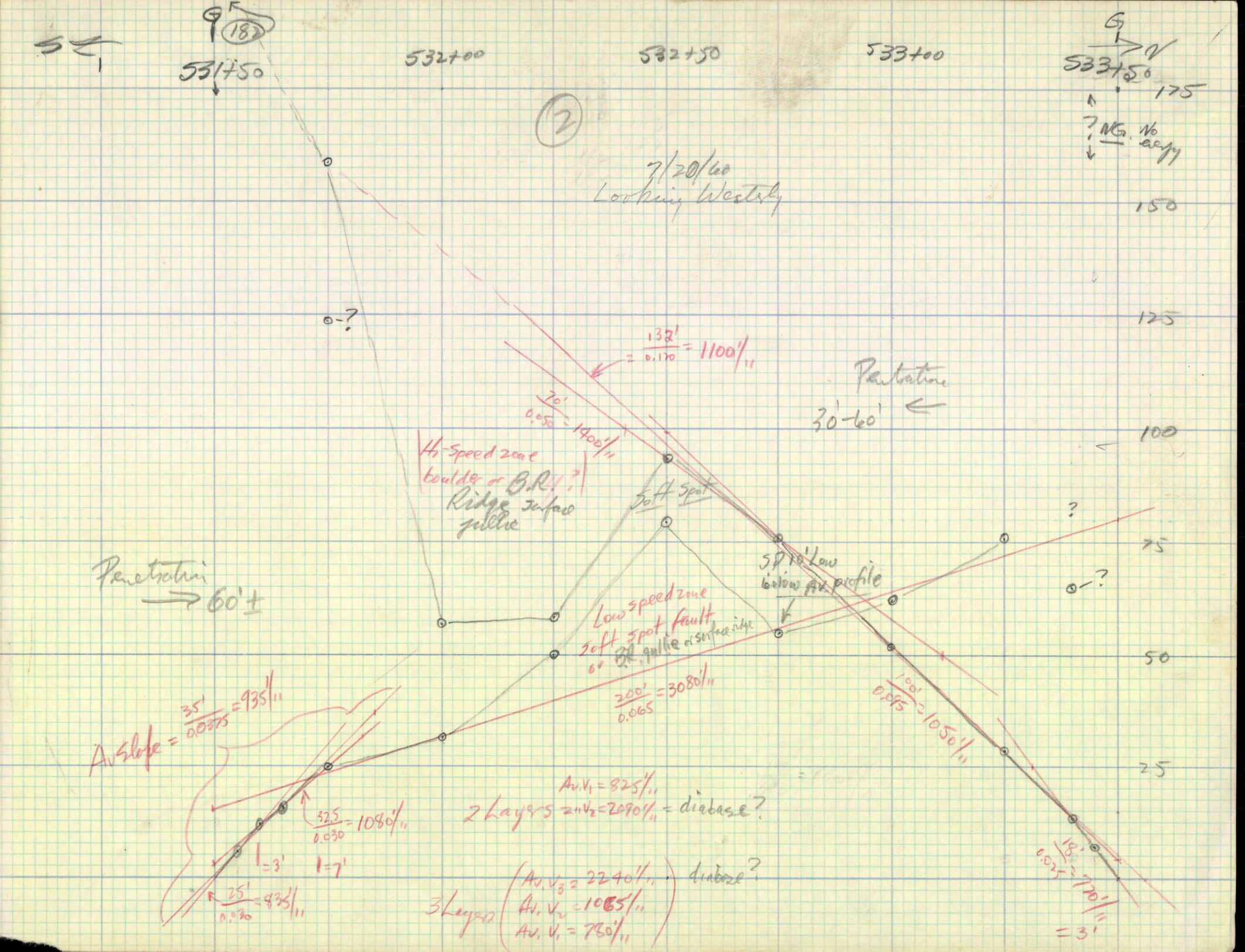
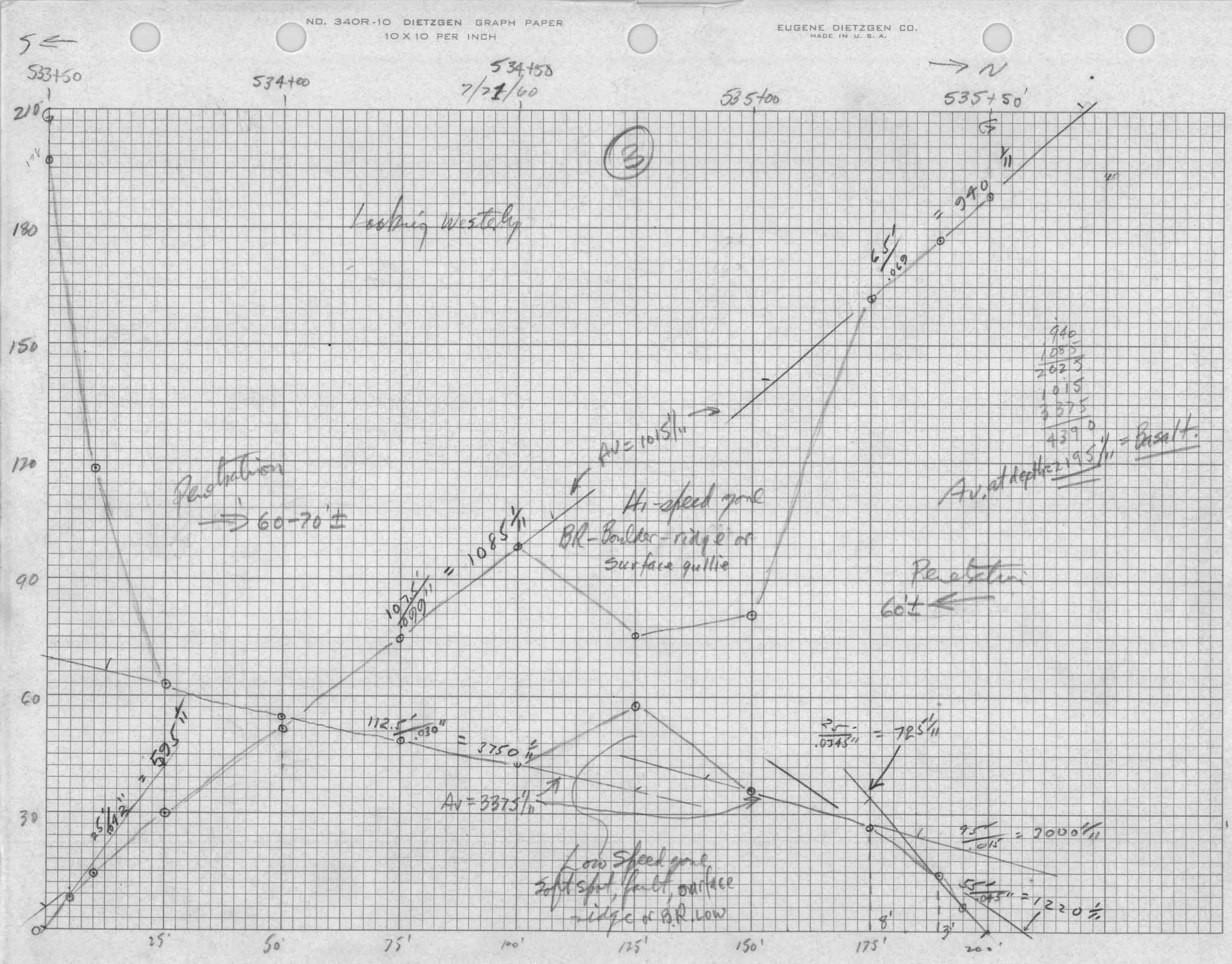


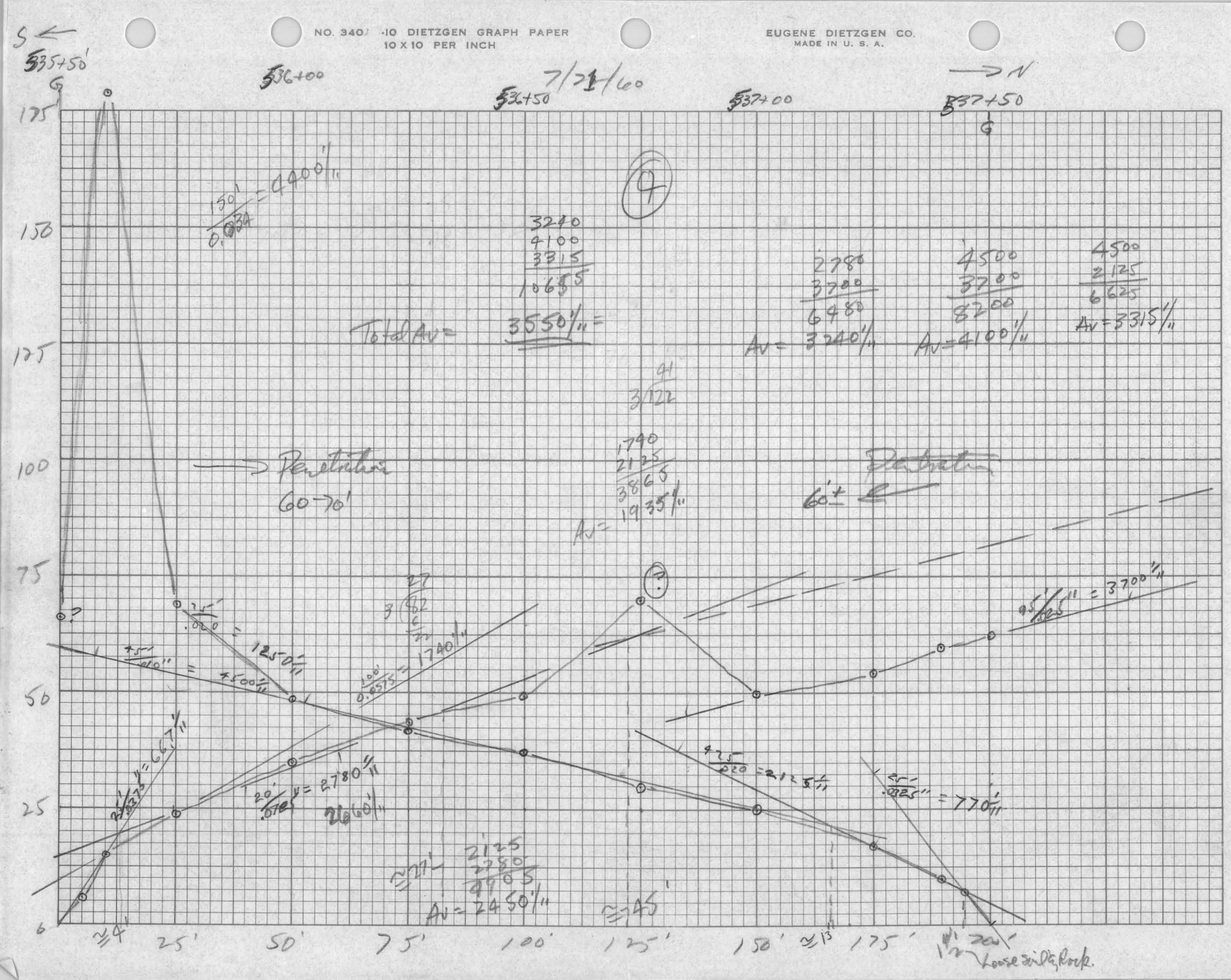
S
G
182
531+50
532+00
532+50
533+00
G
V
533+50
175
150
125
100
75
50
25
2
7/20/60
Looking Westerly
? NG. No energy
o-?
132'/0.120 = 1100'/"
70'/0.050 = 1400'/"
Penetration
30'-60'
Hi-Speed zone
boulder or B.R.?
Ridge surface
gullie
Soft Spot
?
SP 10' Low
below Av. profile
o-?
Penetration
60'±
Low speed zone
soft spot fault
or B.R. gullie or surface ridge
200'/0.065 = 3080'/"
100'/0.095 = 1050'/"
Av Slope = 35'/0.0375 = 935'/"
Av. V1 = 825'/"
2 Layers 2" V2 = 2090'/" = diabase?
32.5/0.030 = 1080'/"
= 3'
= 7'
25'/0.030 = 835'/"
3 Layers
Av. V3 = 2240'/"
Av. V2 = 1065'/"
Av. V1 = 780'/"
diabase?
18'/0.025 = 720'/"
= 3'

NO. 340R-10 DIETZGEN GRAPH PAPER
10 X 10 PER INCH
EUGENE DIETZGEN CO.
MADE IN U. S. A.



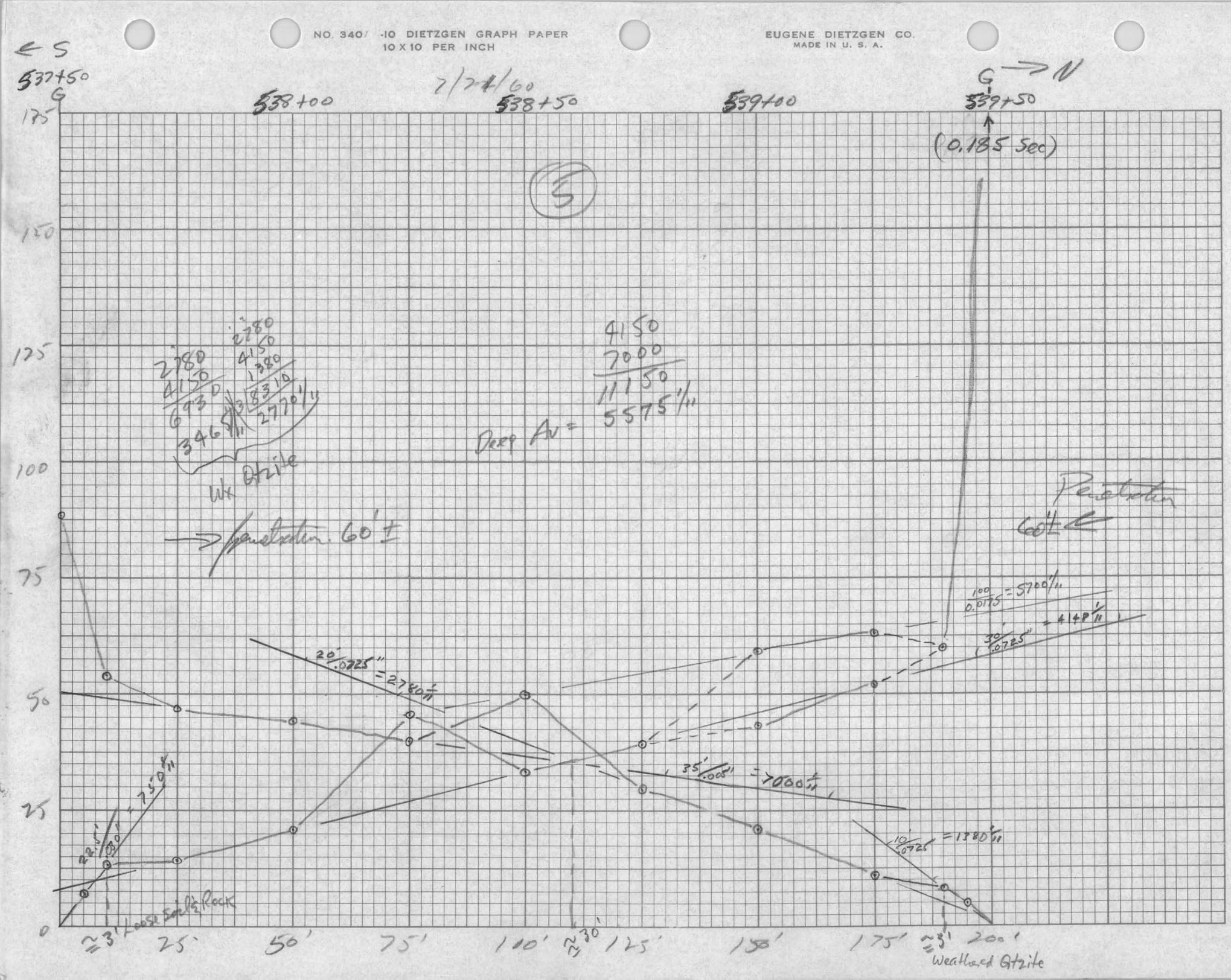
NO. 3407 -10 DIETZGEN GRAPH PAPER
10 X 10 PER INCH

EUGENE DIETZGEN CO.
MADE IN U. S. A.



NO. 340/ -10 DIETZGEN GRAPH PAPER
10 X 10 PER INCH

EUGENE DIETZGEN CO.
MADE IN U. S. A.



NO. 340/ -10 DIETZGEN GRAPH PAPER
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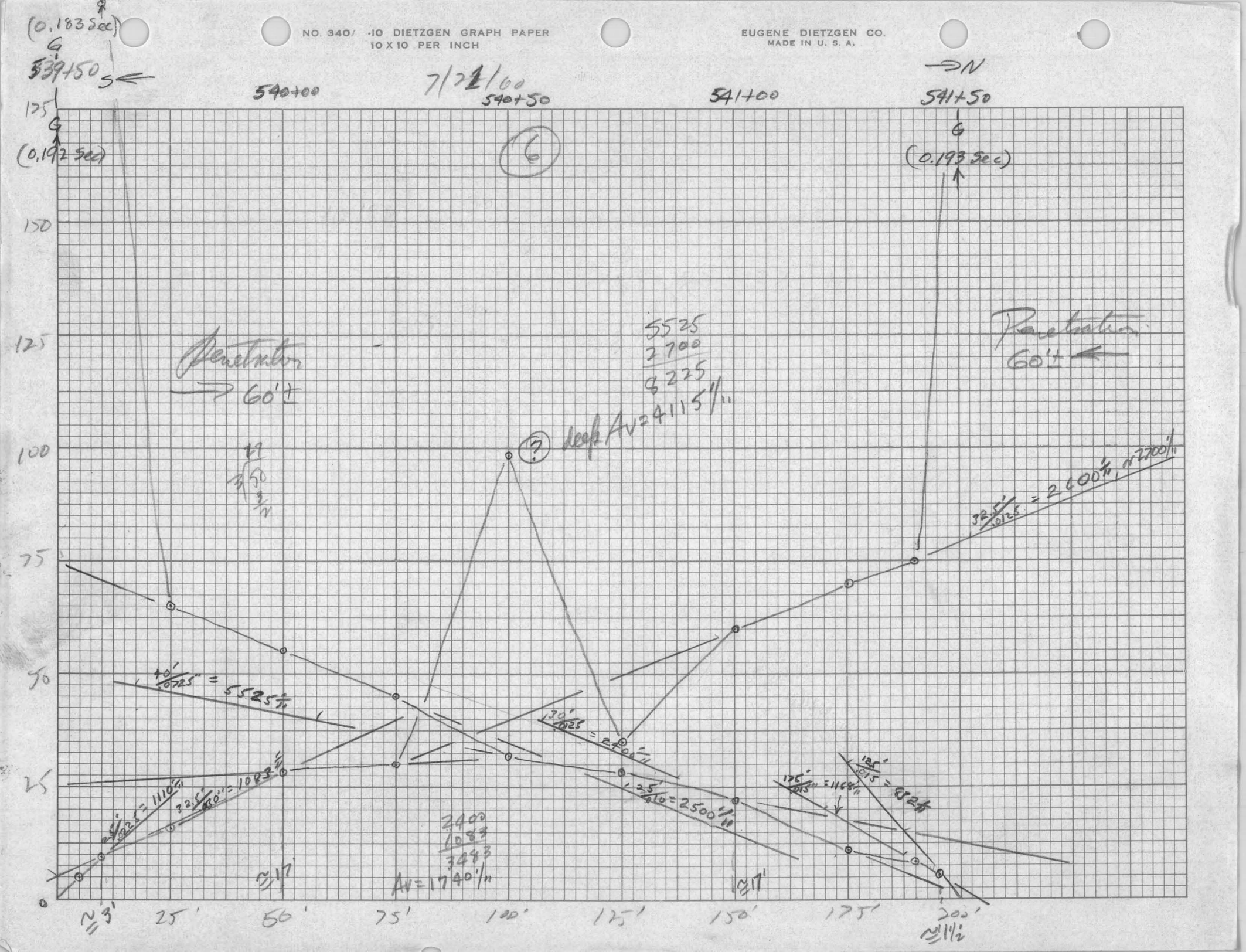


, and maybe heavier hammer operator too, when necessary, I am sure this could be efficiently extended to 100' and of course, even deeper with caps & primer cord etc. In any case, there were no indications of major higher velocity increases to any of the cut depths to grade.

Velocity-riffability notes are based on some assumptions and conditions, such as:

1. Diabase seems to be fairly weathered with a strong decomposing tendency which should aid rifping somewhat consistent within reasonable recorded velocity variations. In every case it should rip.

2. Shale notes are purely on various published experiences elsewhere, as I did not get a good look at the shale exposures. From velocity data only, it would appear to be riffable

3. Quartzite near surface is quite brittle, ~~[illegible]~~ seems fairly well laminated and factured - not massive, all of which often help riffability, even though the velocities might be otherwise too high. Nevertheless, much of the quartzite and probably the conglomerate, will be either unriffable or extremely tough to rip.

4. Other than the above, most rocks less than 4000'/" is often found to be riffable, between 4000'/" to 6000'/" questionable, and above 6000'/" very seldom will rip with present available equipment. With heaviest available equipment, the simplest average cut off point now is to say: below 5000'/" may rip, and above 5000'/" may not rip.

5. Unfortunately, we have not yet had the opportunity to inspect the core and soil samples in Phoenix.

Let us know if there are any questions. On the plotted travel time curves, velocities were purposely left off in case any one wished to apply re-interpretations. For ourselves we used the original graphs.

We will look forward to keeping in touch with progress and further correlation of data & results.

V.T.Y.
[illegible]
Pres & G.M.

Mr Harold Hall, V.P. Engineering
Minatoon Eqpt Co. 1914 E Buchanan
Phx Ariz

Mr. Furman Byers, V.P. &/or Mr. Jack DuPont, Chief Engr?
Arizona Operations(?) Ariz operations
Isbell Const Co. 2808 N. 27th ave Isbell Const Co.
? Phoenix Arizona

Mr. Louis Scott, Chief Geol.
Ariz State Highway Dept.
? 1739 W. Jackson
Phoenix, Ariz
} incl a Dynametric ad sheet.

50 orig & 2 cc

Dynametric Inc
? Pasadena, Cal.

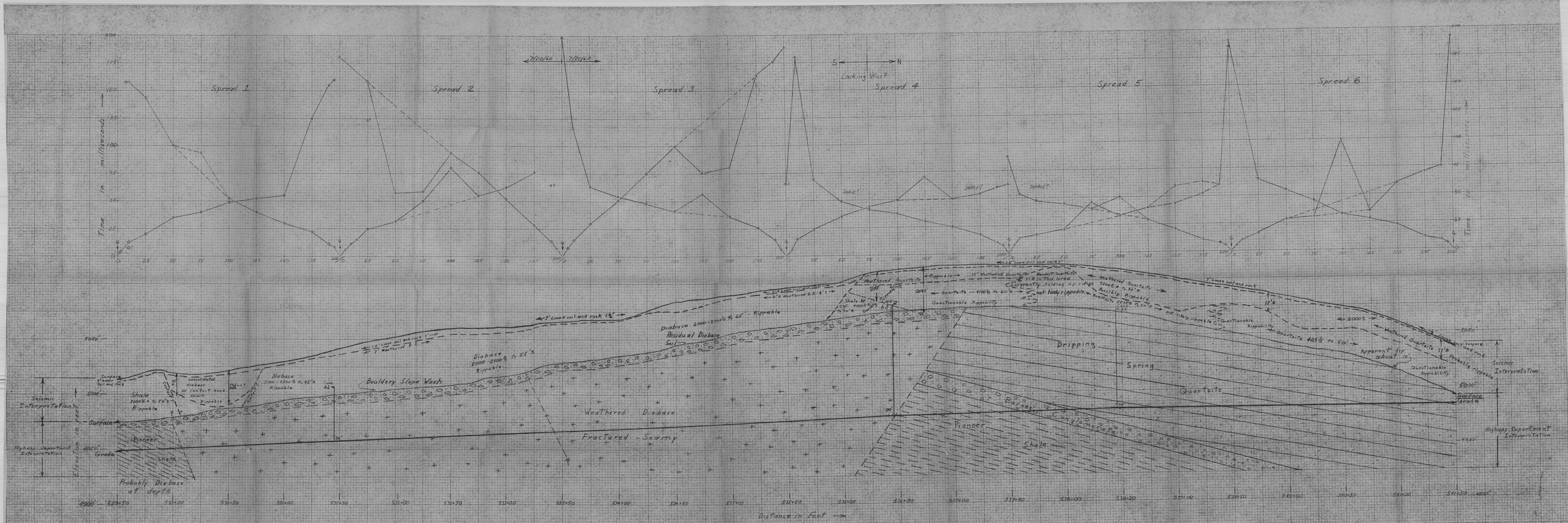
File - 2

7/26/60

Gentlemen:

In accordance with joint venture seismic demonstration conducted at Champion Pass, Apache Summit area along proposed new Globe-Show Low State highway alignment on 6/20/60 & 6/21/60, we herewith submitt to each of you a copy of the not cod after mailing results of our interpretation.

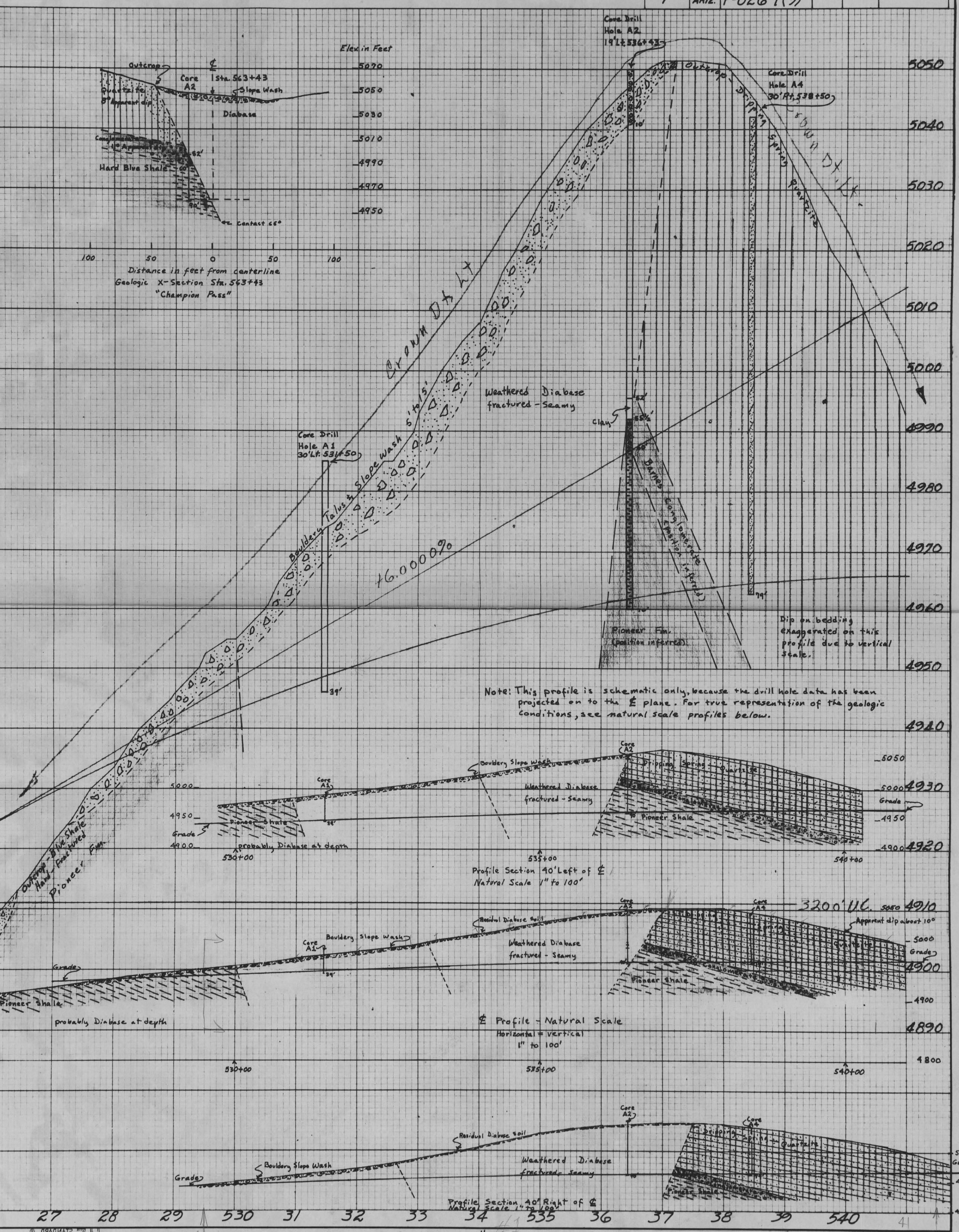
Although the results are not as clean cut as we would desire, I believe some definite benefit will be realized. Our average maximum depth of penetration was likely not much over 70', however with more experience and heavier hammer

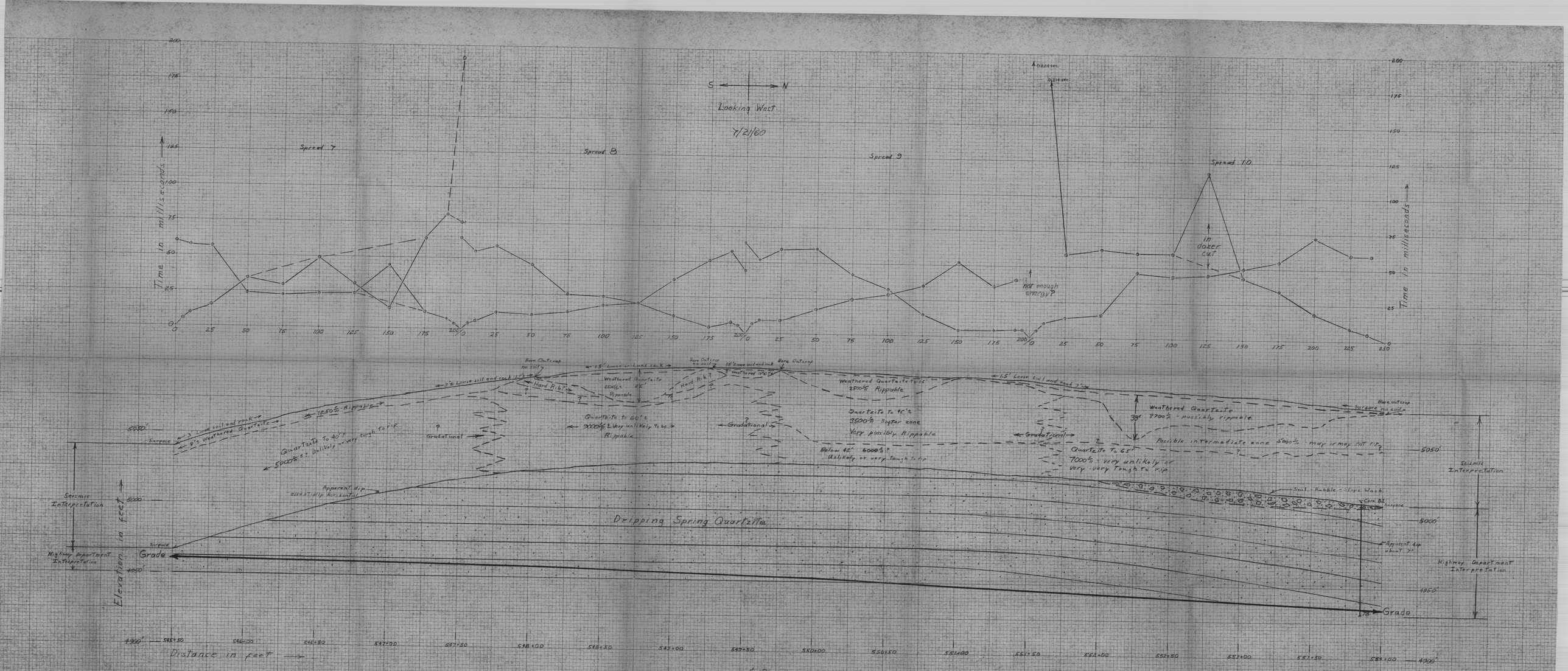


CHAMPION-PASS-APACHE SUMMIT AREA
GLOBE-SHOW LOW HIGHWAY
GILA COUNTY, ARIZONA

HEINRICHS GEOEXPLORATION COMPANY
808 WEST GRANT ROAD
P.O. BOX 5671 TEL. MAIN 2-4202
TUCSON ARIZONA

FED. ROAD DIVISION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
7	ARIZ.	F-026-1(9)			



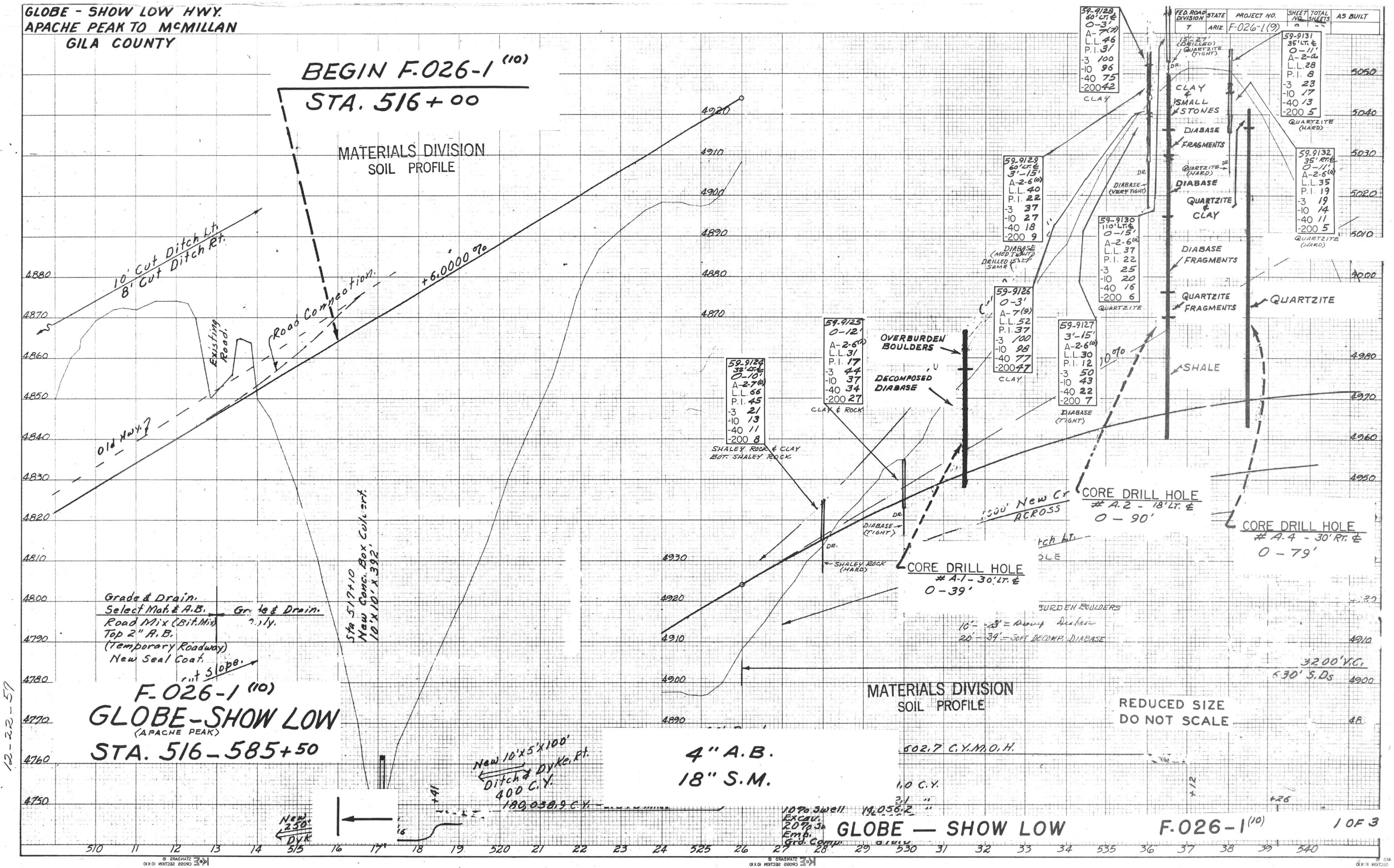


℄ Profile
Horizontal = Vertical
1" = 25'

Champion Pass — Apache Summit Area
Globe — Show Low Highway
Gila County, Arizona

HEINRICHS GEOEXPLORATION COMPANY
80 WEST GRANT ROAD
P.O. BOX 56 TEL. MA 2-4202
TUCSON ARIZONA

KEUFFEL & ESSER CO. MADE IN U.S.A.
K&E STANDARD CROSS SECTION

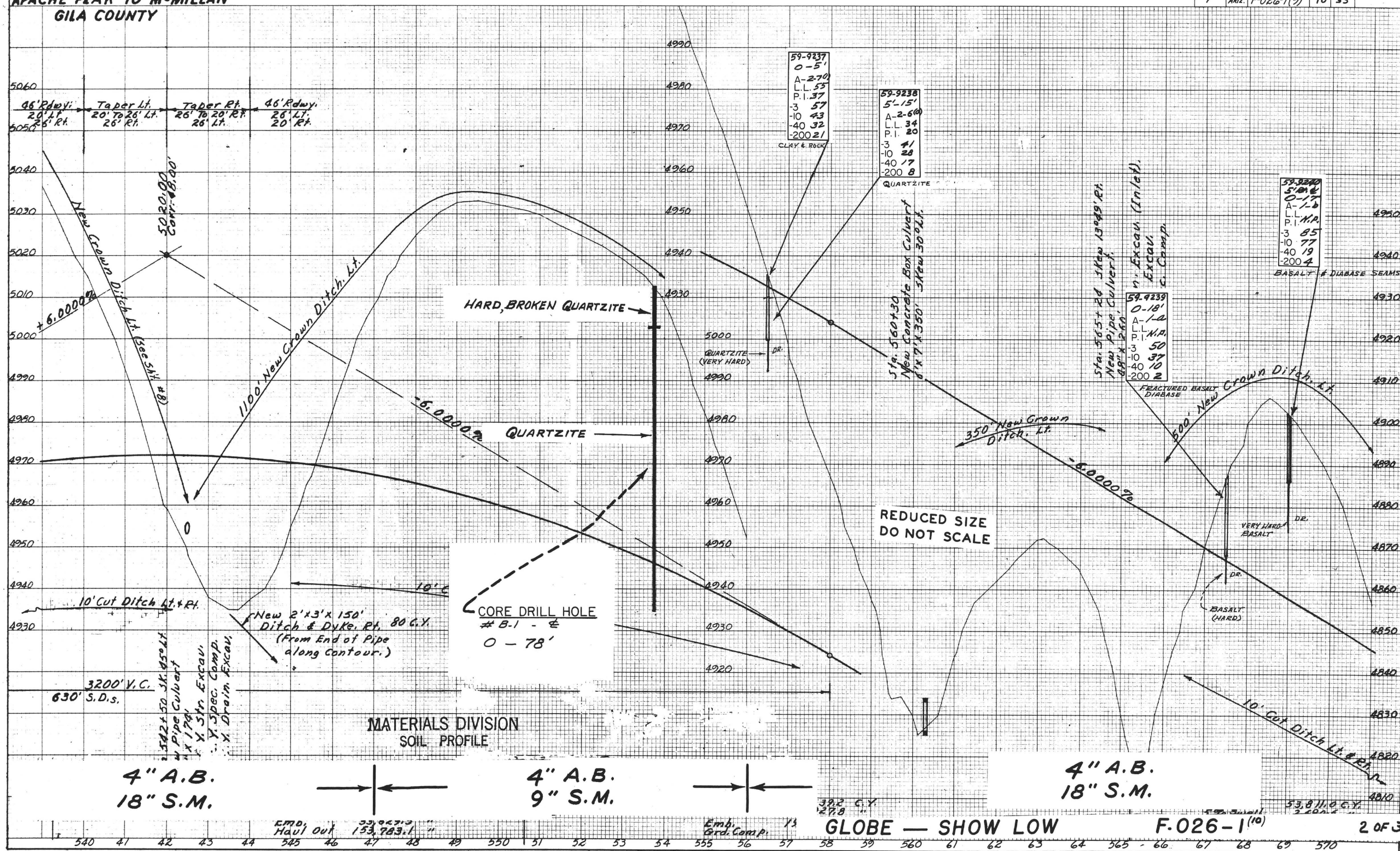


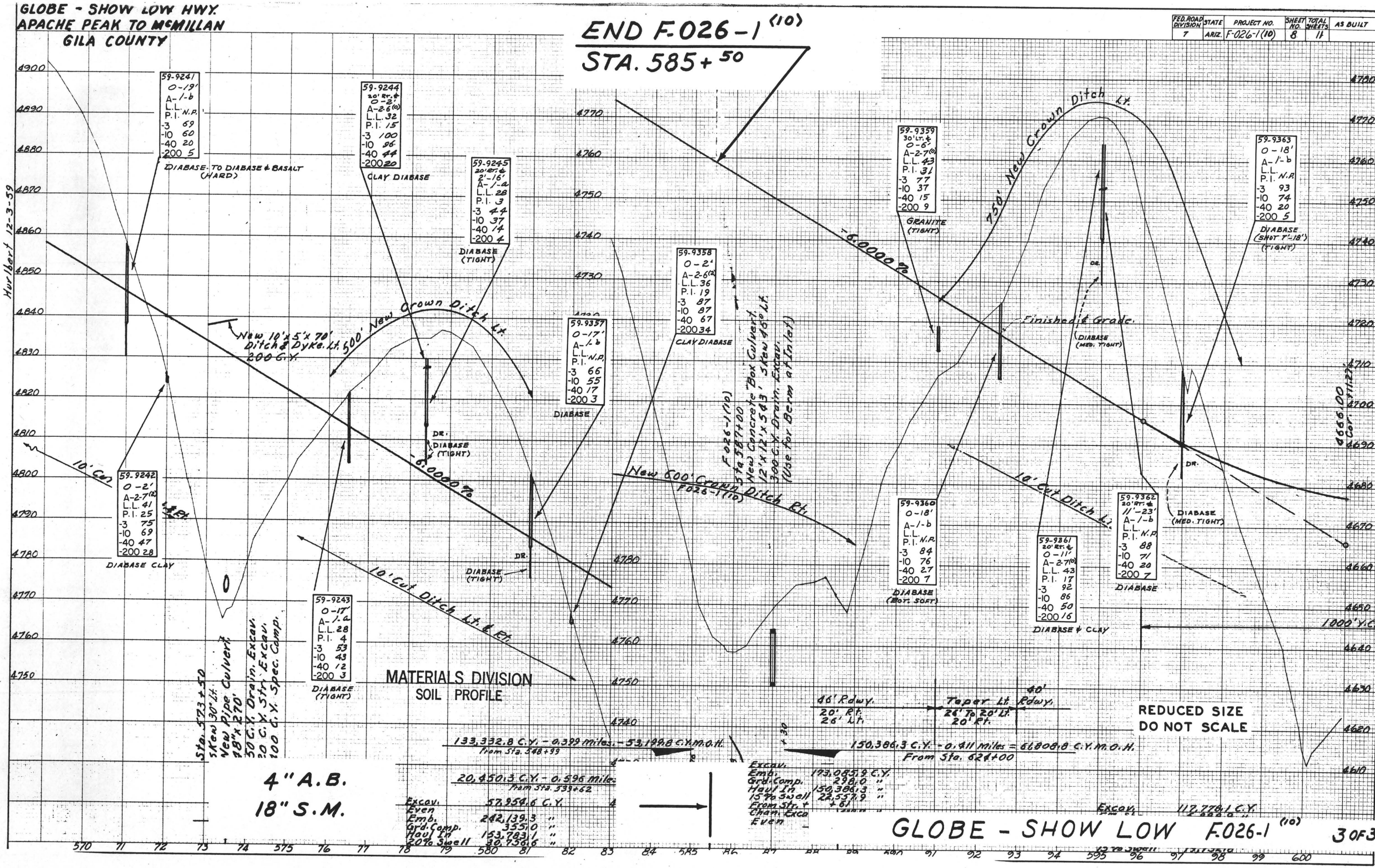
FED. ROAD DIVISION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
7	ARIZ.	F-026-1(9)	8		

TO EPR
12-22-57

GLOBE - SHOW LOW HWY.
APACHE PEAK TO McMILLAN
GILA COUNTY

FED. ROAD DIVISION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
7	ARIZ.	F-026-1(9)	10	33	




GLOBE - SHOW LOW HWY.
APACHE PEAK TO McMILLAN
GILA COUNTY
FED. ROAD DIVISION 7
STATE ARIZ.
PROJECT NO. F-026-1(10)
SHEET NO. 8
TOTAL SHEETS 11
AS BUILT
END F-026-1 (10)
STA. 585+50
Hurlbert 12-3-59
59-9241 0-19' A-1-b L.L. N.P. P.I. -3 69 -10 60 -40 20 -200 5
DIABASE TO DIABASE & BASALT (HARD)
59-9244 20' Rt. & 0-2' A-2-6(0) L.L. 32 P.I. 15 -3 100 -10 96 -40 44 -200 20
CLAY DIABASE
59-9245 20' Rt. & 2'-16' A-1-a L.L. 28 P.I. 3 -3 44 -10 37 -40 14 -200 4
DIABASE (TIGHT)
59-9357 0-17' A-1-b L.L. N.P. P.I. -3 66 -10 55 -40 17 -200 3
DIABASE
59-9358 0-2' A-2-6(2) L.L. 36 P.I. 19 -3 87 -10 87 -40 67 -200 34
CLAY DIABASE
59-9359 30' Lt. & 0-6' A-2-7(0) L.L. 43 P.I. 31 -3 77 -10 37 -40 15 -200 9
GRANITE (TIGHT)
59-9363 0-18' A-1-b L.L. P.I. N.P. -3 93 -10 74 -40 20 -200 5
DIABASE (SHOT 7'-18') (TIGHT)
59-9242 0-2' A-2-7(2) L.L. 41 P.I. 25 -3 75 -10 69 -40 47 -200 28
DIABASE CLAY
59-9243 0-17' A-1-a L.L. 28 P.I. 4 -3 53 -10 43 -40 12 -200 3
DIABASE (TIGHT)
59-9360 0-18' A-1-b L.L. P.I. N.P. -3 84 -10 76 -40 27 -200 7
DIABASE (BOT. SOFT)
59-9361 20' Rt. & 0-11' A-2-7(0) L.L. 43 P.I. 17 -3 92 -10 86 -40 50 -200 16
DIABASE & CLAY
59-9362 20' Rt. & 11'-23' A-1-b L.L. P.I. N.P. -3 88 -10 71 -40 20 -200 7
DIABASE
DIABASE (MED. TIGHT)
DIABASE (MED. TIGHT)
DR.
Finished & Grade.
New 10'x5'x70' Ditch & Dyke. Lt. 200 C.Y.
500' New Crown Ditch Lt.
750' New Crown Ditch Lt.
-6.0000%
-6.0000%
10' Cut
10' Cut Ditch Lt. & Rt.
10' Cut Ditch Lt.
New 600' Crown Ditch Rt. F026-1(10)
F026-1(10) Sta 587+00 New Concrete "Box Culvert" 12'x12'x543' Skew 45° Lt. 300 C.Y. Drain. Excav. (Use for Berm at Inlet)
Sta. 573+50 Skew 30° Lt. New Pipe Culvert 48"x270' 50 C.Y. Drain. Excav. 20 C.Y. Str. Excav. 100 C.Y. Spec. Comp.
MATERIALS DIVISION
SOIL PROFILE
46' Rdwy. 20' Rt. 26' Lt.
Taper Lt. 26' To 20' Lt. 20' Rt.
40' Rdwy.
133,332.8 C.Y. - 0.399 Miles - 53,199.8 C.Y. M.O.H.
From Sta. 548+99
150,386.3 C.Y. - 0.411 Miles = 61,808.8 C.Y. M.O.H.
From Sta. 624+00
20,450.3 C.Y. - 0.596 Miles
From Sta. 539+62
Excav. 57,954.6 C.Y.
Even
Emb. 242,139.3 "
Grd. Comp. 355.0 "
Haul In 153,783.1 "
20% Swell 30,756.6 "
Excav. Emb. 173,085.9 C.Y.
Grd. Comp. 298.0 "
Haul In 150,386.3 "
15% Swell 22,557.9 "
From Str. + +61
Chan. Exca
Even
Excav. 117,778.1 C.Y.
4" A.B.
18" S.M.
REDUCED SIZE
DO NOT SCALE
GLOBE - SHOW LOW F.026-1 (10)
3 OF 3

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane 7, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass 1st 536+50 — Hole No.: A 2

Shift: 8:00 to 4:00 — Date: June 16 1959

Actual Drilling Time: 4 hrs — Machine No.:

Depth of Hole Start of Shift: 0 — Depth End of Shift: 18

Distance Drilled: 18 (FEET) NX (SIZE) — Distance Reamed: (FEET) (SIZE)

Estimated Core Saved: 6 (FEET) — Cement Drilled: (FEET) (SIZE)

Bit No.: — Footage: — Bit No.: — Footage:

Shell No.: — Footage: — Shell No.: — Footage:

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
0	5	Clay & small stones
5	10	" " "
10	14	" " "
14	16	Diabase fragment
16	18	" "

Remarks: 4 hrs setup up Drill water tanks drilling eyebolt hole.

Inspector or Foreman:

Helper: Ed Brown — Runner: Ray Owen (SIGNATURE)

A-2

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Mob. Champion Pass State Highway — Hole No.: A 2

Shift: 8:00 to 4:00 — Date: June 15 1959

Actual Drilling Time: — Machine No.:

Depth of Hole Start of Shift: — Depth End of Shift:

Distance Drilled: (FEET) (SIZE) — Distance Reamed: (FEET) (SIZE)

Estimated Core Saved: (FEET) — Cement Drilled: (FEET) (SIZE)

Bit No.: — Footage: — Bit No.: — Footage:

Shell No.: — Footage: — Shell No.: — Footage:

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION

Remarks: Mob. equipment moved truck mount Drill to job site levelled off setup for Drill

Inspector or Foreman:

Helper: — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass State Hwy — Hole No. A2

Shift: 8:00 to 4:00 — Date: June 18 1957

Actual Drilling Time: 6 hrs. — Machine No.

Depth of Hole Start of Shift: 35 — Depth End of Shift: 60

Distance Drilled: 25 FEET | WW SIZE — Distance Reamed: FEET | SIZE

Estimated Core Saved: FEET — Cement Drilled: FEET | SIZE

Bit No. Footage — Bit No. Footage

Shell No. Footage — Shell No. Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
35	40	Diabase fragments mud seams
40	50	" " "
50	54	" " "
54	60	Quartzite fragments

Remarks: Hole caving 54 to 60. Run out of Diabase at 54 into Broken Quartzite. Cemented Plaster

Inspector or Foreman (SIGNATURE)

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass — Hole No. A2

Shift: 8:00 to 4:00 — Date: June 17 1957

Actual Drilling Time: 8 hrs. — Machine No.

Depth of Hole Start of Shift: 18 — Depth End of Shift: 35

Distance Drilled: 17 FEET | 2 NX 15 WW. SIZE — Distance Reamed: FEET | SIZE

Estimated Core Saved: 10 FEET — Cement Drilled: FEET | SIZE

Bit No. Footage — Bit No. Footage

Shell No. Footage — Shell No. Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
18	20	NX-Diabase fragments
20	25	" Diabase "
25	30	" "
30	35	" "

Remarks: 2 ft NX set BX casing at 20' setup wireline hoist etc. Soft fractured + weathered diabase

Inspector or Foreman (SIGNATURE)

Helper: Ed Snow — Runner: Ray Owen

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass State Hiway — Hole No. A2

Shift: 8:00 to 4:00 — Date: June 20 1959

Actual Drilling Time: ____ — Machine No: ____

Depth of Hole Start of Shift: 68 — Depth End of Shift: ____

Distance Drilled: ____ FEET ____ SIZE — Distance Reamed: ____ FEET ____ SIZE

Estimated Core Saved: ____ FEET — Cement Drilled: ____ FEET ____ SIZE

Bit No. ____ Footage ____ Bit No. ____ Footage ____

Shell No. ____ Footage ____ Shell No. ____ Footage ____

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION

Remarks: 8 hrs working AX casing down thru caving conglomerate

Inspector or Foreman ____

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass State Hiway — Hole No. A2

Shift: 8:00 to 4:00 — Date: June 19 1959

Actual Drilling Time: 8 hrs — Machine No: ____

Depth of Hole Start of Shift: 60 — Depth End of Shift: 68

Distance Drilled: 8 FEET BX SIZE — Distance Reamed: ____ FEET ____ SIZE

Estimated Core Saved: 5 FEET — Cement Drilled: ____ FEET ____ SIZE

Bit No. ____ Footage ____ Bit No. ____ Footage ____

Shell No. ____ Footage ____ Shell No. ____ Footage ____

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
60	61	Ba. Shale & conglomerate
61	62	" "
62	63	" "
63	65	" "
65	68	" "

Remarks: Drilled out 7' cement. Hole caving in conglomerate area. Started AX casing down hole.

Inspector or Foreman ____

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass — Hole No. A2

Shift: 8:00 to 4:00 — Date: June 23 1959

Actual Drilling Time: 8 hrs. — Machine No.:

Depth of Hole Start of Shift: 74 — Depth End of Shift: 85

Distance Drilled: FEET — AX SIZE — Distance Reamed: FEET — SIZE

Estimated Core Saved: FEET — Cement Drilled: FEET — SIZE

Bit No.: Footage: Bit No.: Footage:

Shell No.: Footage: Shell No.: Footage:

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
74	77	SHALE
77	78	
78	81	
81	83	
83	85	

Remarks: Had to drill to bottom each time down hole, Had trouble getting coreland back into casing

Inspector or Foreman:

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass — Hole No. A2

Shift: 8:00 to 4:00 — Date: June 22 1959

Actual Drilling Time: — Machine No.:

Depth of Hole Start of Shift: 68 — Depth End of Shift: 74

Distance Drilled: 6' FEET — AX SIZE — Distance Reamed: FEET — SIZE

Estimated Core Saved: FEET — Cement Drilled: FEET — SIZE

Bit No.: Footage: Bit No.: Footage:

Shell No.: Footage: Shell No.: Footage:

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
68	69	SHALE
69	71	
71	73	
73	74	

Remarks: Hole still developing cave.

Inspector or Foreman:

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

A-4

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass State Hiway — Hole No. A4

Shift: 8:00 to 4:00 — Date: June 25 1959

Actual Drilling Time: 8 hrs. — Machine No. CP8

Depth of Hole Start of Shift: 0 — Depth End of Shift: 28

Distance Drilled: 23 5 FEET — 3½" NX SIZE — Distance Reamed: FEET — SIZE

Estimated Core Saved: 20 FEET — Cement Drilled: FEET — SIZE

Bit No. — Footage — Bit No. — Footage

Shell No. — Footage — Shell No. — Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
0	5	3½" collar pipe
5	8	Quartzite
8	11	"
11	13	"
13	17	"
17	22	"
22	23½	"
23½	27	
27	to 28	

Remarks:

Inspector or Foreman

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass — Hole No. A2

Shift: 8:00 to 4:00 — Date: June 24 1959

Actual Drilling Time: 4 hrs. — Machine No.

Depth of Hole Start of Shift: 85 — Depth End of Shift: 90'

Distance Drilled: 5 FEET — AX SIZE — Distance Reamed: FEET — SIZE

Estimated Core Saved: FEET — Cement Drilled: FEET — SIZE

Bit No. — Footage — Bit No. — Footage

Shell No. — Footage — Shell No. — Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
Finished hole, pulled Casing		
AX & BX	85-90 = 5 ft	
Moved drill and equipment		
to hole no. A4		

Remarks: Setup drill on Hole no A4

Inspector or Foreman

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass Hiway Cut — Hole No. A 4

Shift: 8:00 to 4:00 — Date: June 29 1959

Actual Drilling Time: 8 hrs — Machine No.:

Depth of Hole Start of Shift: 42 — Depth End of Shift: 65

Distance Drilled: 22 FEET — NX / BX SIZE — Distance Reamed: FEET — SIZE

Estimated Core Saved: 15 FEET — Cement Drilled: FEET — SIZE

Bit No. — Footage — Bit No. — Footage

Shell No. — Footage — Shell No. — Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
42	43	Quartzite
43	46	"
46	52	"
52	53	"
53	56	"
56	59	"
59	65	"

Remarks: Ground got very soft lost 6 ft.

Inspector or Foreman

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass — Hole No. A 4

Shift: 8:00 to 4:00 — Date: June 26 1959

Actual Drilling Time: 8 hrs — Machine No.:

Depth of Hole Start of Shift: 28 — Depth End of Shift: 42

Distance Drilled: 14 FEET — NX SIZE — Distance Reamed: FEET — SIZE

Estimated Core Saved: 14 FEET — Cement Drilled: FEET — SIZE

Bit No. — Footage — Bit No. — Footage

Shell No. — Footage — Shell No. — Footage

Condition of Bit, Shell and Stones lost, if any: Hauled 1 load water

FROM	TO	FORMATION
28	31	Quartzite
31	33	"
33	36	"
36	37	"
37	39	"
39	40	"
40	42	"

Remarks: Hole started caving Had to drill 2 or 3 ft to reach bottom

Inspector or Foreman

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

A-1

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job Champion Pass Hole No. A1

Shift 8:00 to 4:00 Date July 1 1959

Actual Drilling Time 6 hrs Machine No.

Depth of Hole Start of Shift 0 Depth End of Shift 20

Distance Drilled 5 15 FEET | 3½ NX SIZE Distance Reamed FEET | SIZE

Estimated Core Saved FEET Cement Drilled FEET | SIZE

Bit No. Footage Bit No. Footage

Shell No. Footage Shell No. Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
0	5	overburden Boulders
5	10	"
10	15	Decomposed Diabase
15	20	" "

Remarks:

Inspector or Foreman (SIGNATURE)

Helper Ed Snow Runner Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job Champion Pass Hole No. A1

Shift 8:00 to 4:00 Date July 2 1959

Actual Drilling Time 4 hrs. Machine No.

Depth of Hole Start of Shift 20 Depth End of Shift 39

Distance Drilled 19 FEET | BX SIZE Distance Reamed FEET | SIZE

Estimated Core Saved 4 FEET Cement Drilled FEET | SIZE

Bit No. Footage Bit No. Footage

Shell No. Footage Shell No. Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
20	25	Soft decomposed diabase
25	30	" " "
30	35	" " "
35	39	" " "

Remarks: Pulled Casing - moved equipment to Hole B1 next cut. Setup Drill.

Inspector or Foreman (SIGNATURE)

Helper Ed Snow Runner Ray Owen (SIGNATURE)

B-1

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue Spokane , Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job Champion Pass Hole No. B 1

Shift 8:00 to 4:00 Date July 3 1959

Actual Drilling Time 8 hrs. Machine No.

Depth of Hole Start of Shift 0 Depth End of Shift 10

Distance Drilled 4 6 FEET | 3½ NX SIZE Distance Reamed FEET | SIZE

Estimated Core Saved 10 FEET Cement Drilled FEET | SIZE

Bit No. Footage Bit No. Footage

Shell No. Footage Shell No. Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
0	4	Hard broken Quartzite
4	10	"

Remarks:

Inspector or Foreman (SIGNATURE)

Helper Ed Snow Runner Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue Spokane , Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job Champion Pass Hole No. A 4

Shift 8:00 to 4:00 Date June 30 1959

Actual Drilling Time 8 hrs Machine No.

Depth of Hole Start of Shift 65 Depth End of Shift 79

Distance Drilled 1 13 FEET | BX AX SIZE Distance Reamed FEET | SIZE

Estimated Core Saved FEET Cement Drilled FEET | SIZE

Bit No. Footage Bit No. Footage

Shell No. Footage Shell No. Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
65	66	BX-Cased Hole
66	67	Quartzite
67	69	"
69	74	"
74	79	"

Remarks: Pulled AX & BX Casing
Haulled 1 load water

Inspector or Foreman (SIGNATURE)

Helper Ed Snow Runner Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue Spokane , Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job Champion Pass Hole No. B1

Shift 8:00 to 4:00 Date July 7 1959

Actual Drilling Time 8 hrs Machine No.

Depth of Hole Start of Shift 27 Depth End of Shift 52

Distance Drilled 23 (FEET) 2BX | WL (SIZE) Distance Reamed (FEET) | (SIZE)

Estimated Core Saved 23 (FEET) Cement Drilled (FEET) | (SIZE)

Bit No. Footage Bit No. Footage

Shell No. Footage Shell No. Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
27	29	BX Quartzite
29	52	WL "

Remarks: used Wireline Corebarrel from 29 ft

Inspector or Foreman (SIGNATURE)

Helper Ed Snow Runner Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue Spokane , Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job Champion Pass Hole No. B1

Shift 8:00 to 4:00 Date July 6 1959

Actual Drilling Time 8 hrs. Machine No.

Depth of Hole Start of Shift 10 Depth End of Shift 27

Distance Drilled 16 (FEET) 1 | 17 (SIZE) NX Distance Reamed (FEET) | (SIZE)

Estimated Core Saved (FEET) Cement Drilled (FEET) | (SIZE)

Bit No. Footage Bit No. Footage

Shell No. Footage Shell No. Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
10	27	
		Quartzite

Remarks: Haulled 1 load water

Inspector or Foreman (SIGNATURE)

Helper Ed Snow Runner Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass — Hole No.: B1

Shift: 8:00 to 4:00 — Date: July 9 1959

Actual Drilling Time: 4 hrs — Machine No.:

Depth of Hole Start of Shift: 67 — Depth End of Shift: 78

Distance Drilled: 11 (FEET) | WL (SIZE) — Distance Reamed: (FEET) | (SIZE)

Estimated Core Saved: (FEET) — Cement Drilled: (FEET) | (SIZE)

Bit No.: Footage: — Bit No.: Footage:

Shell No.: Footage: — Shell No.: Footage:

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
67	72	Quartzite
72	74	"
74	78	"

Remarks: Pulled Casing and moved to Hole C1.

Inspector or Foreman:

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass — Hole No.: B1

Shift: 8:00 to 4:00 — Date: July 8 1959

Actual Drilling Time: — Machine No.:

Depth of Hole Start of Shift: 52 — Depth End of Shift: 67

Distance Drilled: 15 (FEET) | WL (SIZE) — Distance Reamed: (FEET) | (SIZE)

Estimated Core Saved: (FEET) — Cement Drilled: (FEET) | (SIZE)

Bit No.: Footage: — Bit No.: Footage:

Shell No.: Footage: — Shell No.: Footage:

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
52	54	Quartzite
54	57	
57	59	
59	62	
62	64	
64	67	

Remarks:

Inspector or Foreman:

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass Hiway Cut — Hole No. C1

Shift: 8:00 to 4:00 — Date: July 11 1959

Actual Drilling Time: 8 hrs. — Machine No.:

Depth of Hole Start of Shift: 28 — Depth End of Shift: 46

Distance Drilled: 2 / 16 FEET | NX / BX SIZE — Distance Reamed: FEET | SIZE

Estimated Core Saved: FEET — Cement Drilled: FEET | SIZE

Bit No.: Footage: Bit No.: Footage:

Shell No.: Footage: Shell No.: Footage:

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
28	30	Basalt
30	35	"
35	40	"
40	46	"

Remarks: Drilled NX to 30' set BX casing.

Inspector or Foreman: (SIGNATURE)

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

C-1

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass Cut — Hole No. C1

Shift: 8:00 to 4:00 — Date: July 10 1959

Actual Drilling Time: — Machine No.:

Depth of Hole Start of Shift: 0 — Depth End of Shift: 28

Distance Drilled: 10' / 18 FEET | 3½ / NX SIZE — Distance Reamed: FEET | SIZE

Estimated Core Saved: 11 FEET — Cement Drilled: FEET | SIZE

Bit No.: Footage: Bit No.: Footage:

Shell No.: Footage: Shell No.: Footage:

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
0	10	~~Clay~~ Pine
10	15	Soft ~~Clay~~ Boulders
15	20	"
20	25	~~Basalt~~
25	28	Basalt

Remarks: Setup Drill, dug sump

Inspector or Foreman: (SIGNATURE)

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

C-2

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass Hiway Cut, 1 — Hole No. C2

Shift: 8:00 to 4:00 — Date: July 14 1957

Actual Drilling Time: 8 hrs. — Machine No.:

Depth of Hole Start of Shift: 0 — Depth End of Shift: 29

Distance Drilled: ~~28~~ 7 FEET | ~~BX~~ 3½ NX SIZE — Distance Reamed: FEET | SIZE

Estimated Core Saved: FEET — Cement Drilled: FEET | SIZE

Bit No. — Footage — Bit No. — Footage

Shell No. — Footage — Shell No. — Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
0	7	3½" Boulders & Clay ~~BX Boulders & Sand~~
7	11	~~NX Basalt Soft.~~
11	14	~~BX Basalt.~~
14	17	Basalt - Mostly Boulders
17	21	"
21	24	"
24	29	"

Remarks: Set BX Casing 11' NX Casing at 7' - Hauled 1 load Water

Inspector or Foreman:

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass Hiway Cut — Hole No. C1

Shift: 8:00 to 4:00 — Date: July 13 1957

Actual Drilling Time: 6 hrs. — Machine No.:

Depth of Hole Start of Shift: 46 — Depth End of Shift: 74

Distance Drilled: 28 FEET | BX SIZE — Distance Reamed: FEET | SIZE

Estimated Core Saved: FEET — Cement Drilled: FEET | SIZE

Bit No. — Footage — Bit No. — Footage

Shell No. — Footage — Shell No. — Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
46	51	Basalt
51	56	"
56	60	"
60	65	"
65	74	"

Remarks: 2 hrs. pulled Casing moving & setting up on Hole No. C2

Inspector or Foreman:

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass Cut Winter Ranch — Hole No. C2

Shift: 8:00 to 4:00 — Date: July 16 1959

Actual Drilling Time: 4 hrs. — Machine No.:

Depth of Hole Start of Shift: 67 — Depth End of Shift: 80

Distance Drilled: 13 (FEET) | BX (SIZE) — Distance Reamed: (FEET) | (SIZE)

Estimated Core Saved: 13 (FEET) — Cement Drilled: (FEET) | (SIZE)

Bit No.: Footage: Bit No.: Footage:

Shell No.: Footage: Shell No.: Footage:

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
67	72	Basalt?
72	77	"
77	80	"

Remarks: Pulled Casing moved to Hole 01. setup Drill.

Inspector or Foreman:

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass Highway Cut. — Hole No. C2

Shift: 8:00 to 4:00 — Date: July 15 1959

Actual Drilling Time: 8 hrs. — Machine No.:

Depth of Hole Start of Shift: 29 — Depth End of Shift: 67

Distance Drilled: 38 (FEET) | BX (SIZE) — Distance Reamed: (FEET) | (SIZE)

Estimated Core Saved: 38 (FEET) — Cement Drilled: (FEET) | (SIZE)

Bit No.: Footage: Bit No.: Footage:

Shell No.: Footage: Shell No.: Footage:

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
29	39	Basalt?
39	47	"
47	57	"
57	67	"

Remarks: Haulled 1 load water

Inspector or Foreman:

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass Hiway cut — Hole No. D1

Shift: 8:00 to 4:00 — Date: July 18 1959

Actual Drilling Time: 3 hrs — Machine No.: CP8

Depth of Hole Start of Shift: 20 — Depth End of Shift: 27

Distance Drilled: 7 (FEET) | BX (SIZE) — Distance Reamed: (FEET) | (SIZE)

Estimated Core Saved: 5 (FEET) — Cement Drilled: (FEET) | (SIZE)

Bit No. ____ Footage ____ Bit No. ____ Footage ____

Shell No. ____ Footage ____ Shell No. ____ Footage ____

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
20	22	Broken Diabase
22	25	" "
25	27	~~Hard Diabase~~

Remarks: 5 hrs jarring BX casing to bottom.

Inspector or Foreman ____

Helper: C. R. Snow — Runner: Ray Owen (SIGNATURE)

D1

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass road cut — Hole No. D1

Shift: 8:00 to 4:00 — Date: July 17 1959

Actual Drilling Time: 8 hrs — Machine No.: ____

Depth of Hole Start of Shift: 0 — Depth End of Shift: 20

Distance Drilled: 12 (FEET) | NX (SIZE) — Distance Reamed: (FEET) | (SIZE)

Estimated Core Saved: 2' (FEET) — Cement Drilled: (FEET) | (SIZE)

Bit No. ____ Footage ____ Bit No. ____ Footage ____

Shell No. ____ Footage ____ Shell No. ____ Footage ____

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
0	8	Diabase Clay
8	12	3½" collar Pipe
12	15	Decomposed Diabase
15	20	" "

Remarks: ____

Inspector or Foreman ____

Helper: C. R. Snow — Runner: Ray Owen (SIGNATURE)

R. S. McCLINTOCK

Diamond Drill Contracting

418 W. Second Avenue — Spokane, Wash.

DAILY DIAMOND DRILL REPORT BY RUNNER

Job: Champion Pass Hiway Cut — Hole No. D1

Shift: 8:00 to 4:00 — Date: July 20 1959

Actual Drilling Time: 8 hrs. — Machine No.

Depth of Hole Start of Shift: 27 — Depth End of Shift: 60

Distance Drilled: 33 FEET | BX SIZE — Distance Reamed: FEET | SIZE

Estimated Core Saved: 33 FEET — Cement Drilled: FEET | SIZE

Bit No. Footage — Bit No. Footage

Shell No. Footage — Shell No. Footage

Condition of Bit, Shell and Stones lost, if any:

FROM	TO	FORMATION
27	32	Hard Diabase
32	37	"
37	47	Basalt
47	52	"
52	57	"
57	60	"

Remarks: Pulled BX + NX Casing

Inspector or Foreman

Helper: Ed Snow — Runner: Ray Owen (SIGNATURE)

~~Site~~ Logging Log Sheet

Cut C [Winters Ranch]

Core Hole C-1 Center Line 6+25 [Depth = 74'] 13 July 1959

Remarks
13 July Cont'd

Core Recovery 60" Run 14 Depth 58' to 63½' MTLS Basalt

Core Recovery 58" Run 15 Depth 63½' to 68½' MTLS Basalt

Core Recovery 44" Run 16 Depth 68½' to 74' MTLS Basalt

HOLE FINISHED
1:45 PM - 13 JULY 1959

C-2

H Site Logging Log Sheet

Cut C [Winter Ranch]

Core Hole C-2 Center Line 622+25 [Depth = 80']

Remarks
Started 8:30 AM
4 July 1959

14 July 1959

Core Recovery 3"	Run 1	Depth 0'	to 7'	MTLS	Bedrock?	
Core Recovery 7"	Run 2	Depth 7'	to 10'	MTLS	Basalt?	
Core Recovery 1"	Run 3	Depth 10'	to 11'	MTLS	Basalt?	
Core Recovery 9"	Run 4	Depth 11'	to 14'	MTLS	Basalt?	Boulders
Core Recovery 24"	Run 5	Depth 14'	to 17'	MTLS	Basalt.	
Core Recovery 3"	Run 6	Depth 17'	to 21'	MTLS	Basalt	
Core Recovery 8"	Run 7	Depth 21'	to 24'	MTLS	Basalt	↓
Core Recovery 43"	Run 8	Depth 24'	to 29'	MTLS	Basalt	

Stopped 4:10 PM - 14 July 1959

Started 8:00 AM 15 July 1959

15 July 1959 ?

Core Recovery 30"	Run 9	Depth 29'	to 34'	MTLS	Basalt	
Core Recovery 30"	Run 10	Depth 34'	to 36½'	MTLS	Basalt	
Core Cave in from Previous run						
Core Recovery 53"	Run 11	Depth 36½'	to 41½	MTLS	Basalt	
Core Recovery 54"	Run 12	Depth 41½'	to 46½	MTLS	Basalt	
Core Recovery 52"	Run 13	Depth 46½'	to 51½'	MTLS	Basalt	
Core Recovery 49"	Run 14	Depth 51½'	to 56½	MTLS	Basalt	

I Suter Logging Log Sheet

Cut C - [Winters Ranch]

Core Hole C-2 Center Line 622+25 [Depth = 80']

Remarks
15 July Cont'd

15 July 1959

Core Recovery 54" Run 15 Depth 56½' to 61½' MTLS Basalt

Core Recovery 58" Run 16 Depth 61½' to 66½' MTLS Basalt

Stopped 4:00 PM
15 July 1959
Started 16 July 1959 - 8:00 AM

16 July 1959

Core Recovery 46" Run 17 Depth 66½' to 71½' MTLS Basalt

Core Recovery 51" Run 18 Depth 71½' to 76½' MTLS Basalt

Core Recovery 44" Run 19 Depth 76½' to 80' MTLS Basalt

Hole dug to 81' in order to prevent cave in
Hole finished [illegible] PM
16 July 1959

D-1

[illegible] Logging Log Sheet

[illegible] – [Winter Ranch]

[illegible] Core Hole [illegible] 80+25 [Depth = 60']

16 July 1959

[illegible] 2:45 PM [illegible] July 1959

[illegible] Recovery [illegible] 16 July

Started 8:00 AM 17 July 1959

Run 1 Depth 0' to 8' MTLS [illegible] Diabase & Clay [no recovery]

17 July 1959

[illegible] Recovery [illegible]

Run 2 Depth 8' to 9' MTLS Diabase Boulders?

[illegible] Recovery [illegible]

Run 3 Depth 9' to 20' MTLS Pebbles

[illegible] Caved in 10' [illegible] being driven – stopped 4:00 PM 17 July 1952 – Started 18 July 1959 – 8:00 AM

[illegible] Recovery 18"

Run 4 Depth 20' to 23' MTLS Pebbles

[illegible] driven to 20'

[illegible] Recovery 23"

Run 5 Depth 23' to 25' MTLS Basalt? & Diabase

[illegible] Recovery 23"

Run 6 Depth 25' to 27' MTLS Basalt & Diabase

Stopped 4:00 PM 18 July 1959

Started 8:15 AM 20 July 1959

20 July 1959

[illegible] Recovery 42"

Run 7 Depth 27' to 32' MTLS Basalt

[illegible] Recovery 54"

Run 8 Depth 32' to 37' MTLS Basalt

[illegible] Recovery 110"

Run 9 Depth 37' to 47' MTLS Basalt

[illegible] Recovery 57"

Run 10 Depth 47' to 52' MTLS Basalt

[illegible] Recovery [illegible]

Run 11 Depth 52' to 57' MTLS Basalt

[illegible] Recovery

Run 12 Depth 57' to [illegible] MTLS Basalt

[illegible] to dug to 62' in order to [illegible] complete recovery

[illegible] completed 3:30 PM

[illegible] July 1959

[illegible] Logging A.1 Log Sheet 1 - 2 July 1959

Cut A [Champion Pass] Sta 528-542

Hole A1 30' LT 531+50 [Depth = 39']
*[25.3' LT 531+50]

[illegible] Started 10:15 AM 1 July 1959

Core Recovery 3"	Run 1	Depth 0' to 9'	MTLS	In a Decomposed Diabase formation Some Quartzite?
Core Recovery 2" Casing [illegible] into Hole	Run 2	Depth 9' to 14'	MTLS	Diabase Fragments
Core Recovery 4" Stopped 4:00 PM 1 July - Started 8:20 AM 2 July	Run 3	Depth 14' to 20'	MTLS	Diabase fragments Clay
No Core Recovery	Run 4	Depth 20' to 25'	MTLS	2 July Decomposed Diabase
Core Recovery 6"	Run 5	Depth 25' to 29'	MTLS	Diabase fragments
Core Recovery 4"	Run 6	Depth 29' to 34'	MTLS	Diabase fragments
Core Recovery 4" C.D. Hole 11:25 AM 23 JULY 1959	Run 7	Depth 34' to 39	MTLS	Diabase fragments

A-4

P. Suter - Logging Log Sheet 25 June 1959

Cut A - [Chamisa Pass] Sta 528-542

Core Hole AH-30' RT 538+50 [Depth = 77']

Remarks [illegible] Core Recovery 10"	Run 1	Depth 0'	to 2'	MTLS Quartzite		
Core Recovery 23"	Run 2	Depth 2'	to 4½	MTLS Quartzite?		
Core Recovery 20"	Run 3	Depth 4½'	to 8'	MTLS Quartzite?		
Core Recovery 20"	Run 4	Depth 8'	to 11½'	MTLS Sand Quartzite?		
Core Recovery 27"	Run 5	Depth 11½'	to 15½'	MTLS Quartzite?		
Core Recovery 12"	Run 6	Depth 15½'	to 17'	MTLS Quartzite		
Core Recovery 40"	Run 7	Depth 17'	to 22'	MTLS Quartzite		
Core Recovery 13"	Run 8	Depth 22'	to 23½	MTLS Quartzite		
Core Recovery 8"	Run 9	Depth 23½	to 25'	MTLS Quartzite?		
Core Recovery 7"	Run 10	Depth 25'	to 27'	MTLS Quartzite Sand		
Core Recovery 12" Stopped 4:00 PM 25 June - Started 9:15 AM 26 JUNE Hole Caved in 1½	Run 11	Depth 27'	to 28'	MTLS Quartzite 26 June 1959		
Core Recovery 17"	Run 12	Depth 28'	to 29½	MTLS Quartzite		
Core Recovery 22"	Run 13	Depth 29½	to 32'	MTLS Quartzite		
Core Recovery 15"	Run 14	Depth 32'	to 34'	MTLS Quartzite		
Core Recovery 20"	Run 15	Depth 34'	to 36"	MTLS Quartzite		

H. Suter Logging Log Sheet 26-30 June 1959

Cut A [Champion Pass] Sta 528-542

Core Hole #4 - 30' Rt 538+50 [Depth = 79']

Remarks							
PM - 26 JUNE 1959 Core Recovery 15"	Run	16	Depth	36'	to	37½'	MTLS Quartzite
Core Recovery 30" HOLE CAVING IN	Run	17	Depth	37½'	to	41'	MTLS Quartzite
Core Recovery 11" HOLE CAVING IN STOPPED 3:59 PM 26 JUNE 1959	Run	18	Depth	41'	to	42'	MTLS Quartzite
27 JUNE - NO CORE 29 JUNE - Started 5:00 AM Core Recovery 8" Some Cave	Run	19	Depth	42'	to	43'	MTLS Quartzite 29 June 1959 apparently Some Cave
Core Recovery 22" Casing Driven to 43'	Run	20	Depth	43'	to	46'	MTLS Quartzite
Core Recovery 40"	Run	21	Depth	46'	to	52'	MTLS Quartzite ?
Core Recovery 4"	Run	22	Depth	52'	to	53'	MTLS Quartzite ?
Core Recovery 15"	Run	23	Depth	53'	to	56'	MTLS Quartzite ?
Core Recovery 0" [illegible] Cave with Core	Run	24	Depth	56'	to	56½'	MTLS Quartzite
Core Recovery "0" Hole Caving in [56½'] No Fresh Core [illegible]	Run	25	Depth	56½'	to	56½	MTLS No Fresh Core
Core Recovery 5"	Run	26	Depth	56½	to	59½	MTLS QUARTZITE and SOME PEBBLES
Core Recovery 12" Stopped 4:PM 29 JUNE [illegible] 30 AM 30 JUNE HOLE FILLED UP 7½'	Run	27	Depth	59½	to	65'	MTLS Quartzite
Core Recovery 5" Bit Broke off in Hole Casing being driven to 66'	Run	28	Depth	65'	to	66'	MTLS Quartzite 30 June 1959
Core Recovery ½"	Run	29	Depth	66'	to	68'	MTLS Fragment of Quartzite
Core Recovery 5"	Run	30	Depth	68'	to	69'	MTLS Quartzite

Platter Logging Log Sheet 30 June Cont'd.

Cut A [Champion Pass] Sta 528-542

Core Hole A4 - 30' RT 538+50 [Depth = 49']

Remarks
30 June 1959 - Cont'd
SAND IN HOLE
Core Recovery
4"

Run 31 Depth 69' to 74' MTLS Quartzite

Core Recovery
7"

Run 32 Depth 74' to 79 MTLS Quartzite

END HOLE A4 - 3:05 PM
30 JUNE 1959

Site Logging 3.1 Log Sheet 3 July 1959

Cut B [Champion Pass]

Core Hole B1 – Center Line 553 + 75 [Depth = 78]

Remarks
Started 9:00 AM
3 JULY 1959

Core Recovery 18"	Run 1	Depth 0'	to [illegible]	MTLS	Quartzite	
Core Recovery 36"	Run 2	Depth [illegible]	to 7'	MTLS	Quartzite	
Core Recovery 24"	Run 3	Depth 7'	to 9'	MTLS	Quartzite	
Core Recovery 18"	Run 4	Depth 9'	to 10½	MTLS	Quartzite	
Stopped 3:45 PM 3 July Started 8:10 AM 6 July NO WATER – Drilling resumed at 11:15 AM					6 July 1959	
Core Recovery 5"	Run 5	Depth 10½	to 11'	MTLS	Quartzite	
Core Recovery 27"	Run 6	Depth 11'	to 16'	MTLS	Quartzite	?
Core Recovery 8"	Run 7	Depth 16'	to 18'	MTLS	Quartzite	?
Core Recovery 28"	Run 8	Depth 18'	to 20½'	MTLS	Quartzite	/
Core Recovery 34"	Run 9	Depth 20½'	to 25	MTLS	Quartzite	/
Core Recovery 3"	Run 10	Depth 25'	to 26½'	MTLS	Quartzite?	? Seam

Stopped 3:45 PM 6 JULY 1959

Log Sheet

H Sutter Logging 7 July 1959

Cut B [Champion Pass]

Remarks Started 8:00 AM - 7 JUL 1959 Core Hole B-1 Center Line 553 + 75 [Depth = 78']

Core Recovery 15" Run 11 Depth 26½' to 30' MTLS Quartzite - some clay or Diabase?

Core Recovery 13" Run 12 Depth 30' to 32 MTLS Quartzite

Core Recovery 10" Run 13 Depth 32' to 35½' MTLS Fractured Quartzite

Core Recovery 32" Run 14 Depth 35½' to 38½' MTLS Quartzite

Core Recovery 39" Run 15 Depth 38½' to 42' MTLS Quartzite

Core Recovery 32" Run 16 Depth 42' to 45' MTLS Quartzite

Core Recovery 3" Run 17 Depth 45' to 45½' MTLS Quartzite

Core Recovery 12" Run 18 Depth 45½' to 47½' MTLS Quartzite

Core Recovery 5" Run 19 Depth 47½' to 49' MTLS Quartzite

Core Recovery 28" Run 20 Depth 49' to 52' MTLS Quartzite

Stopped 4:00 PM 7 July

[illegible]

Log Sheet

(5)

Project - Apache Peak - McMillanville - (F-026-1(6))

Location - Champion Pass sta. 528 to 542

Core Hole No. A2 - ~~18' Left 536+60~~ 19' Lt 536+43

Date: Moved in - Noon June 15, 1959 - Drilling started Noon June 16, 1959

Drill Run	Depth in Feet	Materials	Core Recovery	Remarks
1	0 to 5'	Small fragments of Quartzite slope wash - wash water with sand	less than 5%	Drill NX - 2 1/8" Most material washed out as sand & silt
2	5' to 10'	Small fragments of Quartzite - slope wash wash water - sandy - maybe weathered diabase		Probably weathered sandy diabase soil
3	10' to 14'	ditto above		
4	14' to 16'	Diabase fragments - hard - shattered	20%	
5	16' to 18'	Diabase fragments - hard - shattered	50%	
6	18' to 19'	Diabase fragments - hard - shattered	80%	Started Run 6 - 8:30 AM June 17, 1959
7	19' to 20'	Diabase fragments - Seamy - Fe-stained	60%	
8	20' to 22'	Diabase fragments - hard - shattered	25%	Change to BX (1 3/8") wire Line - Cased 2" to 20'
9	22' to 23'	Diabase fragments - Seamy - Medium Hard wash water - sand & silt	40%	
10	23' to 24'	Diabase fragments - Seamy - Medium Hard	85%	
11	24' to 25½'	Diabase fragments - Seamy - shattered Medium Hard	50%	
12	25½' to 27'	Diabase fragments - shattered - Seamy Fe Stained	50%	
13	27' to 28'	Diabase - fractured - Seamy	85%	
14	28' to 29'	Diabase fragments - Sandy - Seamy wash water - sandy	less than 10%	At 28½' - Soft seam Drill fall rapidly 4"
15	29' to 30'	Diabase fragments - Seamy - Fe Stained	45%	
16	30' to 31'	Diabase fragments - shattered - Fe Stained	60%	

Log Sheet

Project - Apache Peak to McMillanville - (F-026-1(6)

Location - Champion Pass Sta. 528 to 542

Core Hole No. A2 - ~~18' Left 536+50~~ 19' Lt 536+43

Drill Run	Depth in Feet	Materials	Core Recovery	Remarks
17	31' to 32'	Diabase fragments - Sandy - Seamy - Fe Stained	95%	
18	32' to 33'	Diabase fragments - Shattered - Medium Hard	90%	
19	33' to 34½'	Diabase - Seamy - fractured - Fe stained	75%	Stopped 4:00 PM June 17, 1959
20	34½' to 35½'	Diabase - fractured - Medium Hard	80%	Started Run 20 - 8:15 AM June 18, 1959
21	35½' to 39'	Diabase - fractured - Seamy - Fe Stained	50%	
22	39' to 41'	Diabase - Sandy - Seamy - Fe stained wash water - sandy & silt	10%	
23	41' to 45'	Diabase - Seamy - Clayey - Fe Stained wash water - Sand - silt & clay	No Core - 41' to 43' - Washed out 75% - 43' to 45'	
24	45' to 46	Diabase - seamy - clayey	40%	
25	46' to 46⅔'	Diabase - fractured - Medium Hard	95%	
26	46⅔' to 47'	Diabase - fractured - Medium Hard	95%	
27	47' to 49'	Diabase - fractured - Seamy	60%	
28	49' to 51'	ditto above	60%	
29	51' to 52'	ditto above	75%	
30	52' to 54'	Brown Clay - Fault Gouge Zone - ? wash water - sandy clay	40%	Probably marks fault or intrusive contact
31	54' to 55½'	Diabase - Clay-in fragments wash water - sandy clay	33%	
32	55½' to 57'	Red Quartzite fragments Pebbles - ?	less than 15%	- Barnes Conglomerate - ?
33	57' to 58½'	Red Quartzite fragments Pebbles - ?	less than 10%	- ditto above

Log Sheet

Project - Apache Peak to McMillanville - (F-026-1(6)

Location - Champion Pass Sta. 528 to 542

Core Hole No. A2 - ~~18' Left 536+50~~ 19' Lt 536+43

Drill Run	Depth in Feet	Materials	Core Recovery	Remarks
34	58½' to 60'	one small white quartzite fragment Appears to be a water-worn pebble	less than 1%	Note: Hole caving from 54' to 60' at contact of Diabase Cemented Hole - Stopped drilling 1:40PM June 18, 1959.
35	60' to 61'	Small black shale fragments Possibly into Pioneer Shale Fm.	less than 5%	Started 8:15AM - June 19, 1959 -
36	61' to 62'	black shale fragments - few small quartzite fragments	50%	Drilling slowly due to caving
37	62' to 63'	ditto above	40%	
38	63' to 65'	ditto above	40%	
39	65' to 68'	ditto above - Shale badly fractured	25%	Core barrel pinched by caving - Stopped 4PM June 19, 1959
Note:	No Core - Sat. - June 20, 1959 - Casing being driven to 67' - started 8:30AM - finished 4:30PM			
40	68' to 70'	Black Shale Fragments - Pioneer Fm	15%	Started 8:15AM - June 22, 1959 Hole caved - Driving Casing
41	70' to 73'	ditto above	25%	
42	73' to 74'	Black Shale Fragments - small recovery	less than 5%	Trouble with drill stopped 4 PM June 22, 1959
43	74' to 77'	ditto above	less than 1%	Started 9:00AM - June 23, 1959 Hole partially caved
44	77' to 81'	ditto above	less than 5%	
45	81' to 83'	ditto above	15%	Rock badly shattered - caving around casing
46	83' to 85'	ditto above	8%	Hole cased to 85' - stopped 4 PM - June 23, 1959
47	85' to 90'	Black Shale - some red layers - badly fractured	8%	Started - 8:15AM - June 24, 1959 Hole caved to 75' level - redrilled.

Core Hole A2 completed 11:45AM - June 24, 1959

Moved to Core Hole A4 afternoon of June 24, 1959

H. Sutter Logging C-1 Log Sheet 10 July 1959

Cut C [WINTERS RANCH]

Core Hole C-1 center Sta 617+25 [Depth - 74']

Remarks
Started 9:00 AM - 10 July 1959

Core Recovery 6"	Run 1	Depth 0'	to 10'	MTLS	Decomposed Diabase + Basalt boulders?
Casing driven to 10'	Run 2	Depth 10'	to 19'	MTLS	Basalt Formation?
Core Recovery 28" 3' Cave in	Run 3	Depth 19'	to 22'	MTLS	Basalt
Core Recovery 20"	Run 4	Depth 22'	to 24'	MTLS	Basalt
Core Recovery 14"	Run 5	Depth 24'	to 25½'	MTLS	Fractured Basalt & Clay
Core Recovery 22"	Run 6	Depth 25½'	to 27½'	MTLS	Basalt
Stopped 4:00 PM 10 July 1959 Started 8:00 AM 11 July 1959 Core Recovery 24"	Run 7	Depth 27½'	to 30'	MTLS	Basalt
Core Recovery 84"	Run 8	Depth 30'	to 39'	MTLS	Basalt
Core Recovery 48"	Run 9	Depth 39'	to 44'	MTLS	Basalt
Core Recovery 74"	Run 10	Depth 44'	to 46'	MTLS	Basalt
Stopped 4:00 PM 11 July 1959 Started 8:00 AM 13 July 1959 Core Recovery 36"	Run 11	Depth 46'	to 50'	MTLS	Basalt
Core Recovery 24"	Run 12	Depth 50'	to 53'	MTLS	Basalt
Core Recovery 48"	Run 13	Depth 53'	to 58'	MTLS	Basalt

Bubble?