

*No 1970
Deposits*
Memorandum.

2110

FOUNDATIONS

UTAH DEPARTMENT OF TRANSPORTATION

DATE: April 14, 1981

TO : Those Listed Below

Heber V Cam for E.E.L.

FROM : Edwin E. Lovelace, Engineer of Materials and Research

SUBJECT: I-15-5(11)213 - Mills Jct. to South Nephi;
I-15 over "K" Line at I-15 ℓ Sta. 661+00

*T 135 RW
Sec 26 H*

SITE CONDITIONS

Two single span prestressed concrete beam structures are proposed to carry I-15 over "K" Line frontage road and channel "K". Each of the proposed structures will be approximately 90 feet long by 44 feet wide and will cross "K" Line at right angles. The approach embankments will be approximately 18 feet to 21 feet high.

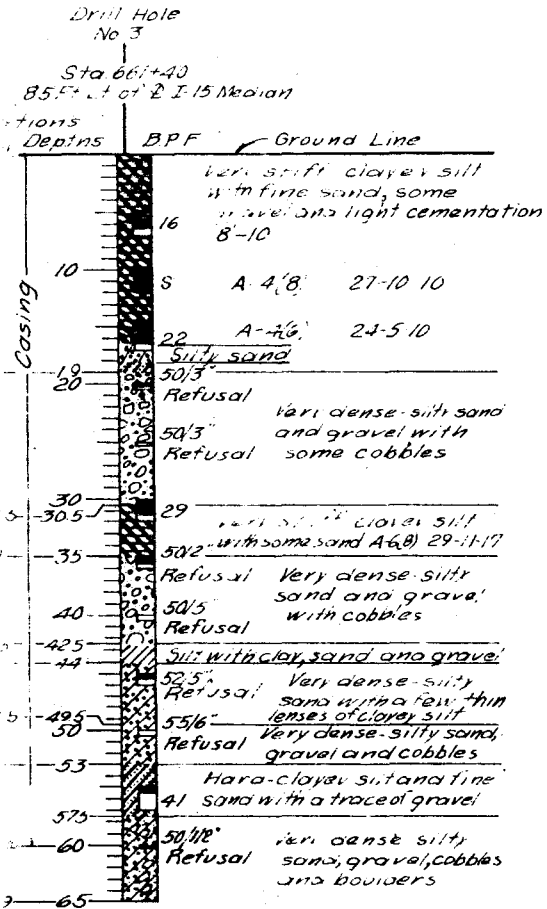
Surface drainage in the area is good.

SUBSURFACE EXPLORATION

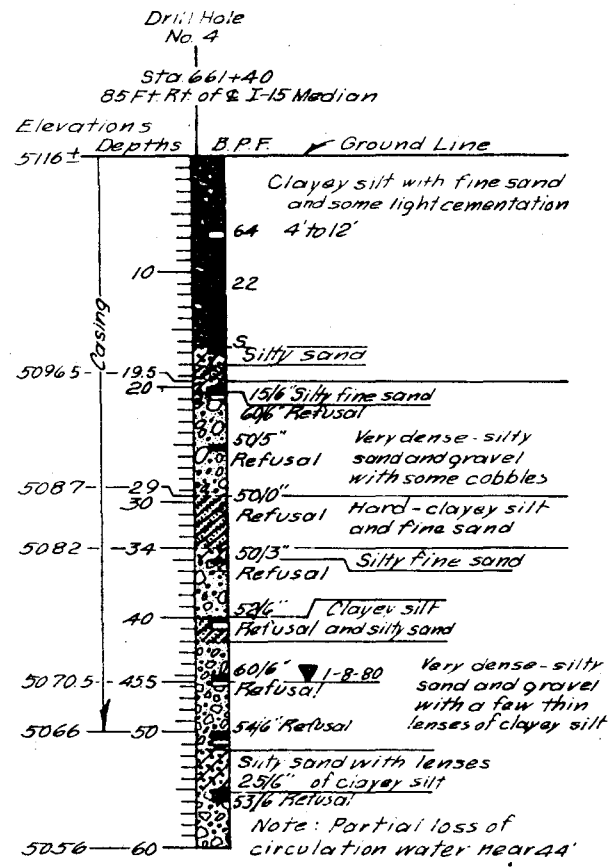
Four test holes were drilled at the site of the proposed structures. The holes ranged from 60 feet to 70 feet deep and correlation of the subsurface materials encountered is good. In general, these materials may be described as follows: From the ground surface to a depth of 16 feet - very stiff clayey silt with some layers of medium silty sand; from 16 feet to 30 feet - dense to very dense silty sand and gravel with some cobbles and hard clayey silt; from 30 feet to 44 feet - layers of medium to hard clayey silt and dense to very dense silty sand with varying amounts of gravel; from 44 feet to the maximum depth of exploration - very dense silty sand and gravel with cobbles and boulders and some hard clayey silt. Detailed descriptions of sediments and test hole locations are given in the attached Drilling Log (Fig. 1).

FOUNDATION RECOMMENDATIONS

Steel pipe piles or tapered steel piles are recommended for support of the abutments on these structures. One foot diameter steel pipe piles or tapered steel pipe piles with a minimum 8 inch diameter tip driven 6 to 12 feet into the dense to very dense silty sand and gravel may be loaded to 120 kips per pile. The estimated pile tip elevations are 5091 feet for the N.B.L. and 5089 feet for the S.B.L. The corresponding depth below the natural ground surface is 25 feet. Estimated pile tip elevations are only approximate and shall be verified at the time of construction. Pile settlement is not expected to exceed 1.0 inch.



Note: A water table was not encountered in Drill Hole No. 3



Note: Partial loss of circulation water near 44'

KEY TO DRILLING LOG

RELATIVE DENSITY-NON-PLASTIC
 VERY LOOSE - LESS THAN 4 BLOWS
 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

CONSISTENCY (PLASTIC SILT & CLAY)
 VERY SOFT - LESS THAN 2 BLOWS
 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
- GRAVEL
- SAND
- SILT
- CLAY
- SHALE
- ARGEOUS
- LIMESTONE
- CONGLOMERATE
- DOLOMITE

DRILL HOLE NO. 4
STATION 0+00 E OR L OR RT.

ELEVATIONS		EXAMPLE
GROUND ELEVATION	DEPTHS	
4555	5'	STIFF BRN. CL. LL - P.I. 17 - 7
GROUND WATER TABLE 4552	7'	DATE
STRATA CHANGE 4546	10'	THIN WATER TUBE U. SAMPL.
LOCATION OF SAMPLE	16'	SPLIT SAMPLE RINGS TYPE 1
SAMPLE NOT RECOVERED	25'	REAS. RECD.
BOTTOM OF HOLE 4531	30'	

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

CLASS. OF EACH AND REAS. CLASSIF. TESTS

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

Note: Refusal - more than 50 blows per foot

UTAH STATE DEPARTMENT OF
SALT LAKE CITY, UTAH
MATERIALS AND TESTS DIV.

MILLS JCT. TO SQ. NEPHI
I-15 OVER "K" LINE

DESIGNED BY: *Bonnie Searle* CHECKED BY: *J. R. ...*
 DRAWN BY: *S. SARAFI* CHECKED BY: *...*

DATE: *...* SCALE: *...*

NO. 01 DATE: _____ APPROVED: _____
 REVISIONS: _____

Note: All Holes Drilled Nov. 1979

Fig No. 1

