

Sevier Co  
**Memorandum**

State Hwy 127  
State Info Stations  
Boiler City  
5100

UTAH DEPARTMENT OF TRANSPORTATION

T255 R5W  
Sec 33F

DATE: April 7, 1983

: Those Listed Below

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

H.V.

Mileage from beginning of route

T: I-70-1(2)2, Clear Creek Summit to Belknap Interchange  
Foundation Report for "O" Line over Clear Creek,  
Drg. No. F-507

Plans  
Central Files

**SITE CONDITIONS**

A single span prestressed concrete box beam structure, 50 feet long and 32 feet wide is proposed to carry "O" Line over Clear Creek. The structure will cross Clear Creek at an approximate angle of 90°.

Surface drainage in the area is fair.

**SUBSURFACE EXPLORATION**

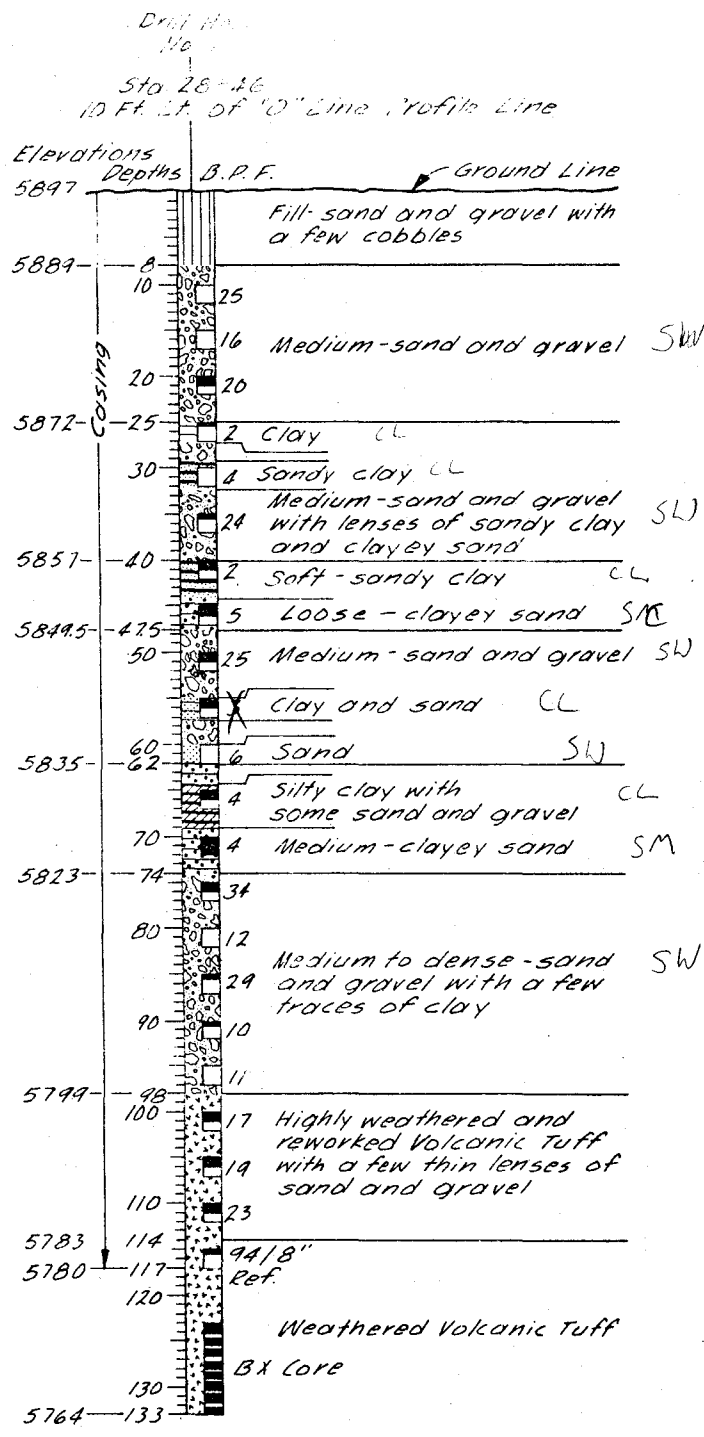
Two test holes were drilled at this site to depths of 77 and 133 feet. Correlation of subsoils between drill holes is fair. The subsoils profile can be generalized as follows: from the ground surface to 98 feet - loose to dense sand and gravel with layers of clayey sand and some lenses of sandy clay; from 98 feet to 114 feet - highly weathered and reworked volcanic tuff with a few thin lenses of sand and gravel; from 114 feet to the maximum depth of exploration - weathered volcanic tuff. For a more detailed description of subsurface materials and test hole locations, refer to Fig. 1, Log of Borings.

Ground water table readings were not taken, but for design purposes the water table is assumed to be at the stream level.

**FOUNDATION RECOMMENDATIONS**

Eighteen-inch diameter expanded base concrete piles (EBCP's) (Pressure-Injected Concrete Footings, PIF) are recommended to support this structure. The estimated bottom of shaft (top of expanded base) elevations for 100 kip piles are as follows:

<u>Location</u>	<u>Est. Shaft Bottom Elevation, Ft.</u>	<u>Approximate Shaft Length Ft.</u>
Abut. #1 (South)	5870	22
Abut. #2 (North)	5865	28



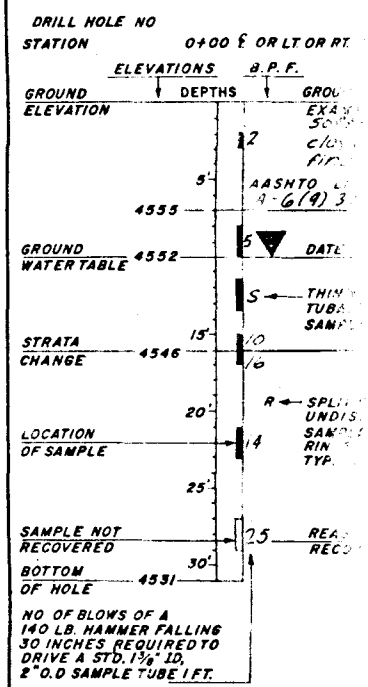
Assume WT  
~5'

**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)**  
 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 |
|  | SILTY           |  | DOLOMITE     |
|  | CLAY            |  | SANDSTONE    |
|  | SHALE           |  | SILTSTONE    |



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

NOTE: Water table readings were not taken.

Date Drilled: March & April 1983

NO.	BY	DATE	REVISIONS

UTAH STATE DEPARTMENT OF TRANSPORTATION  
SALT LAKE CITY, UTAH

**MATERIALS and RESEARCH**

CLEAR CREEK SUMMIT TO BELKNAP  
"O" LINE OVER CLEAR CREEK

Drawn By *Kistler* Checked By *Joey Ryan*

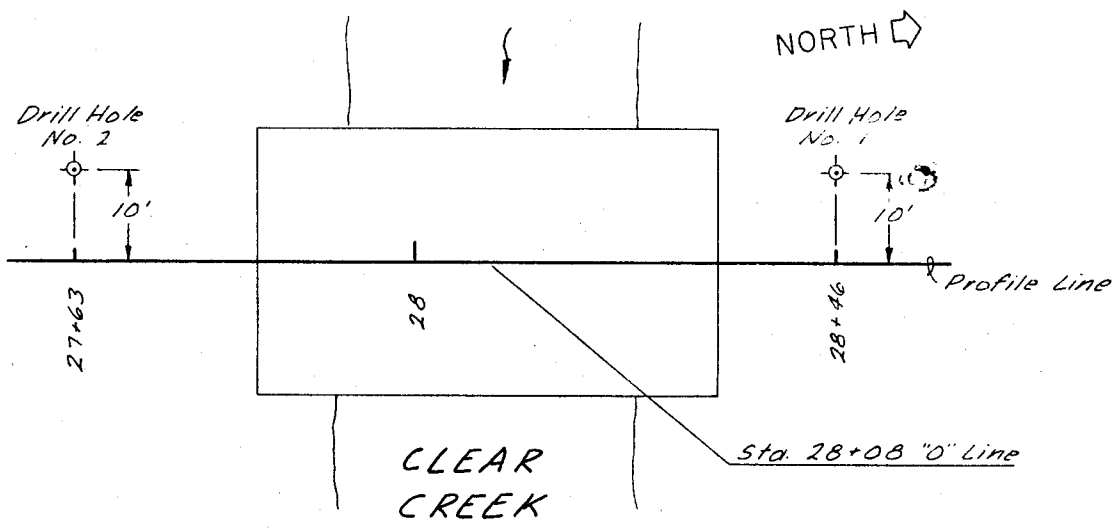
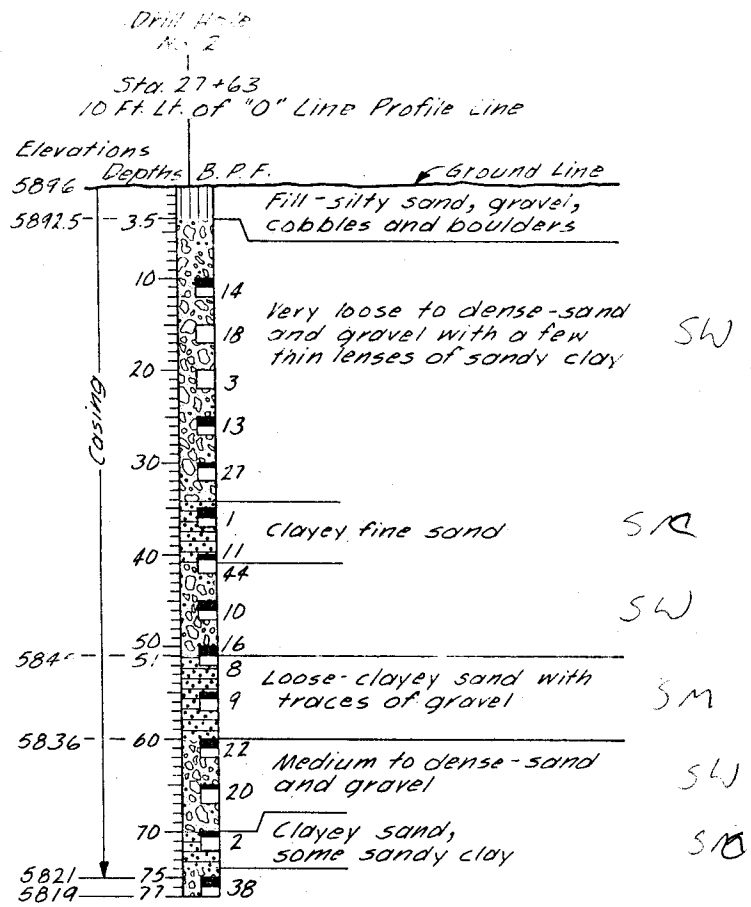
Checked By *P. Sizemore* Checked By

Checked By *Si Sakhar* Checked By

Approval Recommended By *Loren H. Rauscher*

Received Date \_\_\_\_\_ Chief Structural Eng. \_\_\_\_\_

Specifications File No. 83-7-FS-13 Org. No. F-50



## Memorandum

UTAH DEPARTMENT OF TRANSPORTATION

FOUNDATIONS

DATE: July 13, 1981

:Those Listed Below

T255 R5W  
Sec 34JFROM :Heber Vlam, P.E., Engineer of Materials and Research *H.V.*SUBJECT: I-70-1(16)15 - Mill Creek to Belknap Interchange; Foundation  
Report for I-70 Over Channel Change No. 8 at I-70 Station 843+40.74  
W.B.L. and Station 844+21.68 E.B.L.

## SITE CONDITIONS

Two single-span prestressed concrete beam structures are proposed to carry I-70 over Channel Change No. 8. The west bound lane structure will be 106 feet long and the east bound lane will be 84 feet long. The two structures will be 44 feet wide with a skew angle of approximately 9 degrees. The approach embankments for I-70 W.B.L. and E.B.L. are approximately 17 to 24 feet high.

Surface drainage at the structure site is good.

## SUBSURFACE EXPLORATION

Four test holes were drilled at this site with depths ranging from 30 to 130 feet. Correlation of soils between test holes is good, and a general description of the subsurface materials is very loose to dense sand and gravel with some layers of slightly organic silty clay and some boulders. Refer to the Drilling Logs, Fig. 1, for more detailed descriptions of subsurface materials and test hole locations.

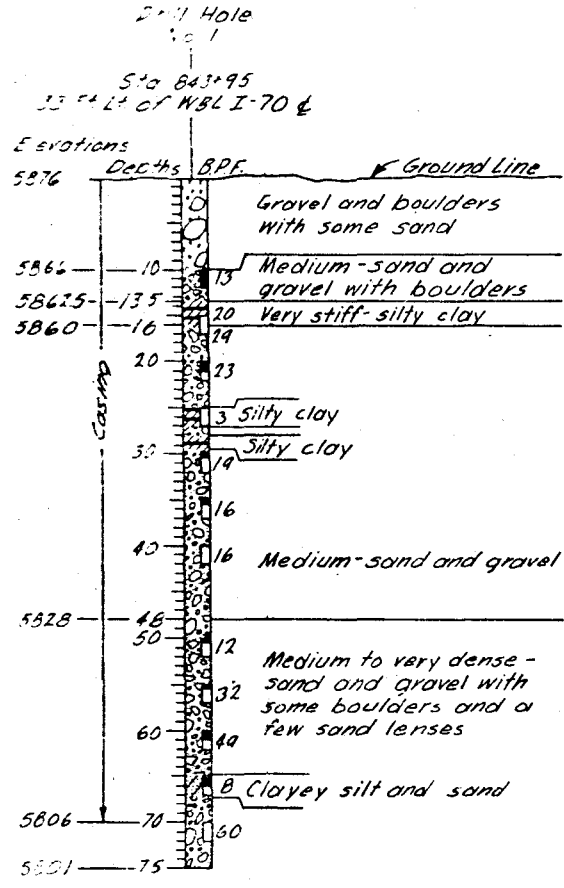
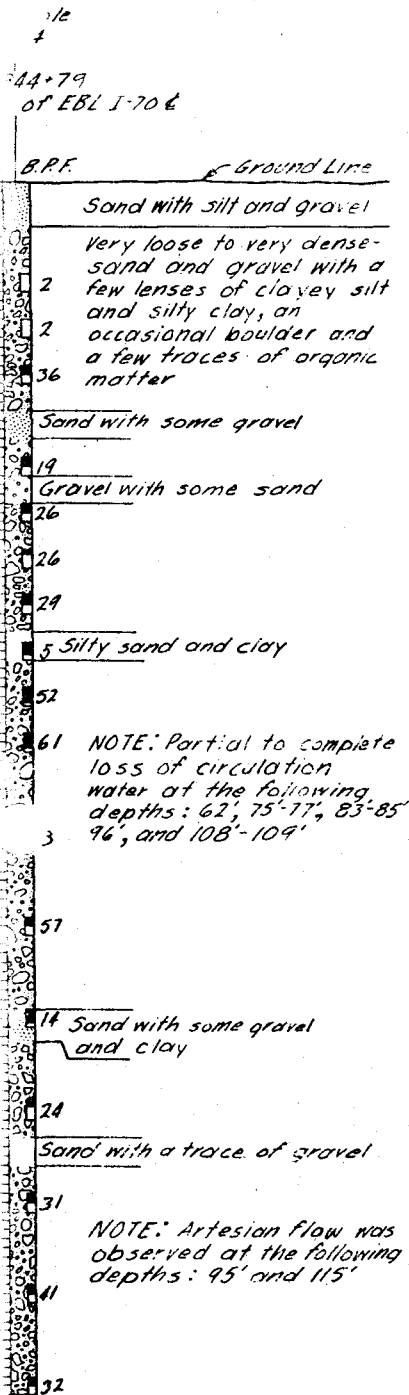
The ground water table was assumed to be at the same elevation as the stream.

## FOUNDATION RECOMMENDATIONS

One-foot diameter steel pipe piles are recommended to support this structure. The estimated tip elevation and corresponding lengths for 100 kip piles are as follows:

<u>Location</u>	<u>Est. Pile Tip Elev. Ft.</u>	<u>Approximate Pile Length Ft.</u>
West Abut., W.B.L.	5782	110
East Abut., W.B.L.	5780	110
West Abut., E.B.L.	5774	110
East Abut., E.B.L.	5773	110

Conical points are recommended for the above pipe piles to prevent damage and facilitate driving through the very dense soil layers.



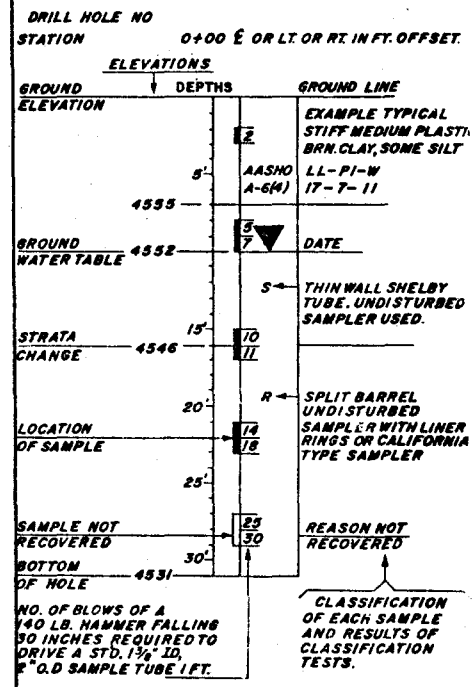
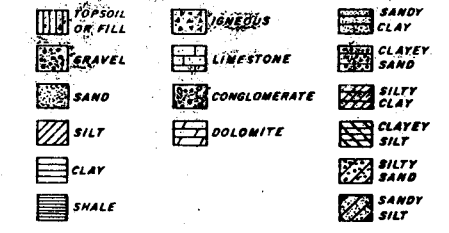
**KEY TO DRILLING LOG**

**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: Water Table Readings were not taken in any of the drill holes.

Date Drilled: 4, 5 and 7-1980

NO.	BY	DATE	REMARKS
REVISIONS			

UTAH STATE DEPARTMENT OF HIGHWAYS  
 SALT LAKE CITY, UTAH  
**MATERIALS AND TESTS DIVISION**

1-70 OVER CLEAR CREEK CHANNEL CHANGE NO. 8

DRAWN BY <i>Ristlet</i>	CHECKED BY <i>Doug C. Seaton</i>	1-70-(116)15
CHECKED BY <i>R. D. ...</i>	CHECKED BY <i>D. K. ...</i>	PROJECT NUMBER
APPROVAL	RECOMMENDED BY <i>Loren H. Rauscher</i>	843+20.74 WBL
RECEIVED	DATE	STATION
		844+21.68 EBL
		SEVIER
		COUNTY

BR. NO. \_\_\_\_\_ DRG. NO. \_\_\_\_\_ OF \_\_\_\_\_

FIGURE 1

*Assume  
GW = 5'*

