5117

FOUNDATIONS

Memorandum

UTAH DEPARTMENT OF TRANSPORTATION

T22S R1W
Sec 20D

DATE: June 15, 1984

TO : Those Listed Below

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

SUBJECT: I-70-1(25)48 - Sigurd to Salina; Foundation Report for I-70 Over "G" Line and Sevier River, At Sta. 2539+22.61 W.B.L. I-70, Drg. No. F-489

SITE CONDITIONS

Two double span prestressed concrete beam structures are proposed to carry I-70 over "G" Line and the Sevier River. Each of the proposed structures will be approximately 223 feet long by 44 feet wide and will cross "G" Line and the Sevier River at an angle of approximately 106°. The approach embankments will be approximately 33 feet high.

Surface drainage in the area is good.

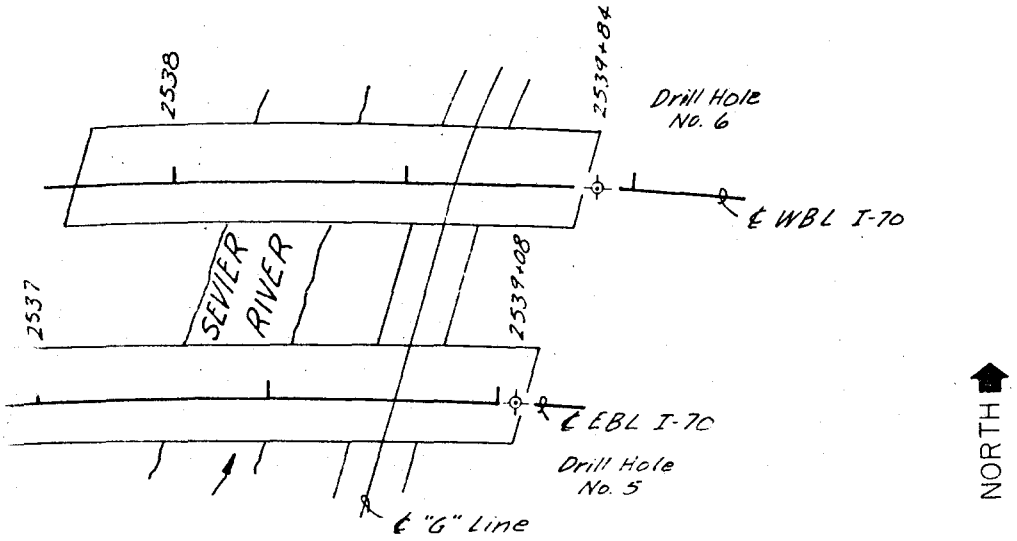
SUBSURFACE EXPLORATION

Six test holes were drilled at the site of the proposed structures to depths between 40 and 60 feet. Correlation of subsoils between drill holes is fair. The subsoils profile can be generalized as follows: from the ground surface to a depth of 5 feet - sandy silt with clayey silt; from 5 feet to the maximum depth of exploration - medium to very dense silty sand and gravel with cobbles and some layers of clayey silt and sandy silt. For a more detailed description of the subsurface materials and test hole locations, refer to Figs. 1A and 1B Log of Borings.

A ground-water table was observed at 2 to 6 feet below the natural ground surface.

FOUNDATION RECOMMENDATIONS

Drilled caissons founded in the medium to very dense silty sand and gravel are recommended to support these structures. An allowable load capacity of 300 kips is recommended for 2.5 foot diameter caissons. The approximate caisson length and tip elevations are as follows:



KEY TO DRILLING LOG

RELATIVE DENSITY (NON-PLASTIC SAND & SIL

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.

TOPSOIL OR FILL	IGNEOUS	SANDY CLAY
GRAVEL	LIMESTONE	CLAYEY SAND
SAND	CONGLOMERATE	SILTY CLAY
SILT	DOLOMITE	CLAYEY SILT
CLAY	SANDSTONE	SILTY SAND
SHALE	SILTSTONE	SANDY SILT

DRILL HOLE NO
STATION 0+00 ℄ OR LT OR RT. IN FT. OFFSE

ELEVATIONS | DEPTHS | B.P.F.

GROUND ELEVATION 4555
GROUND WATER TABLE 4552
STRATA CHANGE 4546
LOCATION OF SAMPLE
SAMPLE NOT RECOVERED
BOTTOM OF HOLE 4531

5' 15' 20' 25' 30'

2 — GROUND LINE EXAMPLE: Soft - silty clay, some fine sand
AASHTO LL - PI - W
A-6(9) 37-14-30
5 — DATE
5 — THIN WALL SHELBY TUBE. UNDISTURBED SAMPLER USED.
10/16
R — SPLIT BARREL UNDISTURBED SAMPLER WITH LINER RINGS OR CALIFORNIA TYPE SAMPLER
14
25 — REASON NOT RECOVERED

NO. OF BLOWS OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO DRIVE A STD. 1⅜" ID, 2" O.D SAMPLE TUBE 1 FT.

ABBREVIATIONS

L.L. — LIQUID LIMIT IN %
P.I — PLASTIC INDEX
w. — NATURAL MOISTURE CONTENT IN
Ref. — REFUSAL ≥ 50 BLOWS PER 6"
PEN. — PENETRATION
G.W.T. — GROUND WATER TABLE
B.P.F. — BLOWS PER FOOT.
N.P - NON PLASTIC
AASHTO - SOIL CLASSIFICATION SYSTE

Date Drilled: September 1983

NO	BY	DATE	REVISIONS

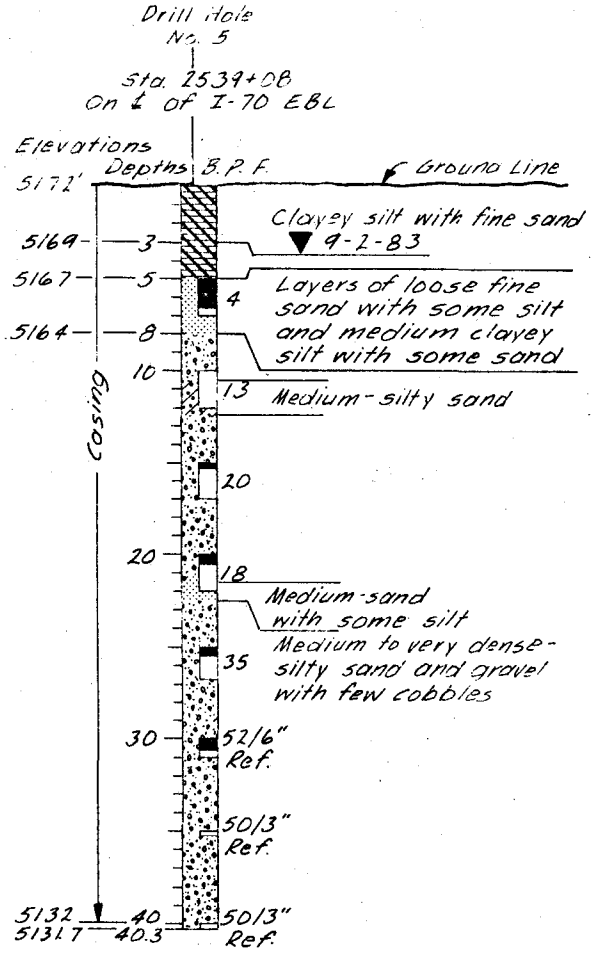
UTAH STATE DEPARTMENT OF TRANSPORTATION
SALT LAKE CITY, UTAH
MATERIALS and RESEARCH SECTIO

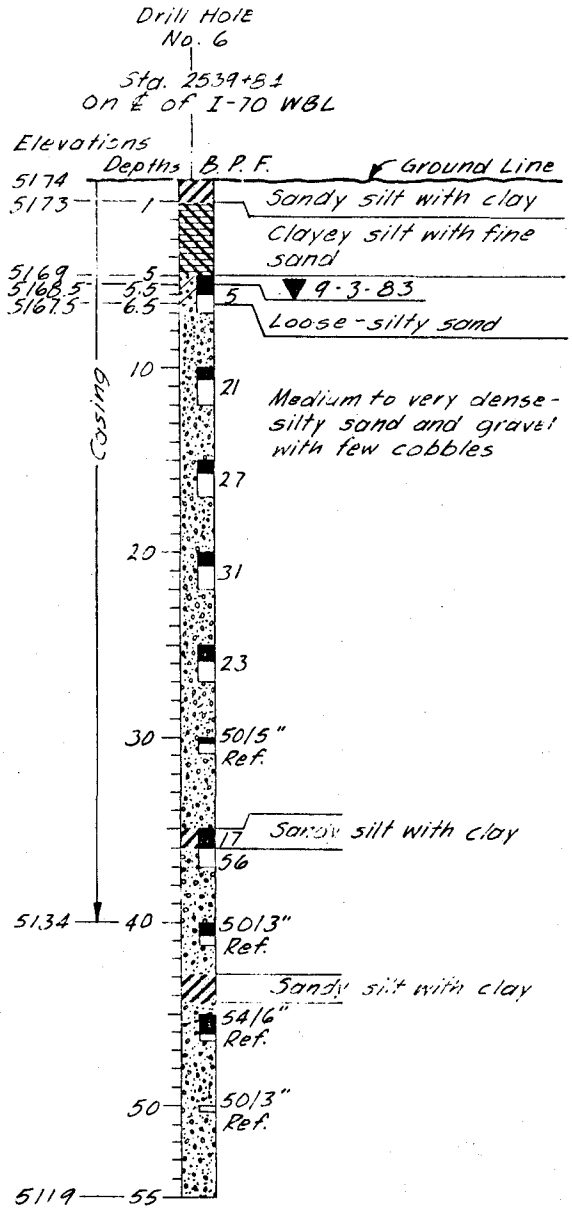
SIGURD TO SALINA
I-70 OVER "G" LINE & SEVIER RIVER

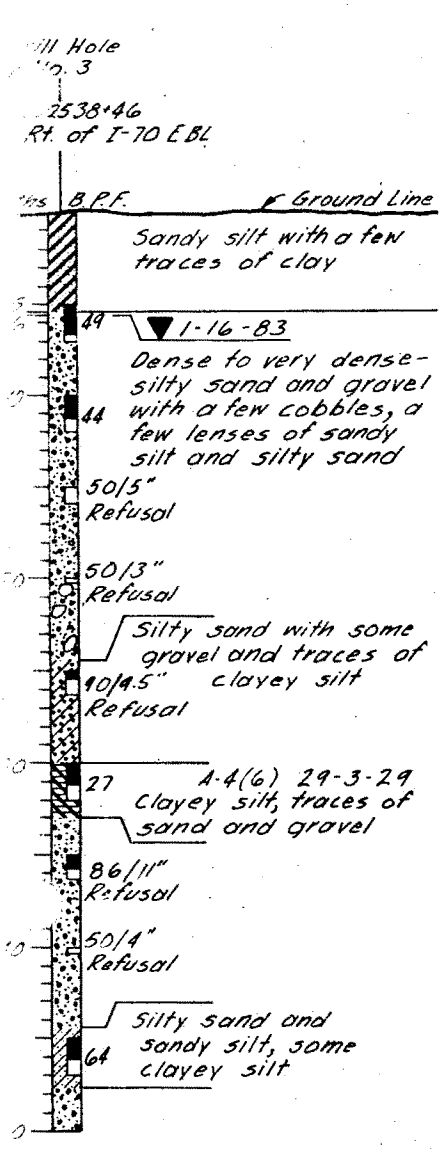
Drawn By Kistler	Checked By	I-70-I(25)48 Project Numb.
Checked By P. Sizemore	Checked By D A Tinney	
Checked By [illegible]	Checked By	2539+22.6W Station
Approval Recommended By Loren H Rausher		SEVIER County
Received Date	Chief Structural Engr.	

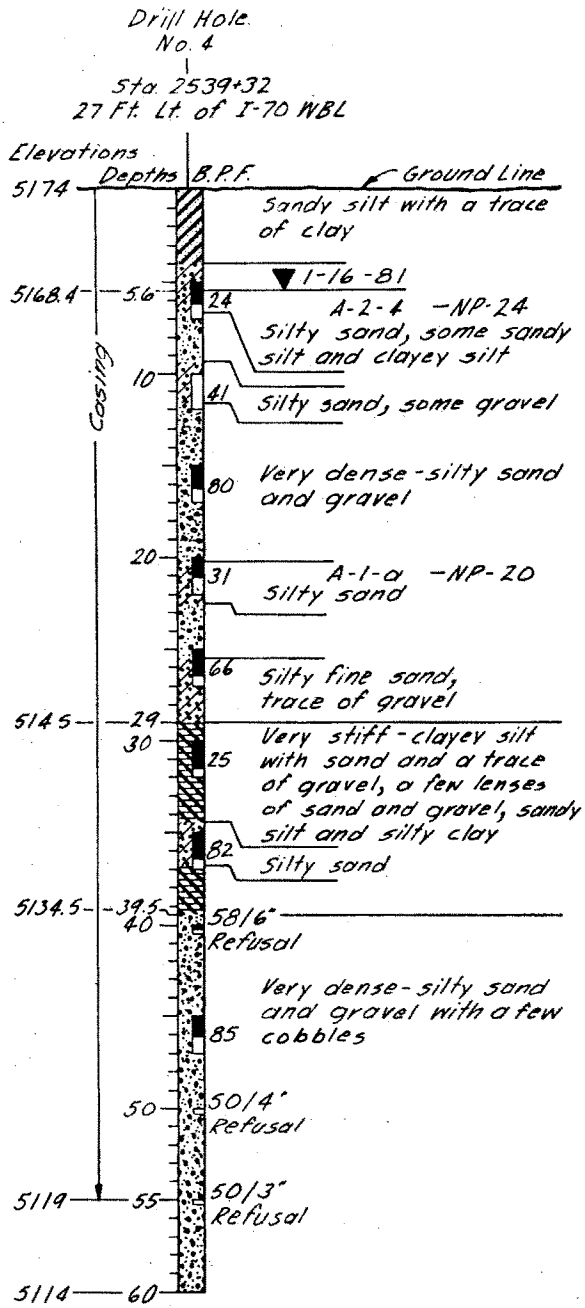
Foundations File No. 80-7-FS-20 Drg. No. F-489

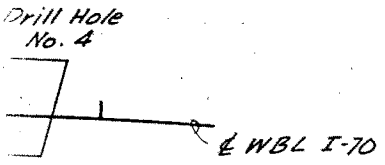
FIGURE 1


Drill Hole
No. 5
Sta. 2539+08
On ℄ of I-70 EBL
Elevations
Depths
B. P. F.
Ground Line
5172'
Clayey silt with fine sand
9-2-83
5169
3
5167
5
4
Layers of loose fine sand with some silt and medium clayey silt with some sand
5164
8
10
13
Medium-silty sand
Casing
20
20
18
Medium-sand with some silt
35
Medium to very dense-silty sand and gravel with few cobbles
30
52/6" Ref.
50/3" Ref.
5132
40
5131.7
40.3
50/3" Ref.


Drill Hole
No. 6
Sta. 2539+81
On ℄ of I-70 WBL
Elevations
Depths
B. P. F.
Ground Line
5174
5173
1
Sandy silt with clay
Clayey silt with fine sand
5169
5
5168.5
5.5
5167.5
6.5
9-3-83
5
Loose-silty sand
10
21
Medium to very dense-silty sand and gravel with few cobbles
Casing
27
20
31
23
30
50/5" Ref.
17
Sandy silt with clay
56
5134
40
50/3" Ref.
Sandy silt with clay
54/6" Ref.
50
50/3" Ref.
5119
55







Sta. 2539+22.61 NBL I-70
Sta. 10+88.16 "G" Line

Sta. 2538+55.00 EBL I-70
Sta. 9+91.59 "G" Line

℄ EBL I-70

NORTH

NOTE: There was sporadic heavy to complete loss of circulation water in all holes.

Date Drilled: January 1981

NO.	BY	DATE	REVISIONS

KEY TO DRILLING LOG

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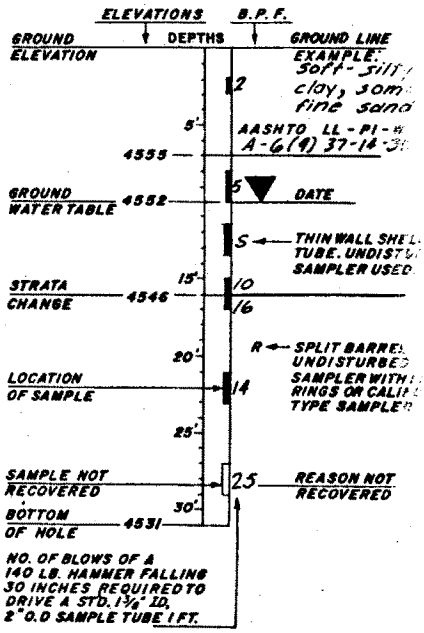
GRAVEL
SAND
SILT
CLAY
SHALE
IGNEOUS
LIMESTONE
CONGLOMERATE
DOLOMITE
SANDSTONE
SILTSTONE

DRILL HOLE NO
STATION 0+00 ℄ OR LT. OR RT. IN FT. OF



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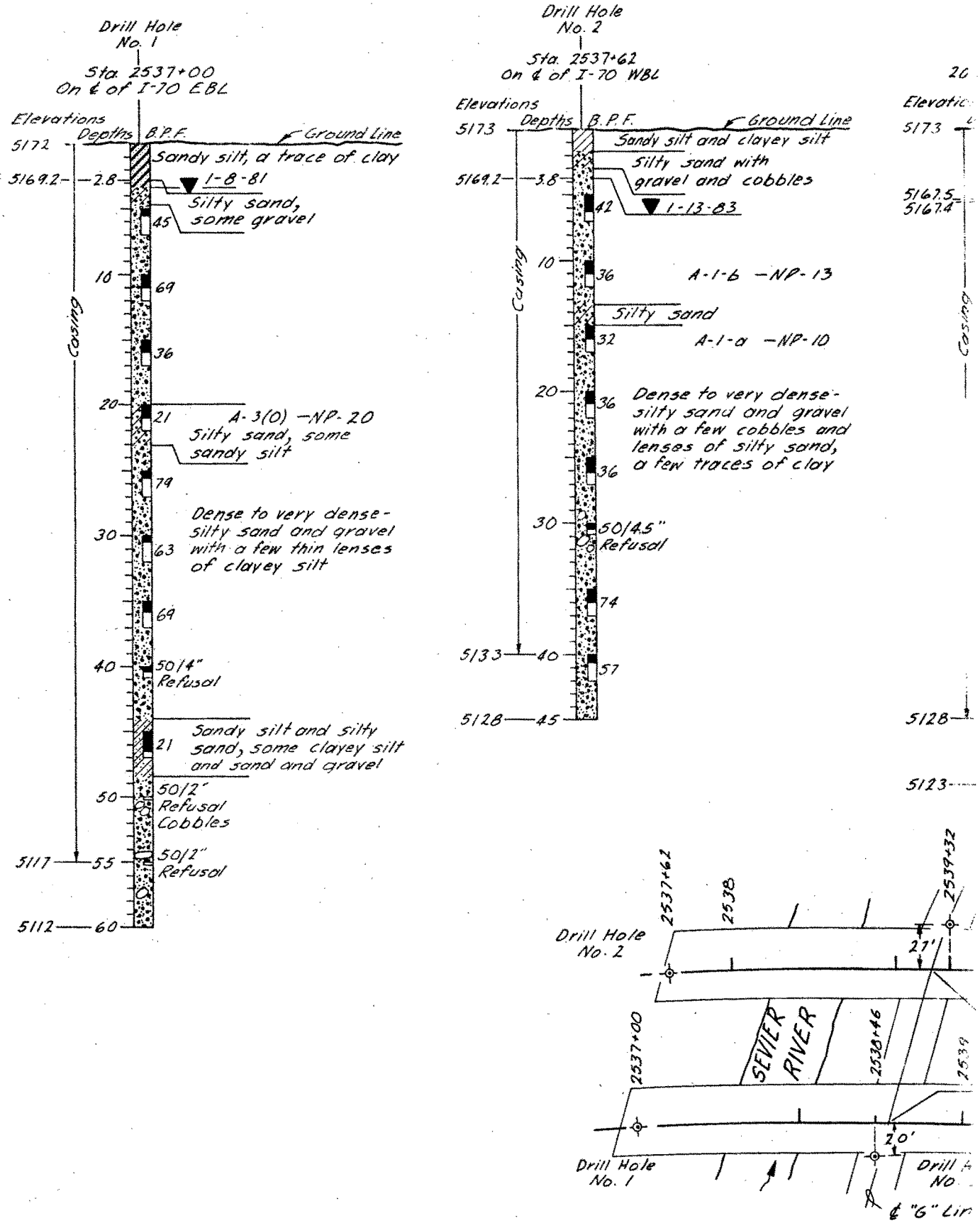
UTAH STATE DEPARTMENT OF TRANSPORTATION
SALT LAKE CITY, UTAH
MATERIALS and RESEARCH SECTION

SIGURD TO SALINA
I-70 OVER "G" LINE & SEVIER RIVER

Drawn By B. Kistler	Checked By	I-70-1(12
Checked By P. Sizemore	Checked By D.K. Fowler	Project No.
Checked By [illegible]	Checked By	2539+22
Approved Recommended By Leon H. Rausch		Sta.
Received Date	Chief Structural Engr.	SEV
Foundations File No. 80-7-FS-20	Drg. No.	F-489

FIGURE 1-3


Drill Hole No. 1
Sta. 2537+00
On ℄ of I-70 EBL
Elevations
Depths
B.P.F.
Ground Line
5172
5169.2
2.8
Sandy silt, a trace of clay
I-8-81
Silty sand, some gravel
45
10
69
36
20
21
A-3(0) -NP-20
Silty sand, some sandy silt
79
30
63
Dense to very dense- silty sand and gravel with a few thin lenses of clayey silt
69
40
50/4"
Refusal
21
Sandy silt and silty sand, some clayey silt and sand and gravel
50
50/2"
Refusal
Cobbles
5117
55
50/2"
Refusal
5112
60
Casing
Drill Hole No. 2
Sta. 2537+62
On ℄ of I-70 WBL
Elevations
Depths
B.P.F.
Ground Line
5173
5169.2
3.8
Sandy silt and clayey silt
Silty sand with gravel and cobbles
42
I-13-83
10
36
A-1-b -NP-13
Silty sand
32
A-1-a -NP-10
20
36
Dense to very dense- silty sand and gravel with a few cobbles and lenses of silty sand, a few traces of clay
36
30
50/4.5"
Refusal
74
5133
40
57
5128
45
Casing
Drill Hole No. 2
2537+62
2538
2539+32
27'
SEVIER RIVER
2537+00
2538+46
2539
20'
Drill Hole No. 1
℄ "6" Lin