



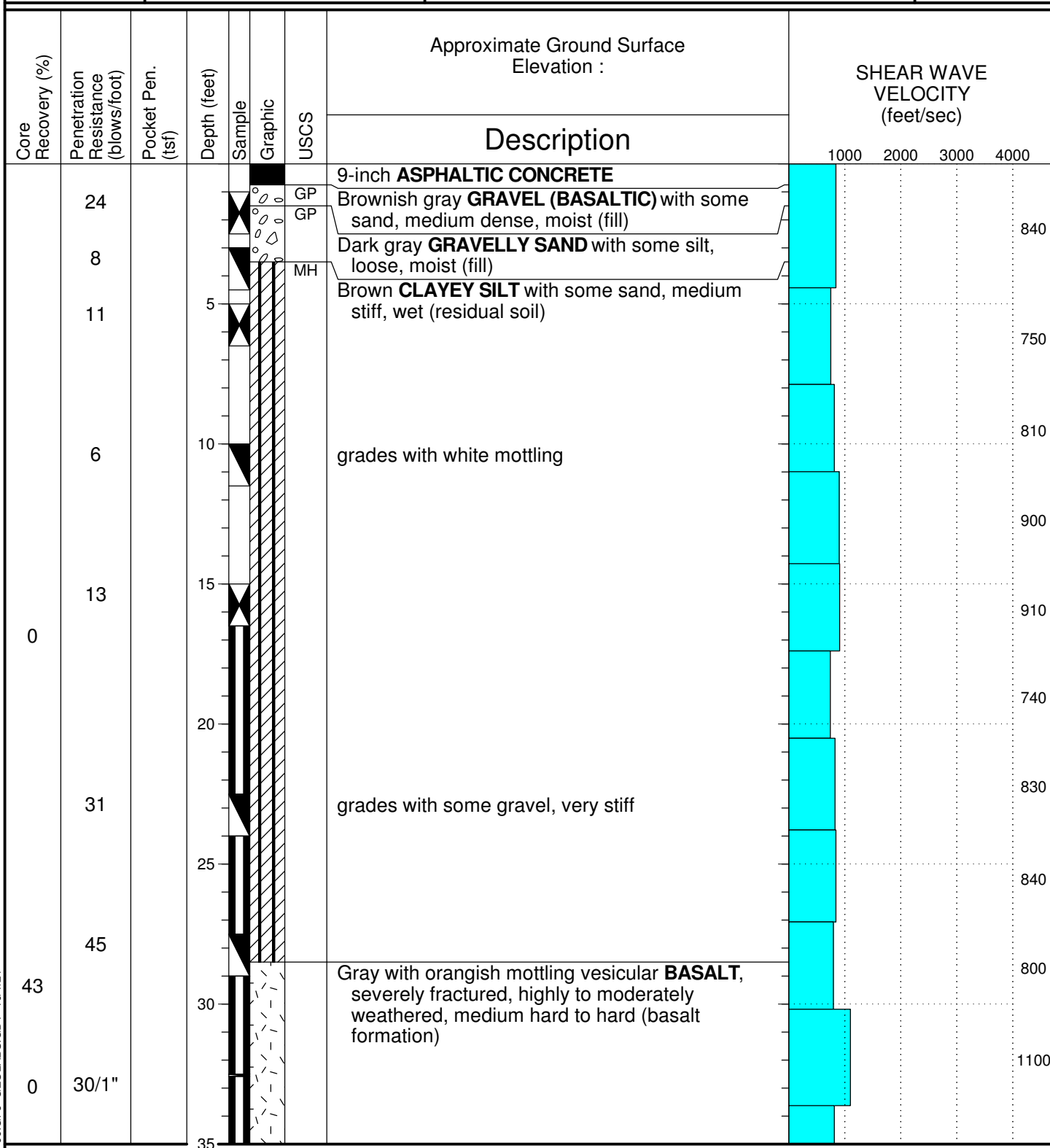
GEOLABS, INC.

Geotechnical Engineering

SEISMIC RETROFIT OF KAHOLO BRIDGE
HAWAII BELT ROAD, PROJECT NO. BR-019-2(072)
DISTRICT OF HAMAKUA, ISLAND OF HAWAII

Data Plot of
Boring

2



Date Started: May 4, 2021

Date Completed: May 6, 2021

Logged By: D. Gremminger

Total Depth: 102.5 feet

Work Order: 8063-00

Water Level: ∇ Not Encountered

Drill Rig: MOBILE B-53.1

Drilling Method: 4" Solid-Stem Auger & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

B - 1.1

SHEAR WAVE PLOT 8063-00.GPJ GEOLABS.GDT 10/1/21



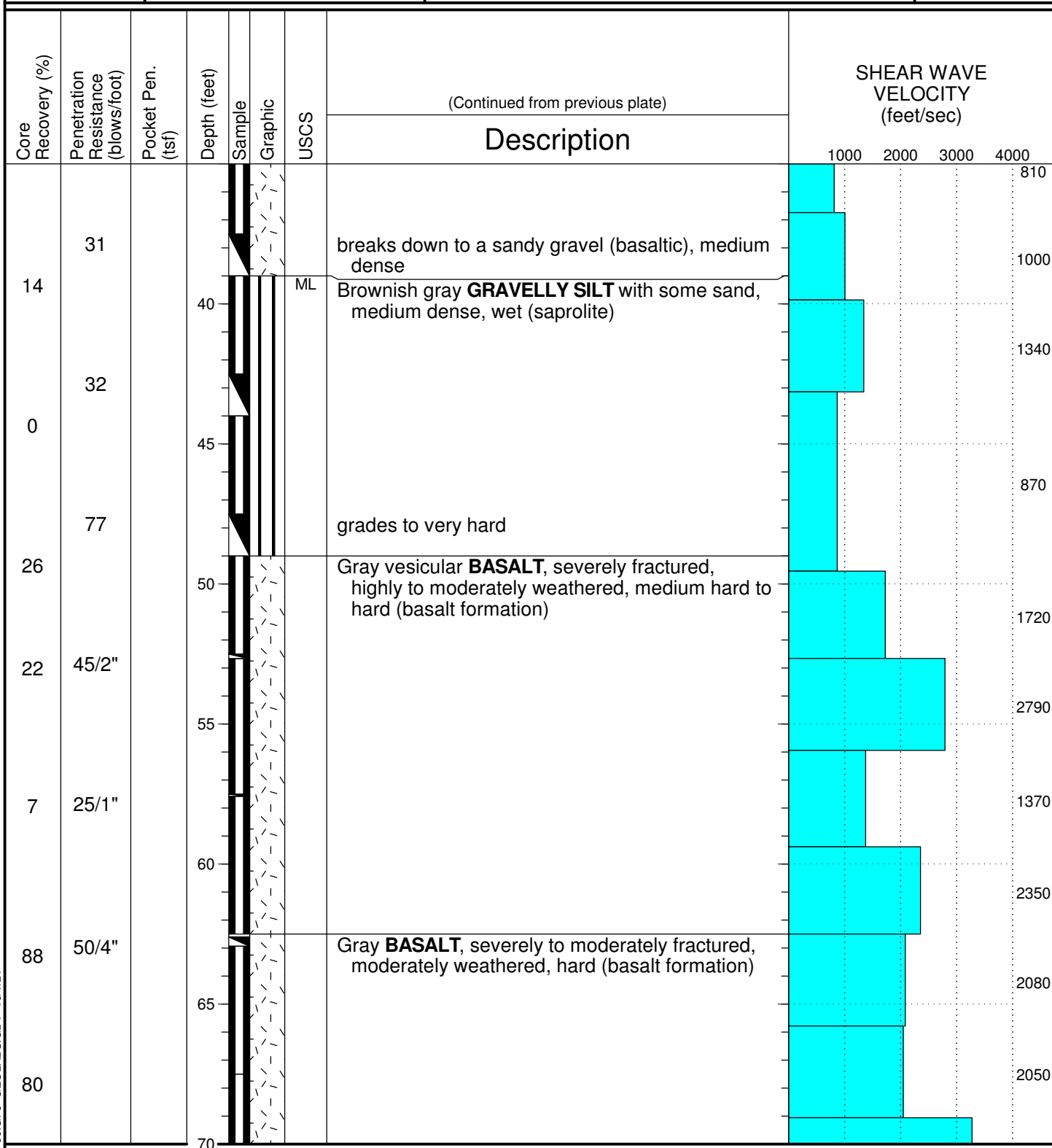
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HAWAII BELT ROAD, PROJECT NO. BR-019-2(072)
DISTRICT OF HAMAKUA, ISLAND OF HAWAII

Data Plot of
Boring

2



Date Started: May 4, 2021

Date Completed: May 6, 2021

Logged By: D. Gremminger

Total Depth: 102.5 feet

Work Order: 8063-00

Water Level: ∇ Not Encountered

Drill Rig: MOBILE B-53.1

Drilling Method: 4" Solid-Stem Auger & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

B - 1.2

SHEAR WAVE PLOT 8063-00.GPJ GEOLABS.GDT 10/1/21



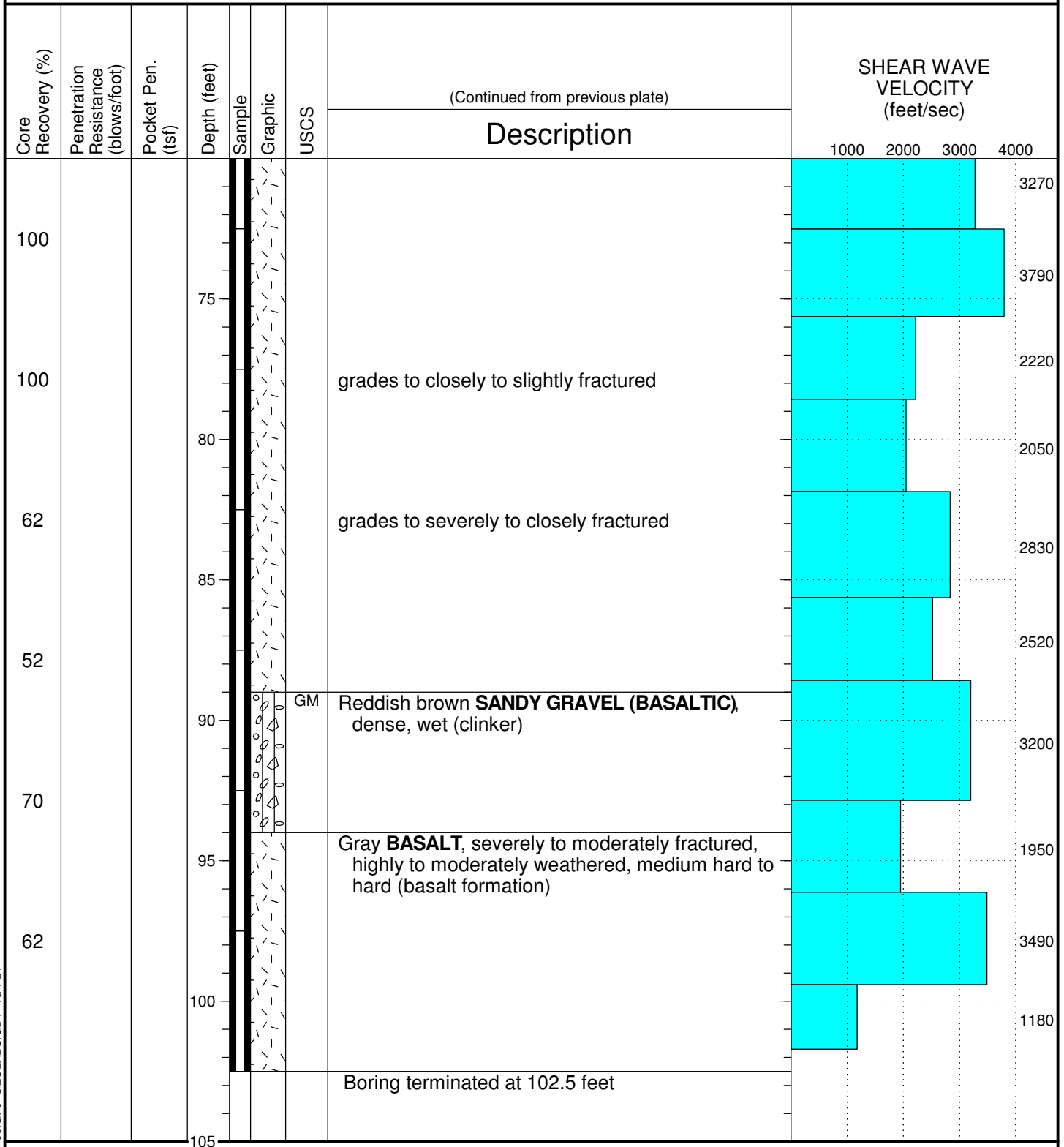
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SEISMIC RETROFIT OF KAHOLO BRIDGE
HAWAII BELT ROAD, PROJECT NO. BR-019-2(072)
DISTRICT OF HAMAKUA, ISLAND OF HAWAII

Data Plot of
Boring

2



Date Started: May 4, 2021

Date Completed: May 6, 2021

Logged By: D. Gremminger

Total Depth: 102.5 feet

Work Order: 8063-00

Water Level: ∇ Not Encountered

Drill Rig: MOBILE B-53.1

Drilling Method: 4" Solid-Stem Auger & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

B - 1.3

SHEAR WAVE PLOT 8063-00.GPJ GEOLABS.GDT 10/1/21

SHEAR WAVE VELOCITY TEST RESULTS

Seismic Retrofit of Kaholo Bridge
Hawaii Belt Road, Project No. BR-019-2(072)
District of Hamakua, Island of Hawaii

B-2				
Depth (From)	Depth (To)	Layer Thickness (d_i)	Estimated Shear Wave Velocity (V_{si})	Average Travel Time (d_i/V_{si})
(feet)	(feet)	(feet)	(feet/second)	(milliseconds)
0.0	4.4	4.4	843	5.25
4.4	7.9	3.4	751	4.59
7.9	11.0	3.1	811	3.84
11.0	14.3	3.3	898	3.65
14.3	17.4	3.1	907	3.44
17.4	20.5	3.1	743	4.19
20.5	23.8	3.3	827	3.97
23.8	27.1	3.3	841	3.90
27.1	30.2	3.1	796	3.92
30.2	33.6	3.4	1,102	3.13
33.6	36.7	3.1	814	3.83
36.7	39.9	3.1	1,004	3.10
39.9	43.1	3.3	1,341	2.45
43.1	49.5	6.4	867	7.38
49.5	52.7	3.1	1,724	1.81
52.7	55.9	3.3	2,793	1.17
55.9	59.4	3.4	1,373	2.51
59.4	62.5	3.1	2,354	1.32
62.5	65.8	3.3	2,084	1.57
65.8	69.1	3.3	2,045	1.60
69.1	72.5	3.4	3,273	1.05
72.5	75.6	3.1	3,793	0.82
75.6	78.6	3.0	2,216	1.33
78.6	81.9	3.3	2,047	1.60
81.9	85.6	3.8	2,832	1.33
85.6	88.6	3.0	2,520	1.17
88.6	92.8	4.3	3,202	1.33
92.8	96.1	3.3	1,950	1.68
96.1	99.4	3.3	3,486	0.94
99.4	101.7	2.3	1,176	1.95
TOTAL		101.7		75.28
Standard Weighted Average			1,702	feet/second
Computed $V_{s100'}$ Using IBC Formula			1,274	feet/second