Memorandum.

UTAH DEPARTME

DATE: July 22, 1982

TO

: Those Listed Below

FROM

: Heber Vlam, P.E., Engineer of Materials and Research #.V.

SUBJECT: I-15-5(11)213 - Mills Junction to South Nephi; I-15 Over Lampson

Canyon Road at I-15 € STA. 450+25.03

SITE CONDITIONS

Two single span prestressed concrete beam structures are proposed to carry I-15 over Lampson Canyon Road. The proposed structures will be approximately 64 feet long by 44 feet wide and will cross Lampson Canyon Road at an angle of nearly 71°. The approach embankments will be approximately 9 to 11 feet high while Lampson Canyon Road will require 6 to 11 feet of cut at the crossing site.

Surface drainage in the area is good.

SUBSURFACE CONDITIONS

Four test holes were drilled at this site with depths ranging from 25.4 feet to 30.1 feet. Correlation between test holes is good and in general the subsurface materials may be described as follows: from the ground surface to a depth of 3 feet - sandy silt with traces of clay and gravel; from 3 feet to 9 feet - soft to very stiff clayey silt with sand and some silty clay; from 9 feet to the maximum depth of exploration - highly weathered to slightly weathered claystone and slightly weathered conglomerate with a few thin beds of siltstone and shale.

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

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

FOUNDATION RECOMMENDATIONS

Drilled caissons founded in the weathered claystone and slightly weathered conglomerate are recommended to support these structures (see Fig. 1). Caissons with a diameter of 2.5 feet founded 6 feet into the weathered claystone 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:

KEY TO DRILLING LOG RELATIVE DENSITY(NON-PLASTIC SAND&SILT) VERY LOOSE - LESS THAN 4 BLOWS PER FO Hole LOOSE - 4 TO IO BLOWS PER FOOT. 3 MEDIUM-10 TO 30 BLOWS PER FOOT DENSE- 30 TO 50 BLOWS PER FOOT. 450+29 VERY DENSE-MORE THAN 50 BLOWS PER FOOT of & I-15 Median CONSISTENCY (PLASTIC-SILT & CLAY) VERY SOFT- LESS THAN 2 BLOWS PER FOOT. Ground Line SOFT- 2 TO 4 BLOWS PER FOOT. Sandy silt with a trace of MEDIUM - 4 TO 8 BLOWS PER FOOT. STIFF - 8 TO 15 BLOWS PER FOOT. VERY STIFF 15 TO 30 BLOWS PER FOOT. clay and gravel Drill Hole No 4 HARD-MORE THAN 30 BLOWS PER FOOT. Clayey silt with sand and a trace of gravel Sta 450+85 TOPSOIL OR FILL I IGNEOUS SANDY Sand with gravel and silt 85 Ft. Rt. of & I-15 Median 20 Highly weathered to weathered claystone to GRAVEL LIMESTONE TO CLAYEY SANO Elerations sandy claystone, a few very thin beds of siltstone 53/6 Depths - Ground Line Sandy silt with a trace of 5317± SAND CONGLOMERATE SILTY clay and gravel 53/5.5-SILT DOLOMITE CLAYEY SILT Refusal A-6(9) 33-12-12 Clayey silt with sand and a CLAY SAND NOTE: Complete loss of trace to some gravel 5312.5-0-4.5 SANOY SHALE circulation water this layer A-7-6(13) 41-24-18 Possible void or very loose silt Very stiff- clayey silt with DRILL HOLE NO Broken claystone A-1-4(0) STATION 25-8-1 sand to silty clay, a few 0+00 E OR LT. OR RT. IN FT. OFFSET 19 and clayey silt thin lenses of sandy silt ELEVATIONS Gravel and sand 5308-DEPTHS GROUND LINE Very stiff-clayey silt with GROUND ELEVATION NOTE: Complete loss of 5307-1 Cumplete loss of Circulation Water at 17.5' 50/1 22 sand and a trace of EXAMPLE TYPICAL 5305.5--11.5 STIFF MEDIUM PLASTI. BRN.CLAY, SOME SILT gravel Z Refusal Highly weathered to AASHO LL-PI-W 17-7-11 Slightly Weathered weathered claystone with A-6(4) conglomerate Refusal A-7-6(12) 42-19-13 50/4.5" <u>GROUND</u> WATER TABLÉ 4552-DATE Refusal BX.Core THIN WALL SHELBY TUBE. UNDISTURBED SAMPLER USED. Slightly weathered a few very thin bods of Siltston B.X.Core claystone to sandy silt stone 15 claystone, a few thin beds STRATA CHANGE of siltstone SPLIT BARREL UNDISTURBED Weathered sandy claystone 20 SAMPLER WITH LIMER RINGS OR CALIFORNIA LOCATION OF SAMPLE 50/2.5 /<u>4</u> /8 Refusal TYPE SAMPLER 25 Weathered claystone SAMPLE NOT RECOVERED REASON NOT 5415" 5286.9 ----30I= 30 BOTTOM Refusal OF HOLE NO. OF BLOWS OF A
140 LB. HAMMER FALLING
30 INCHES REQUIRED TO
ORIVE A STD, 1½° 10,
2°0.0 SAMPLE TUBE I FT. CLASSIFICATION OF EACH SAMPLE AND RESULTS OF CLASSIFICATION TESTS. **ABBREVIATIONS** L.L.-LIQUID LIMIT IN S P.I - PLASTIC INDEX E. -- NATURAL MOISTURE CONTENTIN'S W.G.-WELL GRADED PEN.-PENETRATION SBL. G.W.T.- GROUND WATER TABLE B.P.F.-BLOWS PER FOOT. K.P-HON PLASTIC NOTE: REFUSAL = 50 OR MORE BLOWS PER 6" Survey Line I-15 UTAH STATE DEPARTMENT OF HIGHWAYS MATERIALS AND RESEARCH SECTION MILLS JUNCTION TO SOUTH NEPHI Note: A water table was not I-15 OVER LAMPSON CANYON RD. & Profile Line N.B.L. encountered in any of the Drill Holes: MANN BY BE SOUTH CHECKED BY KISHEY 1-15-5(11 no et P.Sezemen Note: All holes drilled April 1980 MICKED BY SE CAME 450+4639145NB on Irun H Raus JUAB n Canyon Road REVISIONS





