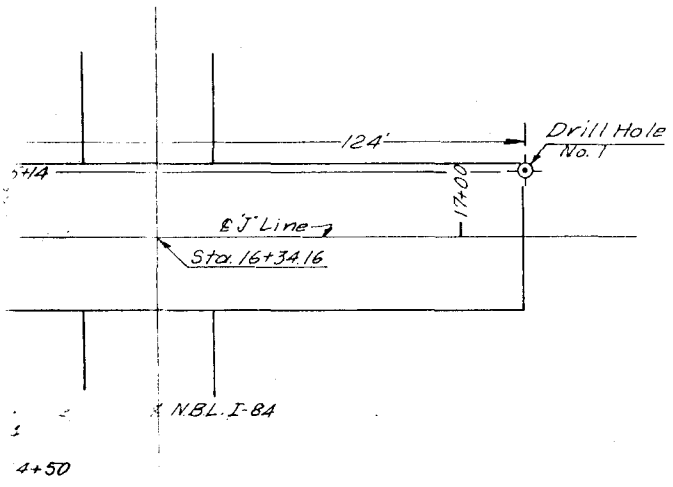
CONSISTENCY (PLASTIC)
VERY SOFT - LESS THAN 25 BLOWS PER FOOT
SOFT - 25 TO 40 BLOWS PER FOOT
MEDIUM - 40 TO 60 BLOWS PER FOOT
STIFF - 60 TO 100 BLOWS PER FOOT
VERY STIFF - 100 TO 300 BLOWS PER FOOT
HARD - MORE THAN 300 BLOWS PER FOOT

- TOPSOIL OR FILL
- GRAVEL
- SAND
- SILT
- CLAY
- SHALE
- IGNEOUS
- LIMESTONE
- CONGLOMERATE
- DOLOMITE
- SANDSTONE
- SILTSTONE

DRILL HOLE NO.	STATION	ELEVATIONS	DEPTHS	B.P.F.
	0+00 E OR I			
GROUND ELEVATION				
			2	
			5	AAS
GROUND WATER TABLE		4552	5	
			5	
STRATA CHANGE		4546	10	
			16	
LOCATION OF SAMPLE			14	
			25	
SAMPLE NOT RECOVERED			25	
BOTTOM OF HOLE		4531	30	

NO. OF BLOWS OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO DRIVE A STD. 1 1/4" ID, 2" O.D. SAMPLE TUBE 1 FT.

- ABBREVIATIONS**
- L.L. - LIQUID LIMIT
 - P.I. - PLASTICITY INDEX
 - N. - NATURAL MOISTURE
 - Ref. - REFUSAL
 - 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 encountered in any of the test holes

Date Drilled: Sept. & Oct. 1982

NO.	BY	DATE

UTAH STATE DEPARTMENT OF TRANSPORTATION
SALT LAKE CITY
MATERIALS and RESEARCH
WEST TREMONTON TO BLU...
"J" LINE OVER

Drawn By <i>Kistler</i>	Checked By
Checked By <i>P. S. GEORGE</i>	Checked By <i>D. ...</i>
Checked By <i>W. ...</i>	Checked By
Approval Recommended By <i>Lynn H. ...</i>	
Received	Date
	Chief Engineer

Foundations File No. _____

