

T16S R2W  
Sec. 23E

2102

# Memorandum

UTAH DEPARTMENT OF TRANSPORTATION

DATE: August 1, 1980

FOUNDATION

TO : Those Listed Below

FROM : Edwin L. Lovelace, Engineer of Materials Research

SUBJECT: I-15-C(2)155 Sevier River to Mills Junction  
Foundation Report - I-15 over Sevier River I-15 Station 1338+94

Filed 9-4-80  
Edwin E. Lovelace

## SITE CONDITIONS

Two, single-span concrete beam structures 110 feet long and 40 feet wide are proposed at this site. The structures will carry I-15 over the Sevier River at an approximate 90° crossing angle. The subgrade is at natural ground level, and the bottom of the footings will be approximately 6 feet below the natural ground. Surface drainage in the area is fair to good and drains into the Sevier River.

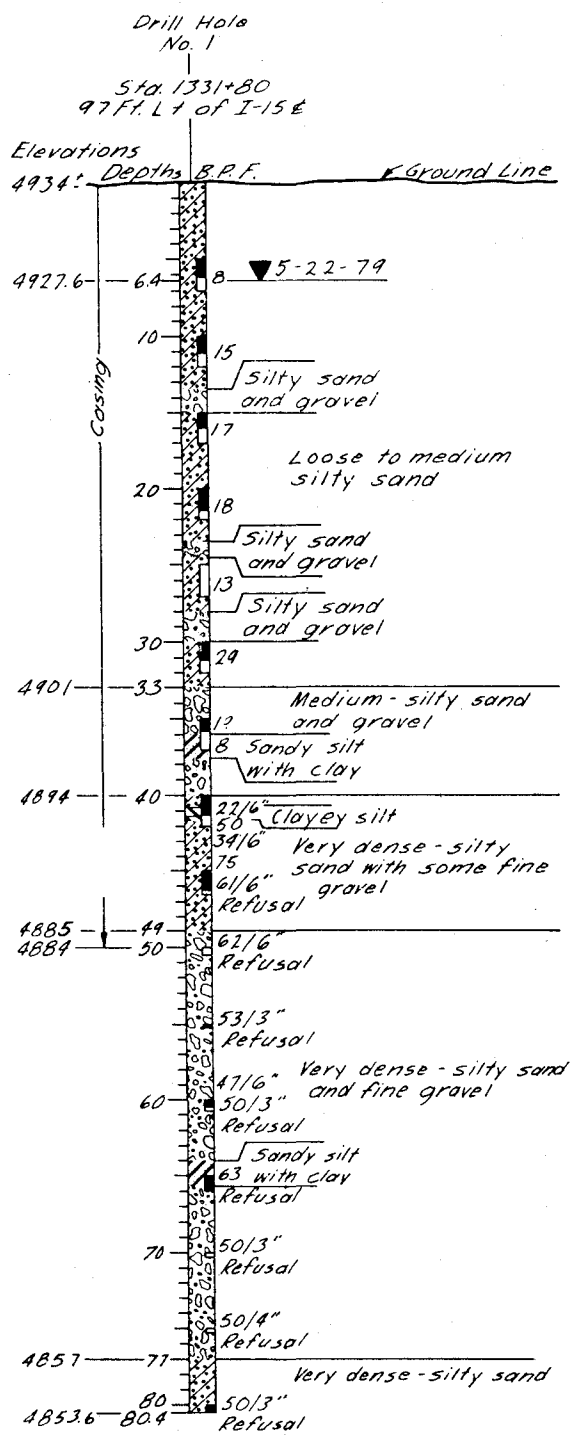
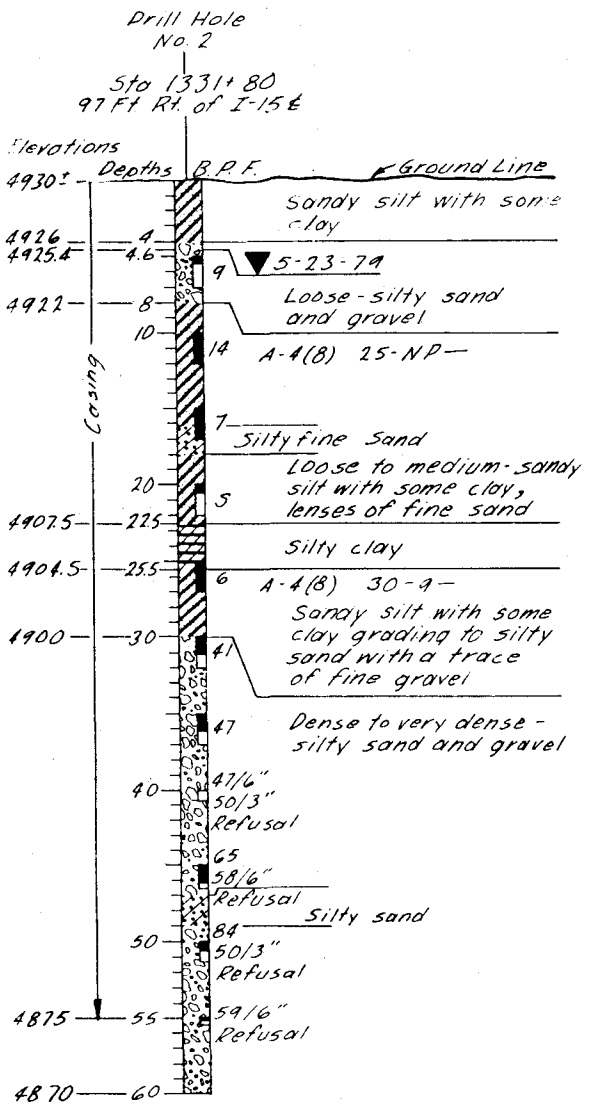
## SUBSOIL EXPLORATION

Four test holes were drilled at this site at the outer corner of each abutment. The depths varied from 60 feet to 69 feet. Correlation between drill holes 1, 3 and 4 is good with some depositional variations. Drill hole 2 appears to have been drilled at the location of an ancient stream meander scar and the upper 30 feet differs from the other holes.

The generalized subsols profile in drill holes 1, 3 and 4 is: from the ground surface to 4 feet - sandy silt with some clay; from 4 feet to 32 feet - loose to dense silty sand with some fine gravel; from 32 feet to the total depth of exploration - dense to very dense silty sand and gravel with the exception of drill hole 4 which has a layer of clayey silt with sand between 39 feet and 47 feet. The subsols profile at drill hole 2 is: from the ground surface to 4 feet - sandy silt with some clay; from 4 feet to 8 feet - loose silty sand and gravel; from 8 feet to 30 feet - loose to medium sandy silt with some clay and a layer of silty clay between 22 feet and 25 feet; from 30 feet to the extent of exploration - dense to very dense silty sand and gravel. The water table was encountered between 4.0 and 7.5 feet below the ground surface. Refer to the drill log (Fig. 1) for further details.

## FOUNDATION RECOMMENDATIONS

One foot diameter steel pipe piles are recommended for support of these structures. The recommended load capacity for piles founded in the dense to very dense silty sand and gravel layer is 90 tons. This capacity is based on a combination of side friction and end bearing with a safety factor of two. Difficulty in driving the piles should be expected in the last ten feet and conical driving points are recommended to penetrate to the required tip elevation. Pre-drilling or jetting will

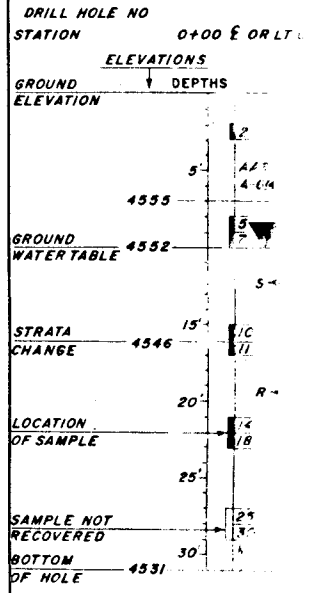


**KEY TO DRILLING**

**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 SILT)**  
 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

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



**ABBREVIATIONS**

L.L. - LIQUID LIMIT  
 P.I. - PLASTIC INDEX  
 W. - NATURAL MOISTURE  
 W.G. - WELL GRADED  
 PEN. - PENETRATION  
 G.W.T. - GROUND WATER TABLE  
 B.P.F. - BLOWS PER FOOT  
 N.P. - NON PLASTIC

UTAH STATE DEPARTMENT OF HIGHWAYS  
 SALT LAKE CITY, UTAH  
**MATERIALS AND TESTS**  
 SEVIER RIVER TO MILLS  
 I-15 OVER SEVIER RIVER

DRAWN BY B. Kistler  
 CHECKED BY Ed Kowalski  
 CHECKED BY J. Byrneaway  
 APPROVAL RECOMMENDED BY Loren H. Rauscher

CHECKED BY [Signature]  
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RECEIVED

NO. BY DATE REVISIONS REMARKS

