

check  
GD

2109

FOUNDATION

## Memorandum

UTAH DEPARTMENT OF TRANSPORTATION

DATE: September 14, 1982

TO : Those Listed Below

FROM : Heber Vlam, P.E., Engineer of Materials and Research *H.V.*SUBJECT: I-15-5(11)213 - Mills Junction to South Nephi; Foundation Report for  
I-15 over Wide Canyon Road at I-15 Q Sta. 549+00*T 145 RIW  
Sec 2 F*

## SITE CONDITIONS

Two single span prestressed concrete beam structures are proposed to carry I-15 over Wide Canyon Road. These structures will be 86 feet long by 42 feet wide and will cross Wide Canyon Road at right angles. The approach embankments will be approximately 12 to 14 feet high for the south bound lanes and 23 feet high for the north bound lanes.

Surface drainage in the area is good.

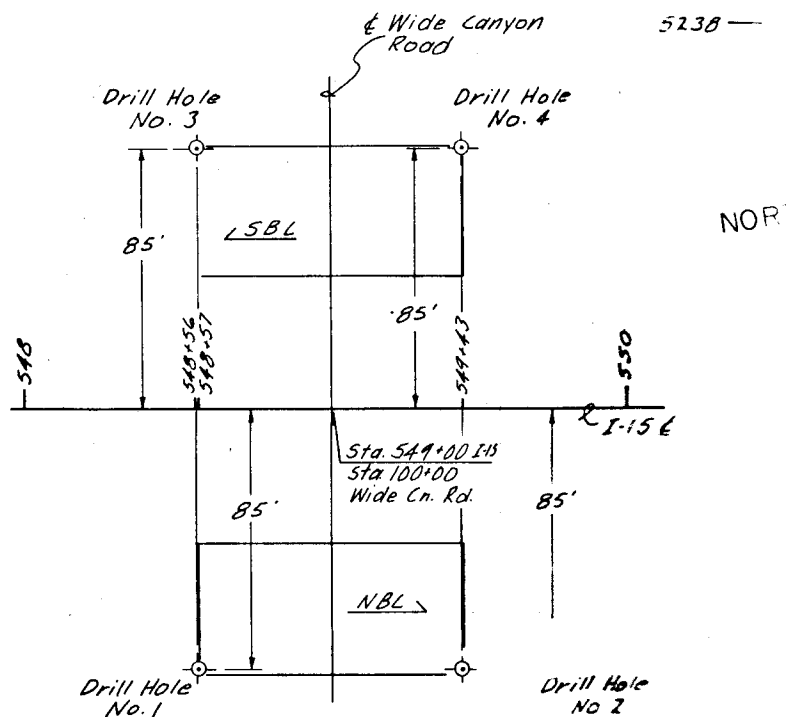
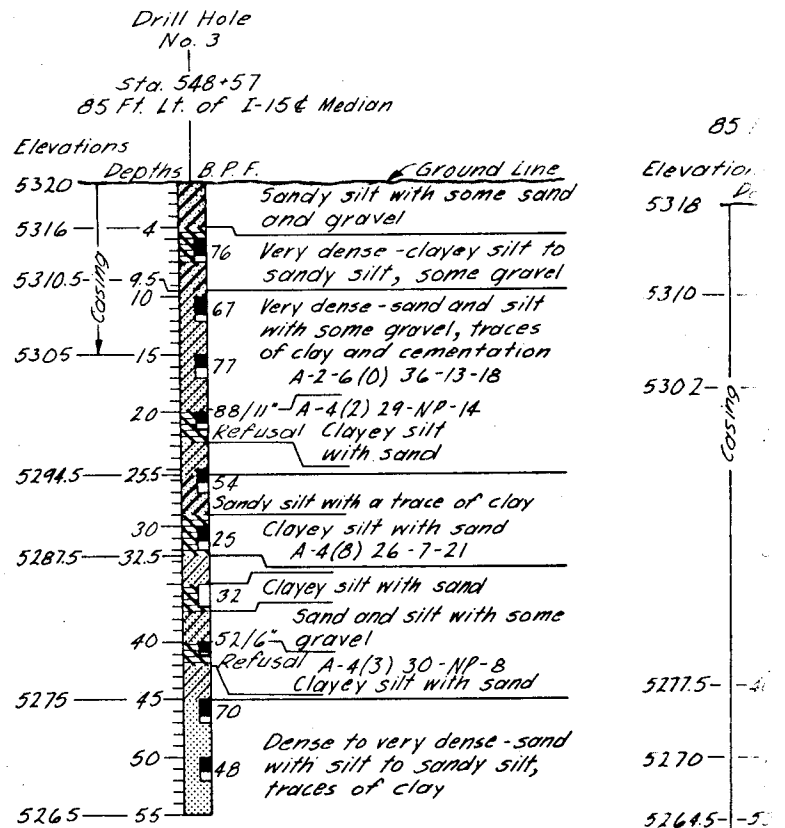
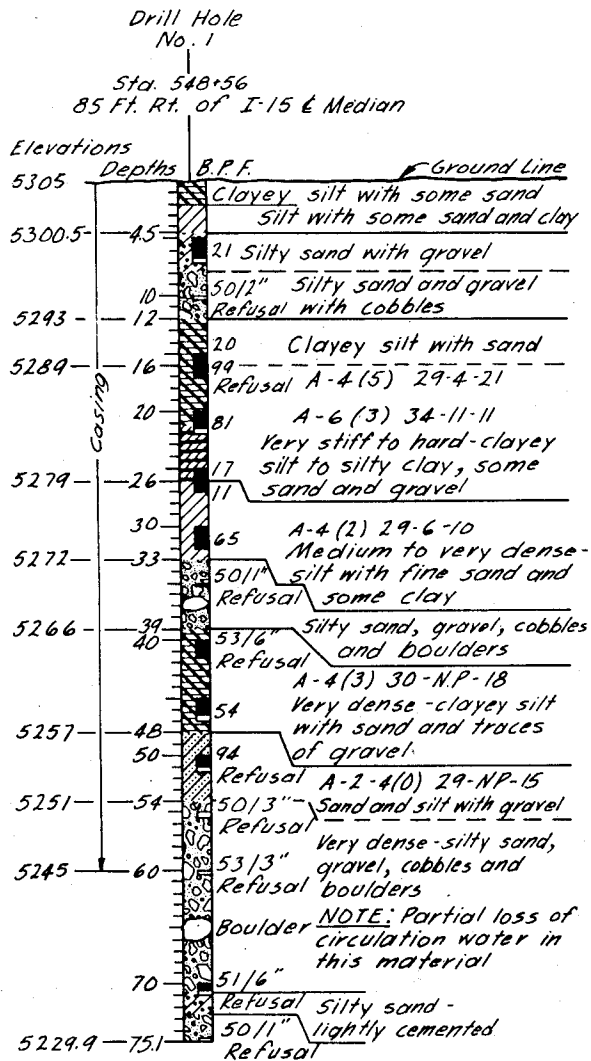
## SUBSURFACE EXPLORATION

Four test holes with depths ranging from 55 to 80 feet were drilled at this site. Correlation between test holes is fair and in general the subsurface materials may be described as follows: from the ground surface to a depth of 9 feet - clayey silt and sandy silt with some silty sand and gravel; from 9 feet to 39 feet - medium to hard clayey silt to silty clay and layers of medium to very dense sand with silt and gravel; from 39 feet to 55 feet - medium to very dense sand and silt with traces of gravel, some clayey silt with sand; from 55 feet to the maximum depth of exploration - medium to very dense sand and silt, very dense silty sand, gravel, cobbles and boulders, some clayey silt with sand and from 70 feet to 80 feet in Drill Hole No. 4 - weathered claystone.

See Figure 1, Log of Borings for more detailed descriptions and test hole locations.

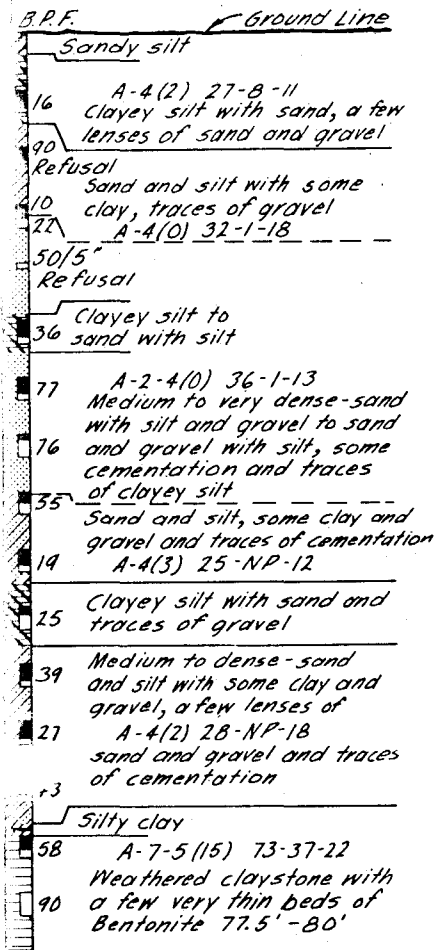
## FOUNDATION RECOMMENDATIONS

Drilled caissons founded in the medium to very dense sand and silt or silty sand and gravel are recommended to support these structures. Drilled caissons with a diameter of 3.0 feet may be loaded to 180 Kips per caisson. See Figure 2 for the bearing capacity of caissons with other diameters. The recommended caisson tip elevations are as follows:

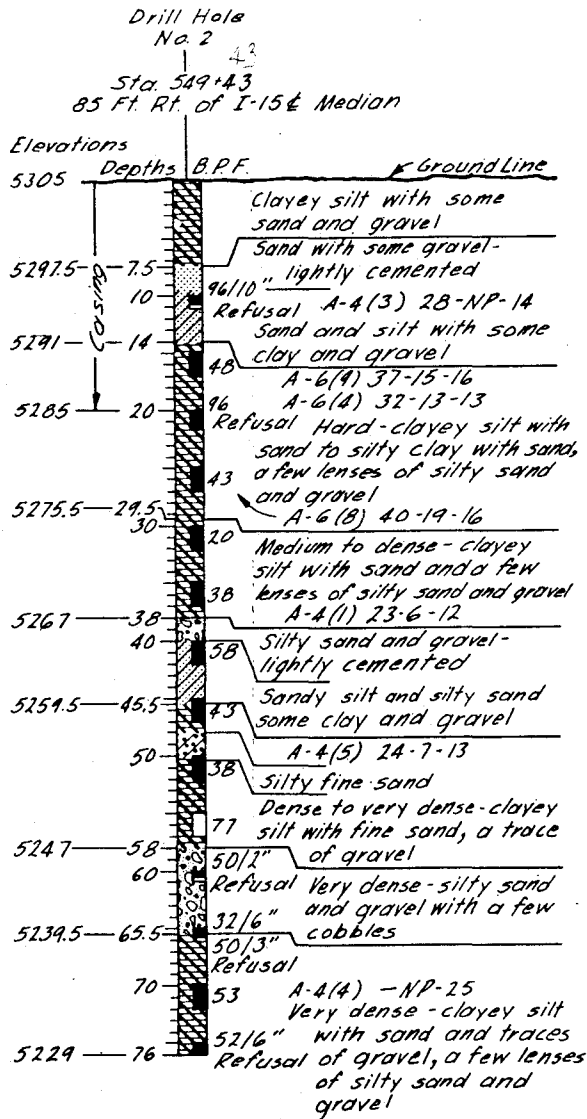


106

43  
I-15 & Median



Note: Complete loss of circulation  
after at the following depths: 54',  
61', and 64'.



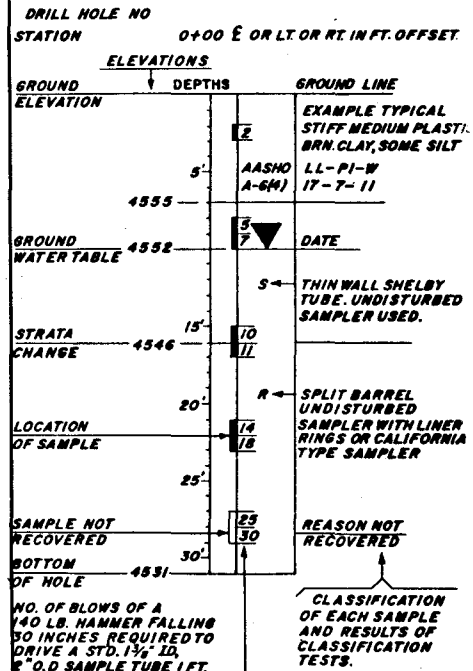
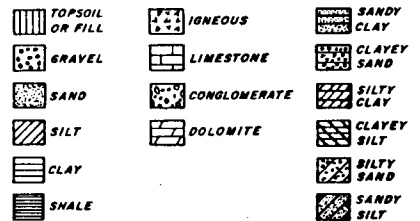
KEY TO DRILLING LOG

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

NOTE: REFUSAL = 50 or more blows per ft.

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

Date Drilled: 12-79, 2 & 4-80

| NO. | BY | DATE | REMARKS |
|-----|----|------|---------|
|     |    |      |         |
|     |    |      |         |
|     |    |      |         |

|                                                                                                                                                       |                              |                |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------|--|
| UTAH DEPARTMENT OF TRANSPORTATION<br>SALT LAKE CITY, UTAH<br>MATERIALS AND RESEARCH SECTION<br>MILLS JUNCTION TO SOUTH NEPHI<br>I-15 OVER WIDE CANYON |                              |                |  |
| DRAWN BY <i>B. Kistler</i>                                                                                                                            | CHECKED BY <i>B. Kistler</i> | 1-15-5(11)213  |  |
| CHECKED BY <i>P. Sizemore</i>                                                                                                                         | CHECKED BY <i>H. Parnell</i> | PROJECT NUMBER |  |
| CHECKED BY <i>A. S. Smith</i>                                                                                                                         | CHECKED BY                   | 549+00         |  |
| APPROVAL<br>RECOMMENDED BY <i>Leon H. Ranshaw</i>                                                                                                     | CHECKED BY                   | STATION        |  |
| RECEIVED                                                                                                                                              | DATE                         | JUAN           |  |
| BR. NO.                                                                                                                                               | DRG. NO.                     | COUNTY         |  |

FIGURE 1