

T255 R4W  
Sec 29 N

5106

Foundations

# Memorandum

UTAH DEPARTMENT OF TRANSPORTATION

DATE: March 3, 1983

Those Listed Below

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

ECT: I-70-1(17)19 - Belknap Interchange to Sevier Junction -  
Foundation Report for "O" Line Over I-70 at Station  
1082+30.13 WBL and Station 1082+88.54 EBL; Drg. No. F-497

## SITE CONDITIONS

A two-span prestressed concrete beam structure 283 feet long by 32 feet wide is proposed to carry "O" Line over I-70. The crossing will be at an angle of approximately 120°. The I-70 road will require a fill of approximately 10 feet and "O" Line will have about 33 feet of fill at abutment No. 1 and about 36 feet of fill at abutment No. 3.

## SUBSURFACE EXPLORATION

Test holes were drilled at the site of the proposed structure to depths of 50 to 75 feet. Correlation of subsoils between drill holes is fair except drill hole No. 1. The subsoils profile can be generalized as follows: from the ground surface to 40 feet - medium to very dense silty sand with lenses of some gravel and sandy silt; from 40 feet to the maximum depth of exploration in drill hole Nos. 2 and 3 - weathered sandy siltstone with a few beds of clayey siltstone; from 40 feet to 60 feet in drill hole No. 1 - loose to medium sandy silt with some lenses of clayey silt; from 60 feet to the maximum depth of exploration in drill hole No. 1 - weathered sandy siltstone with a few beds of clayey siltstone. 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.

Surface drainage in the area is good.

## FOUNDATION RECOMMENDATIONS

One foot diameter steel pipe piles are recommended for support of the abutments and the bent on this structure. The recommended maximum bearing capacities and tip elevations for the piles are as follows:

| Location | Estimated<br>Pile Tip<br>Elevations<br>Ft. | Approximate<br>Pile Length<br>Ft. | Allowable<br>Pile Load<br>Kips |
|----------|--------------------------------------------|-----------------------------------|--------------------------------|
| Abut. #1 | 5637                                       | 37                                | 180                            |
| Bent #2  | 5637                                       | 17                                | 180                            |
| Abut. #3 | 5593                                       | 83                                | 180                            |

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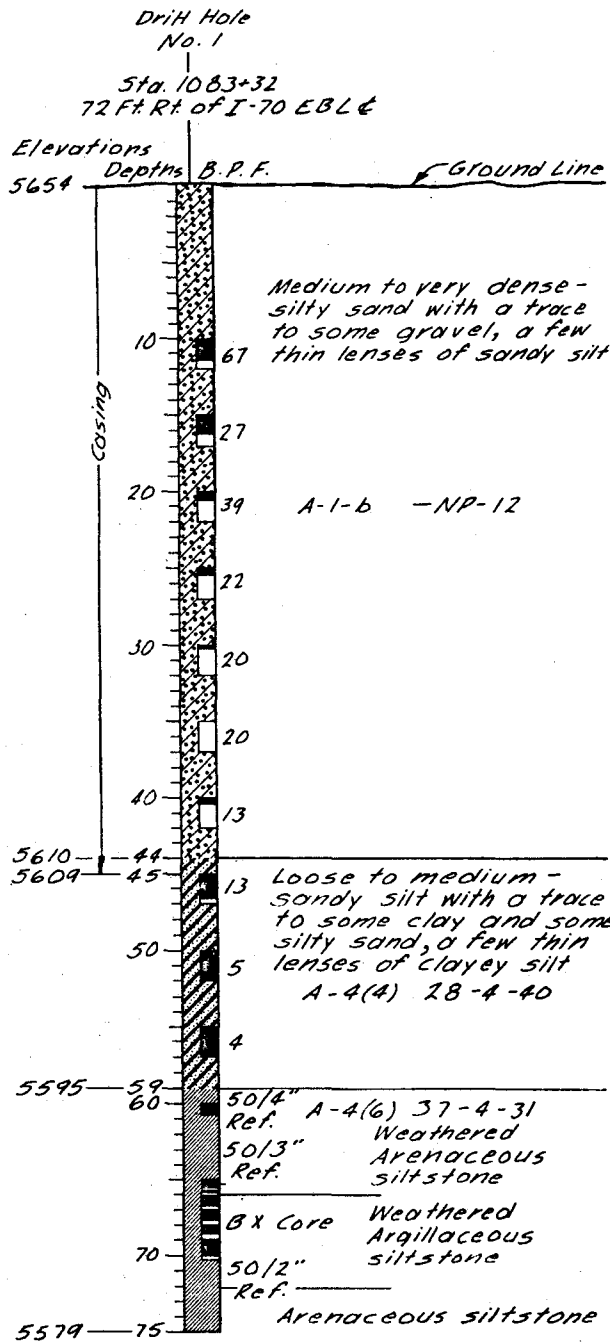
NORTH  
↑  
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Profile & Survey Line

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

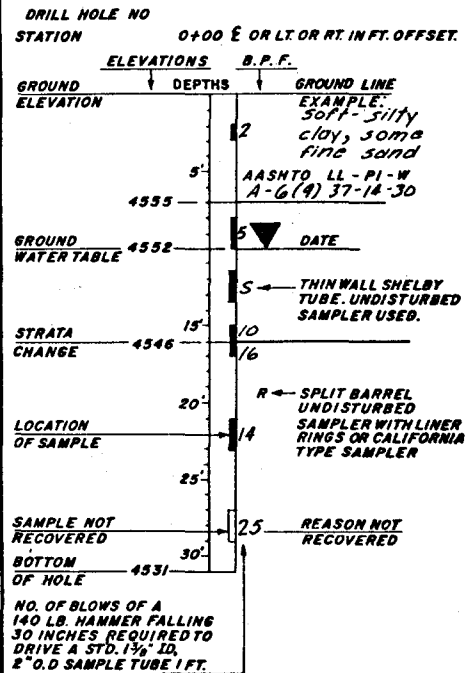
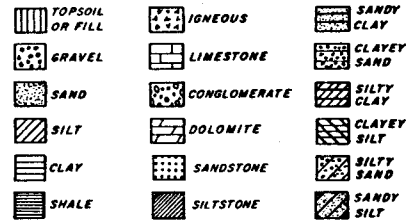
Date Drilled: February 1983

| NO.       | BY | DATE |
|-----------|----|------|
|           |    |      |
| REVISIONS |    |      |



KEY TO DRILLING LOG  
RELATIVE DENSITY (NON-PLASTIC SAND & SILT)  
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



ABBREVIATIONS  
L.L. - LIQUID LIMIT %  
P.I. - PLASTIC INDEX  
w. - NATURAL MOISTURE CONTENT %  
Ref. - REFUSAL ≥ 50 BLOWS PER 6"  
PEN. - PENETRATION  
G.W.T. - GROUND WATER TABLE  
B.P.F. - BLOWS PER FOOT  
N.P. - NON PLASTIC  
AASHTO - SOIL CLASSIFICATION SYSTEM

UTAH STATE DEPARTMENT OF TRANSPORTATION  
SALT LAKE CITY, UTAH  
MATERIALS and RESEARCH SECTION  
BELKNAP INTERCHANGE TO SEVIER JUNCTION  
"O" LINE OVER I-70

Drawn By K. J. R. J. Checked By D. K. P. I-70-1(17)19  
Checked By P. Sizemore Checked By D. K. J. Smith Project Number  
Checked By S. J. J. Checked By S. J. J. 1082 + 30.13 WBL  
Approval Recommended By John H. Rausher 1082 + 88.94 EBL  
Received Date Chief Structural Eng. Station  
SEVIER  
County  
Foundations File No. 82-7-FS-39 Orig No. F-497 01

FIGURE 1

