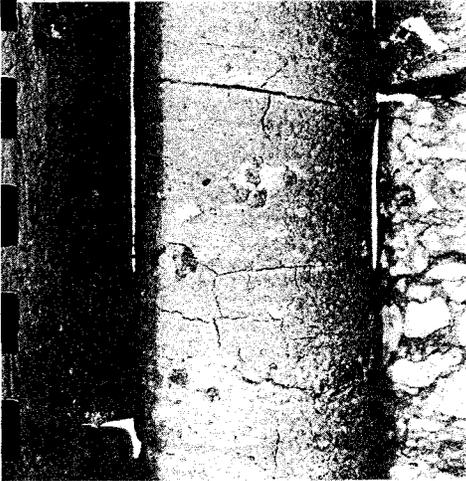


7

18-9W-33

# Geotechnical Report Wishkah Road Improvements Retaining Wall Alternative Grays Harbor County, WA



*BENCH DRIVE*

*T18-R9W-33*

*AB-GARD*

*47.00/35*

*123.80878*

*MANY BH's  
and TPI's*

**Grays Harbor County  
Department of Public Works  
P.O. Box 511  
Montesano, WA 98563**

**November 1986**

Agreement For Preliminary Engineering. The basic agreement was authorized by the Grays Harbor County Board of Commissioners on March 4, 1985, and the Supplemental Agreement was authorized on June 17, 1986.

C. Site and Project Description

The proposed study area is approximately 1,400 feet long. Within this area the roadway will be widened from the existing 24 feet to 36 feet and the two bends in the road will be straightened. Plans (including a geotechnical report) were initially developed to widen and straighten the road by excavating into the rock bluff. Concerns of neighboring property owners regarding the stability of the bluff, and difficulties in obtaining necessary easements resulted in the current efforts to widen and straighten the roadway without cutting into the hillside. The design problems are compounded by environmental constraints which severely restrict the amount of fill which can be placed in the river.

The project area includes approximately stations 24+00 through 38+00 of the Wishkah River Road, just north of Aberdeen, Washington. This section of road curves along the west bank of the Wishkah River at the toe of a steep bluff. The existing roadway is about 24 feet wide, with a guard rail on the river side and a ditch on the bluff side. Much of the bluff is a nearly vertical rock slope, although it is interrupted by ravines in two locations. As indicated on Figure 1, the alignment of the road is generally northwest/southeast, and contains curves at the far ends of the project area.

The drainage ditch on the inside of the road varies from 2 to 5 feet wide, but is filled in with debris in many places. Water frequently stands in the ditch in the interval between Stations 23+00 and 33+00 from groundwater seepage which emerging from the bluff or the ravines. The mud line of the river is approximately 5 to 15 feet below the outside edge of the roadway. The slope down to the river has been armored with large rocks which were reportedly end-

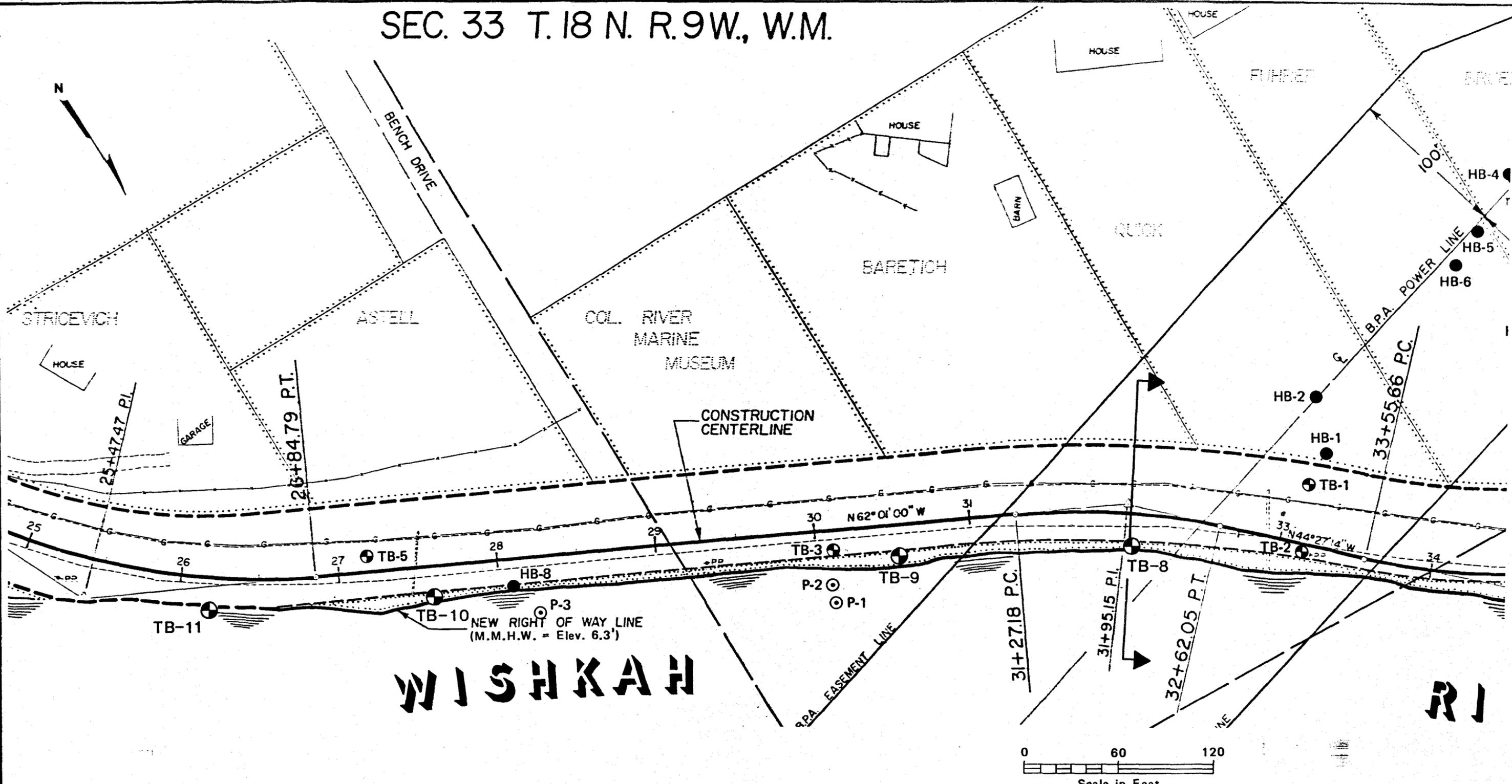
dumped over the bank. The rocks do not appear to be keyed together or placed to form a toe.

The height of the bluff varies from approximately 10 feet near Station 24+00 to nearly 200 feet near Station 35+00. In general, the lower part of the bluff is quite steep (60 to 80 degrees) and the upper portion of the bluff is flatter (20 to 45 degrees). The ravine areas, which are located between Stations 32+85 and 33+25 and Stations 37+30 and 37+80, lie at a flatter slope angles, in the range of 30 to 40 degrees, although the slopes are locally steeper.

A steel tower owned and maintained by the Bonneville Power Administration (BPA) is located in the vicinity of Station 35+00 about 200 feet above the Wishkah Road and approximately 200 feet to the southwest. Although few construction records exist for this particular tower, it is reported that the towers in this area were founded by excavating about 14 feet into the ground, placing a grid of steel beams in the bottom of the excavation and then backfilling the excavation.

The Wishkah Road surface has experienced distress in several places within the project area for many years. The practice has been to seal the crack in the roadway and pave over the effected area. Those areas which were observed during our field studies were Stations 26+00 to 27+40, 30+00 to 32+20 and 33+45 to 33+60. Additionally, it appears that some roadway distress has occurred where the two ravines intersect the road.

SEC. 33 T. 18 N. R. 9 W., W.M.



**WISHKAH**

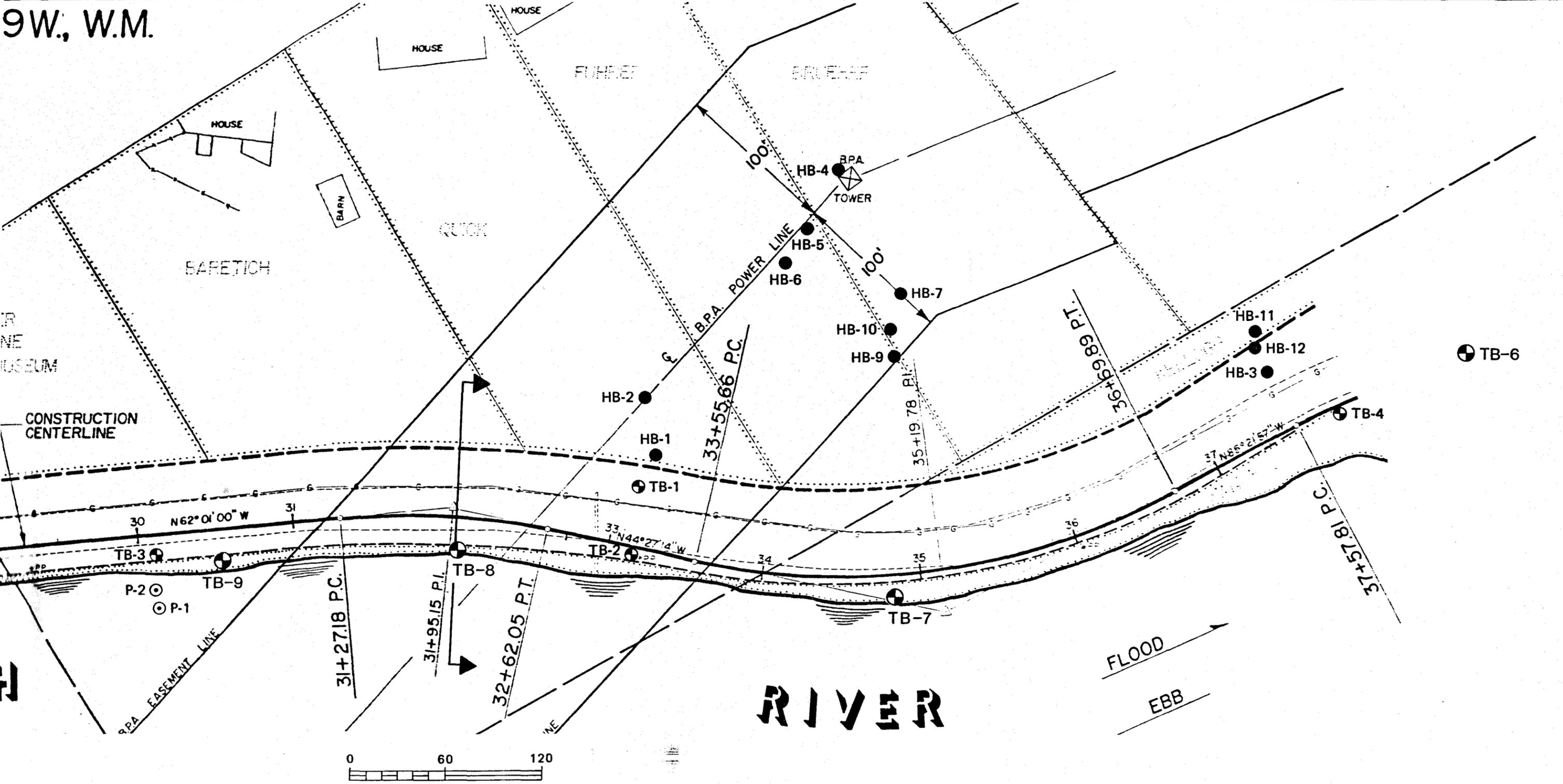
**RJ**

**LEGEND**

- TB-1 ⊕ Truck Boring Location (1985)
- TB-6 ⊕ Truck Boring Location (1986)
- HB-1 ● Hand Boring Location
- P-1 ⊙ Hand Probe Location
- ▲ ▲ Generalized Subsurface Profile Location

1. This map was redi and Profile drawin Grays Harbor Dep
2. Exploration locati
3. Elevations are bas

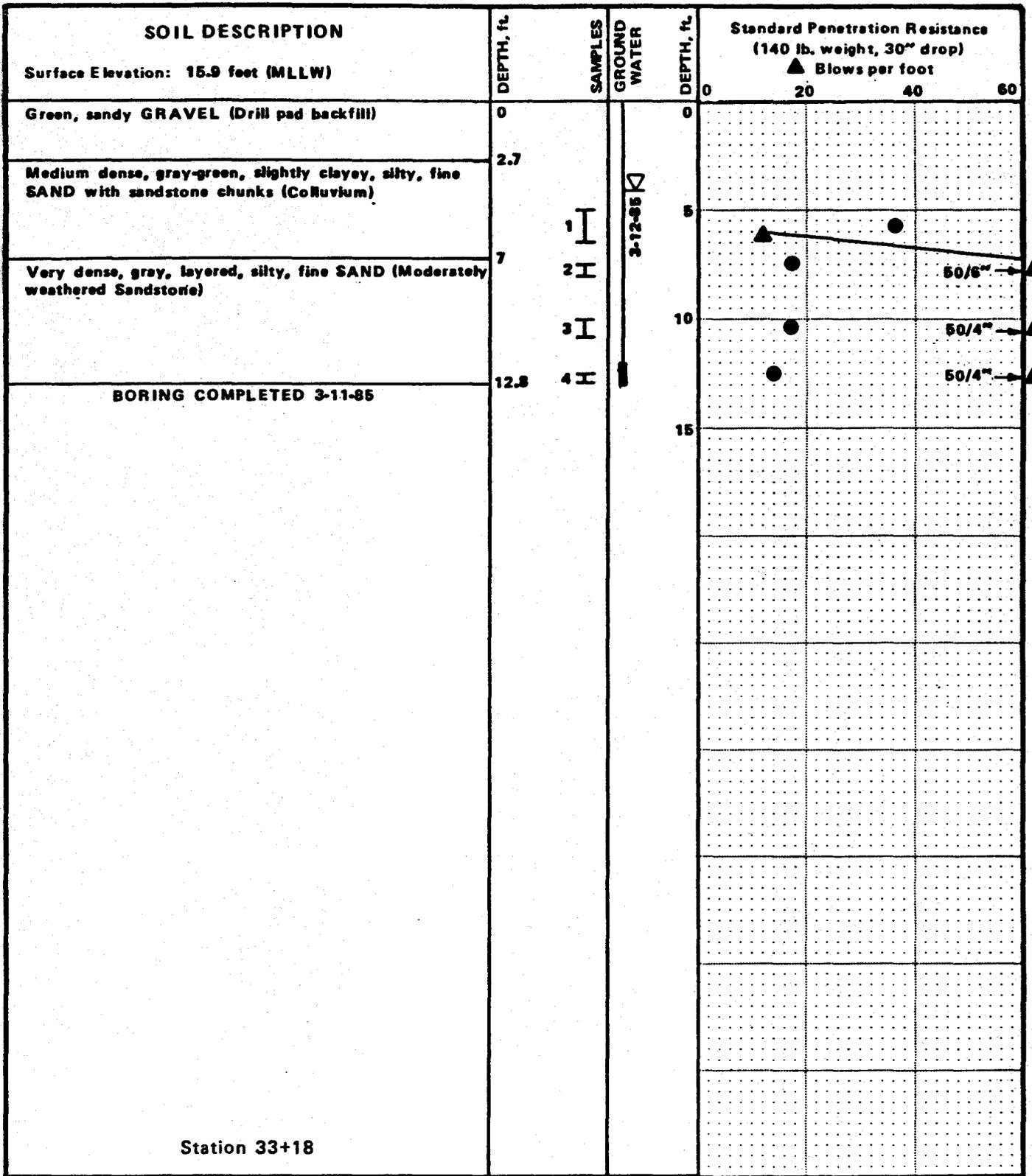
9W., W.M.



- LEGEND**
- Truck Boring Location (1985)
  - Truck Boring Location (1986)
  - Hand Boring Location
  - Hand Probe Location
  - Generalized Subsurface Profile Location

- NOTES**
1. This map was reduced and adapted from Plan and Profile drawing no. 94311-26/29 by the Grays Harbor Department of Public Works.
  2. Exploration locations are approximate.
  3. Elevations are based on Grays Harbor M.S.L.

Grays Harbor County Department of Public Works Wishkah Road Improvements	
<b>SITE PLAN</b>	
October 1986	W-4365-01
SHANNON & WILSON, INC. Geotechnical Consultants	<b>FIG. 1</b>



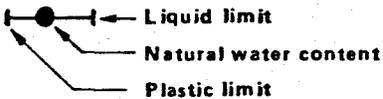
Station 33+18

**LEGEND**

- I 2" O.D. split spoon sample
- II 3" O.D. thin-wall sample

\*Sample not recovered

Atterberg Limits:



- Impervious seal
- Water level
- Piezometer tip
- P Sample pushed

NOTE: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

GRAYS HARBOR COUNTY  
DEPARTMENT OF PUBLIC WORKS  
WISHKAH ROAD IMPROVEMENTS

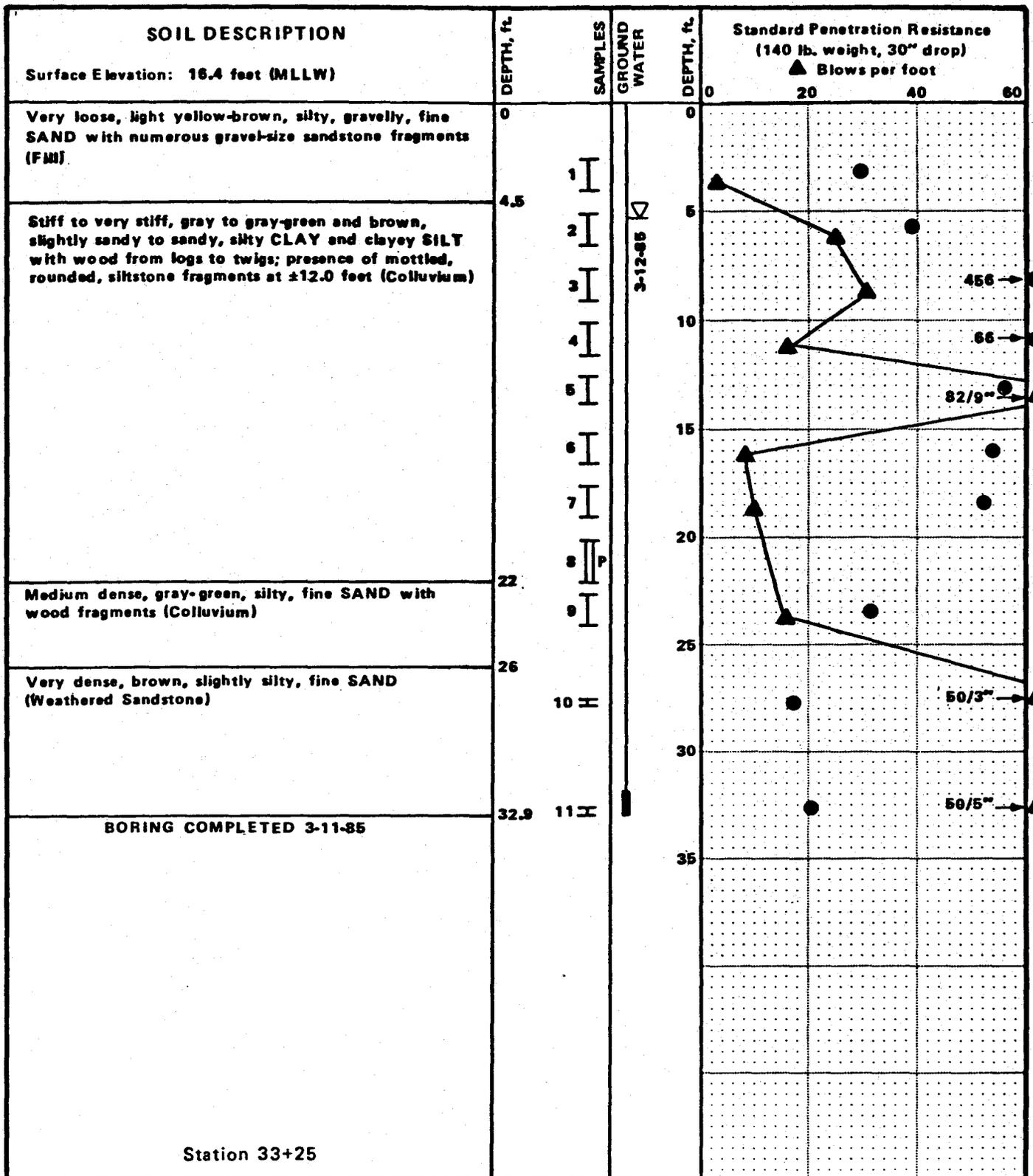
**LOG OF BORING TB-1**

APRIL 1985

W-4365-01

SHANNON & WILSON, INC.  
Geotechnical Consultants

FIG. 6



**LEGEND**

I 2" O.D. split spoon sample  
 II 3" O.D. thin-wall sample

\*Sample not recovered

Atterberg Limits:  
 —●— Liquid limit  
 — Natural water content  
 — Plastic limit

Impervious seal  
 Water level  
 Piezometer tip  
 P Sample pushed

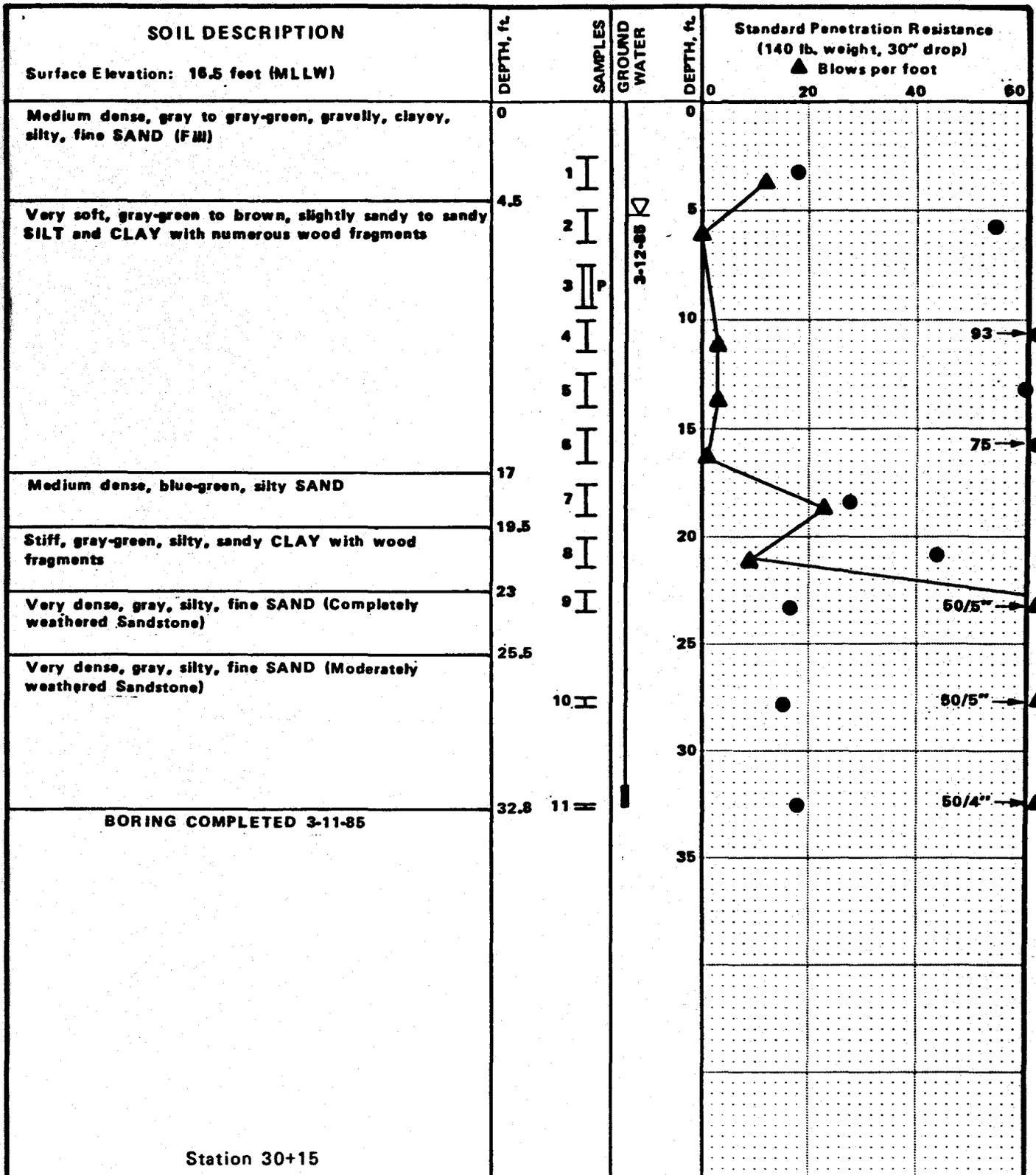
NOTE: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

**GRAYS HARBOR COUNTY  
 DEPARTMENT OF PUBLIC WORKS  
 WISHKAH ROAD IMPROVEMENTS**

**LOG OF BORING TB-2**

APRIL 1985 W-4365-01

SHANNON & WILSON, INC. FIG. 7  
 Geotechnical Consultants

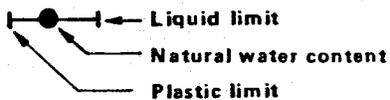


Station 30+15

**LEGEND**

- I 2" O.D. split spoon sample
- II 3" O.D. thin-wall sample

\*Sample not recovered  
Atterberg Limits:



- ▽ Impervious seal
- Water level
- ▬ Piezometer tip
- P Sample pushed

NOTE; The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

GRAYS HARBOR COUNTY  
DEPARTMENT OF PUBLIC WORKS  
WISHKAH ROAD IMPROVEMENTS

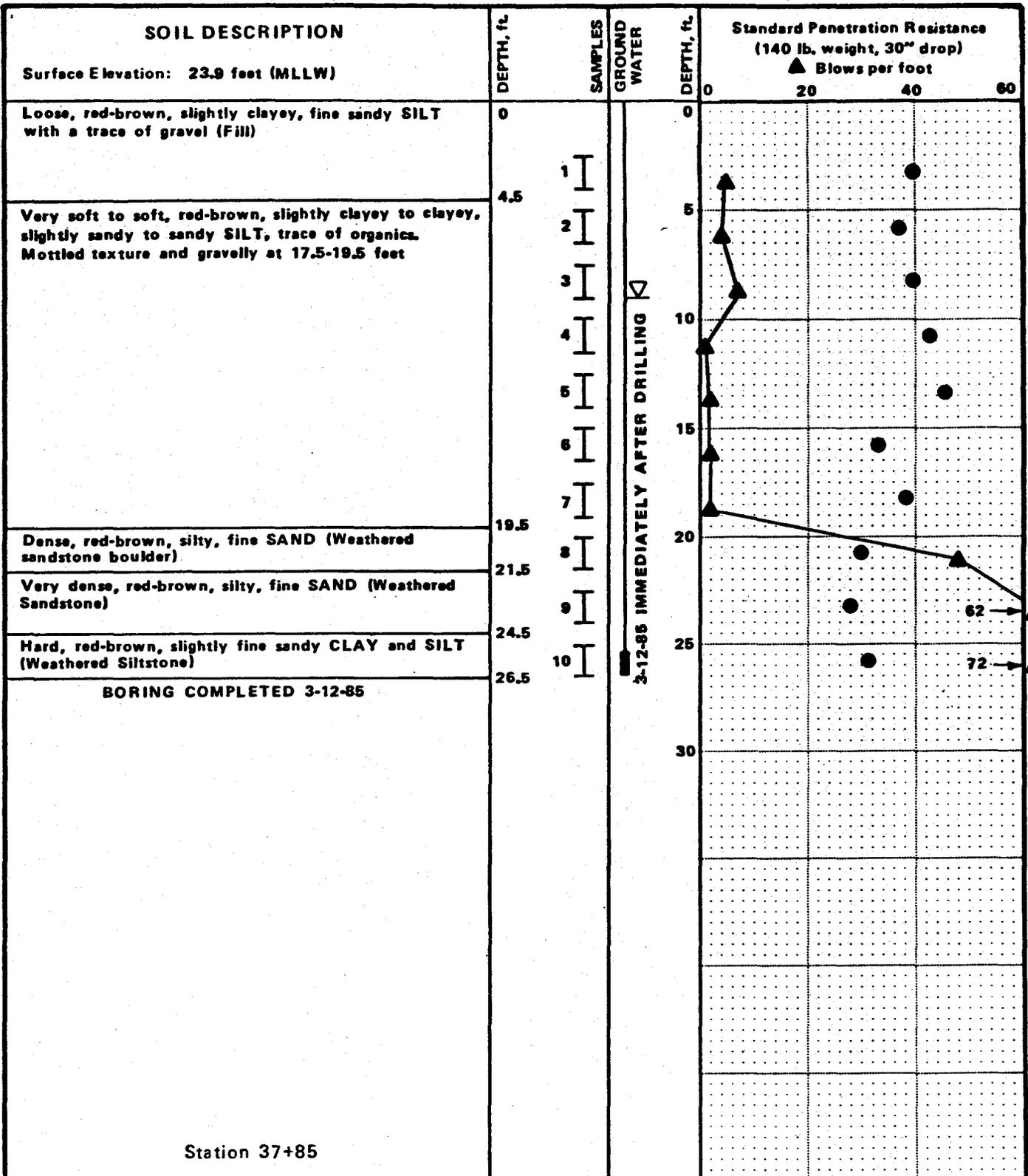
**LOG OF BORING TB-3**

APRIL 1985

W-4365-01

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Geotechnical Consultants

FIG. 8



Station 37+85

**LEGEND**

- I 2" O.D. split spoon sample
- II 3" O.D. thin-wall sample
- \*Sample not recovered
- Atterberg Limits:
  - Liquid limit
  - Natural water content
  - Plastic limit
- Impervious seal
- Water level
- Piezometer tip
- P Sample pushed

NOTE: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

GRAYS HARBOR COUNTY  
DEPARTMENT OF PUBLIC WORKS  
WISHKAH ROAD IMPROVEMENTS

**LOG OF BORING TB-4**

APRIL 1985

W-4365-01

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Geotechnical Consultants

FIG. 9

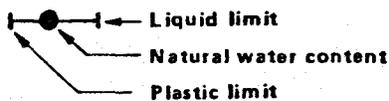
SOIL DESCRIPTION	DEPTH, ft.	SAMPLES	GROUND WATER	DEPTH, ft.	Standard Penetration Resistance (140 lb. weight, 30" drop) ▲ Blows per foot
Surface Elevation: 13.9 feet (MLLW)	0		0	0	20 40 60
Yellow-brown, gravelly, clayey, silty SAND (FII)	0		NO WATER OBSERVED	0	● 50/1"
Very dense, gray, slightly silty, fine SAND (Sandstone)	2.3 2.6	1		6	
BORING COMPLETED 3-12-85					
Station 27+15					

**LEGEND**

- I 2" O.D. split spoon sample
- II 3" O.D. thin-wall sample

\*Sample not recovered

Atterberg Limits:



- Impervious seal
- Water level
- Piezometer tip
- P Sample pushed

GRAYS HARBOR COUNTY  
DEPARTMENT OF PUBLIC WORKS  
WISHKAH ROAD IMPROVEMENTS

**LOG OF BORING TB-5**

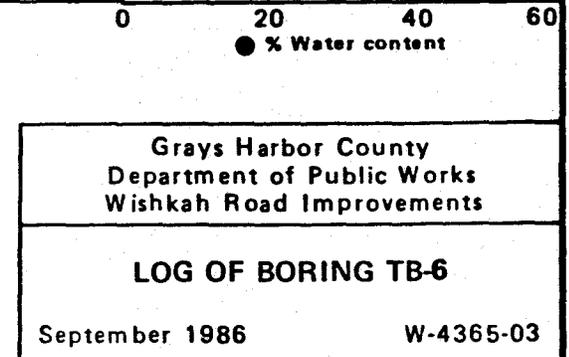
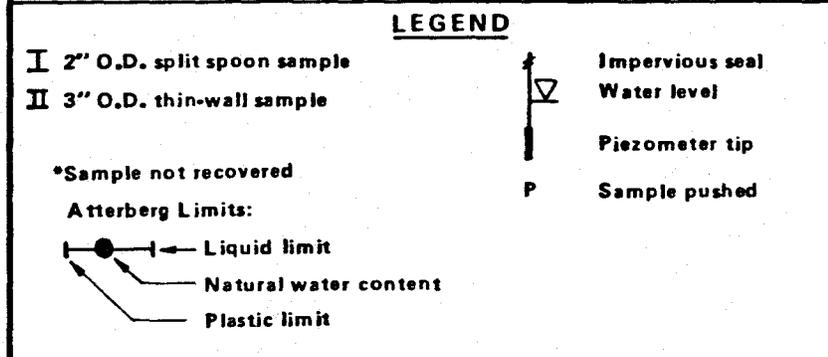
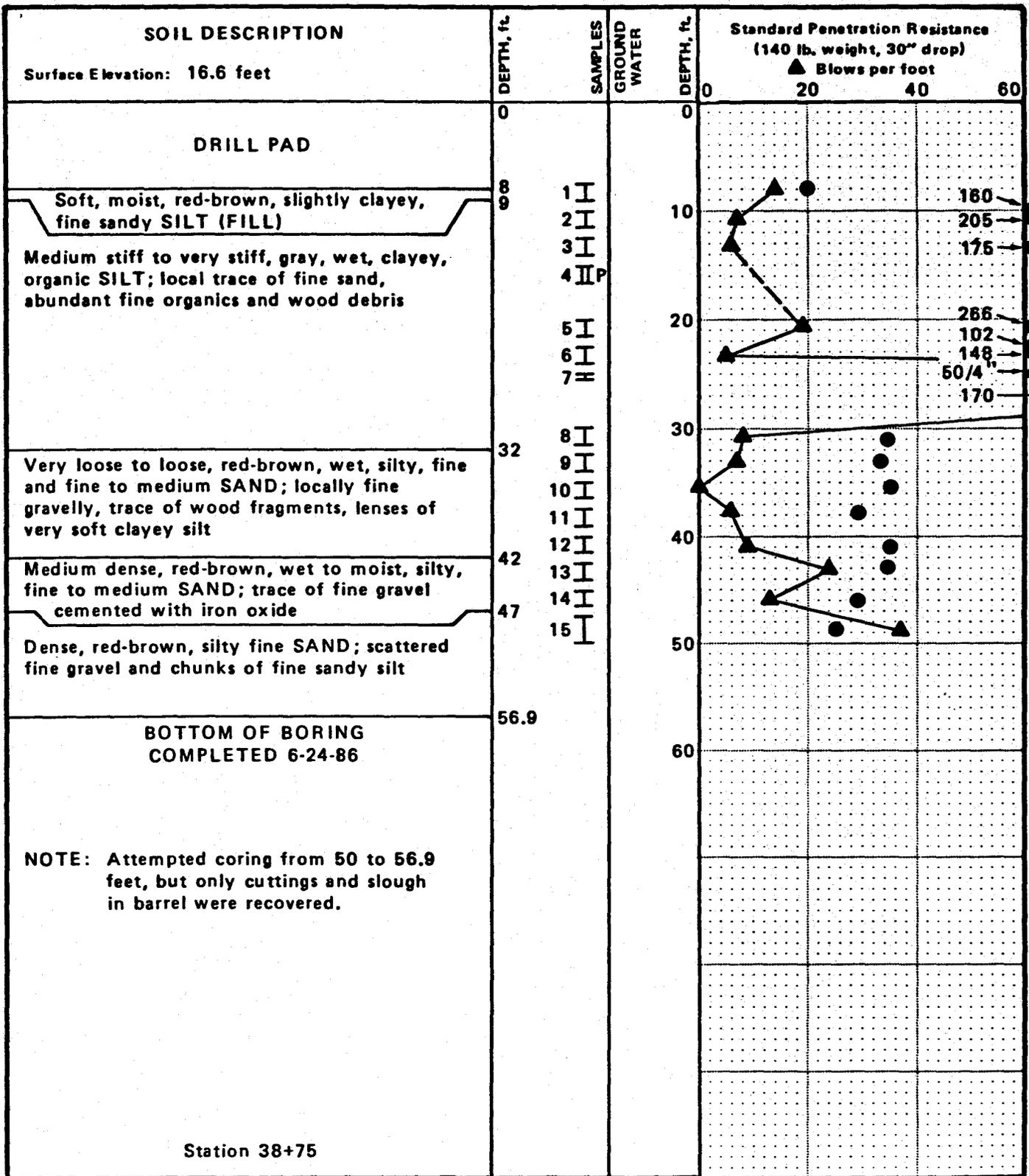
APRIL 1985

W-4365-01

NOTE: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

SHANNON & WILSON, INC.  
Geotechnical Consultants

FIG. 10



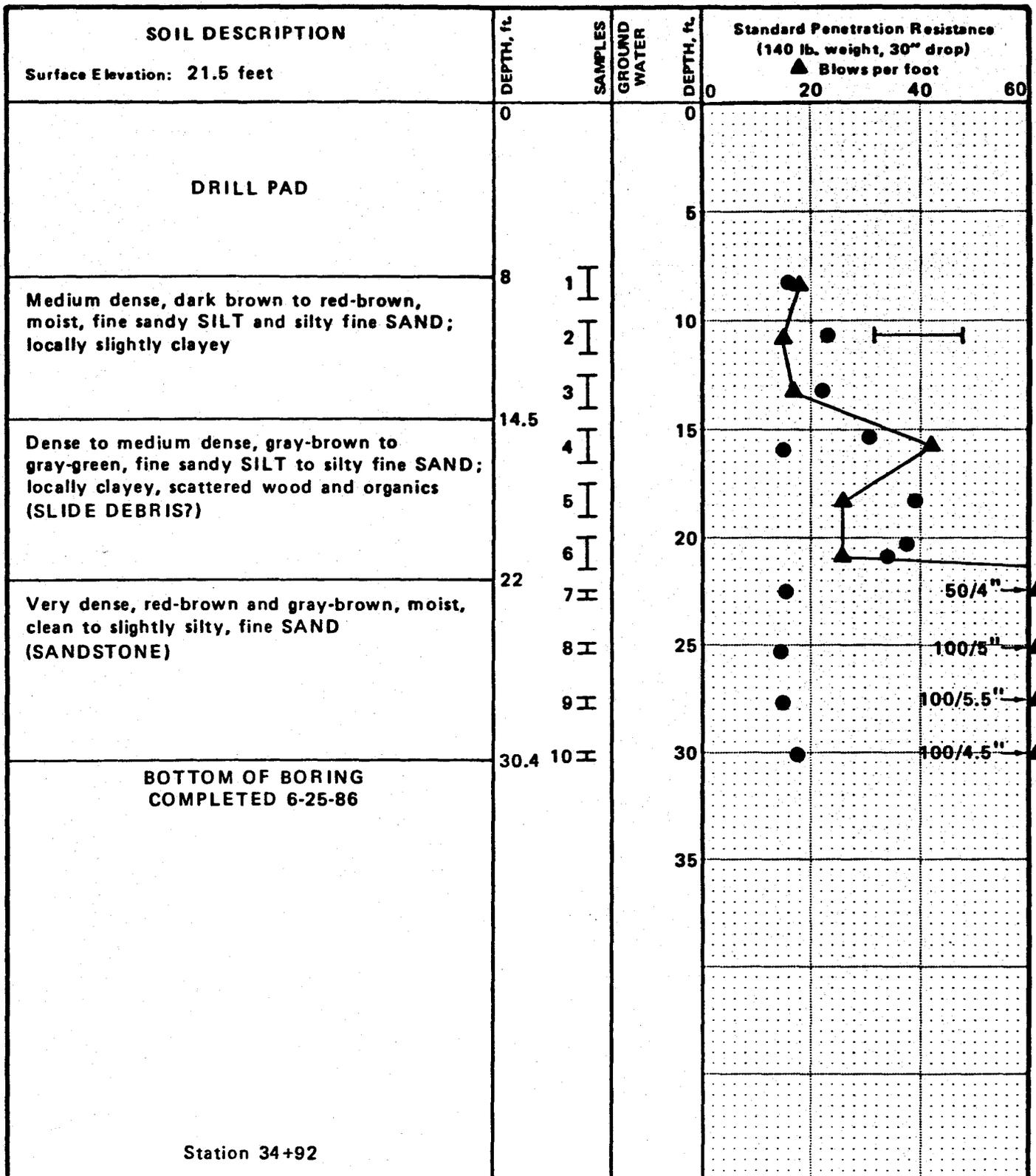
Grays Harbor County  
Department of Public Works  
Wishkah Road Improvements

LOG OF BORING TB-6

September 1986 W-4365-03

SHANNON & WILSON, INC. Geotechnical Consultants FIG. 11

NOTE: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

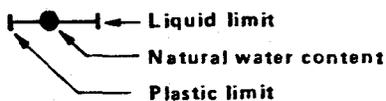


**LEGEND**

- I 2" O.D. split spoon sample
- II 3" O.D. thin-wall sample

\*Sample not recovered

Atterberg Limits:



- ▲ Impervious seal
- ▽ Water level
- ▬ Piezometer tip
- P Sample pushed

NOTE: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

Grays Harbor County  
Department of Public Works  
Wishkah Road Improvements

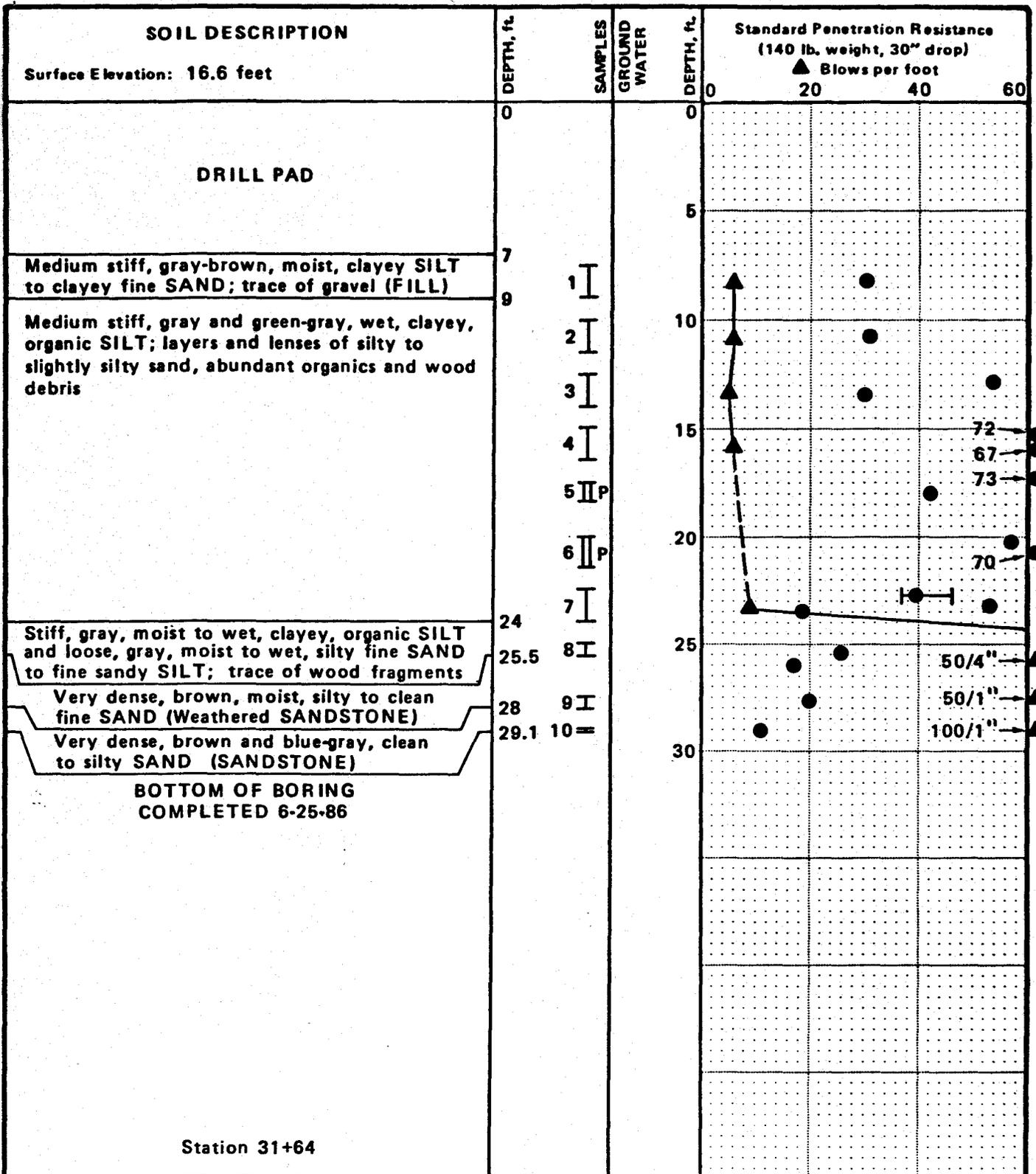
**LOG OF BORING TB-7**

September 1986

W-4365-03

SHANNON & WILSON, INC.  
Geotechnical Consultants

FIG. 12



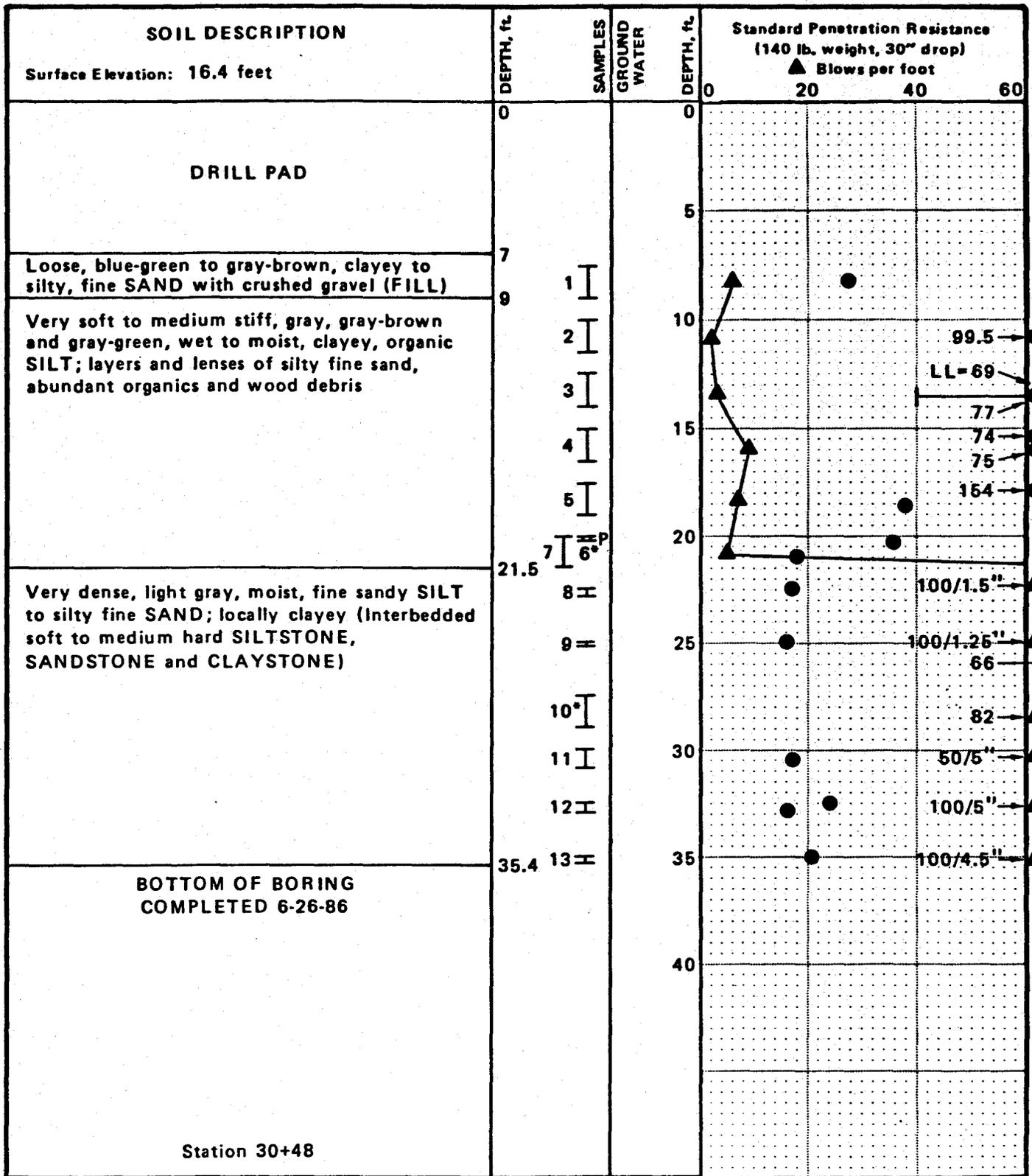
Grays Harbor County  
Department of Public Works  
Wishkah Road Improvements

**LOG OF BORING TB-8**

September 1986 W-4365-03

SHANNON & WILSON, INC. FIG. 13  
Geotechnical Consultants

**NOTE:** The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.



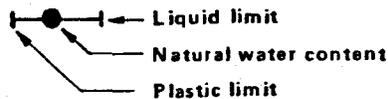
Station 30+48

**LEGEND**

- I 2" O.D. split spoon sample
- II 3" O.D. thin-wall sample

\*Sample not recovered

Atterberg Limits:



- ▲ Impervious seal
- ▽ Water level
- Piezometer tip
- P Sample pushed

Grays Harbor County  
Department of Public Works  
Wishkah Road Improvements

**LOG OF BORING TB-9**

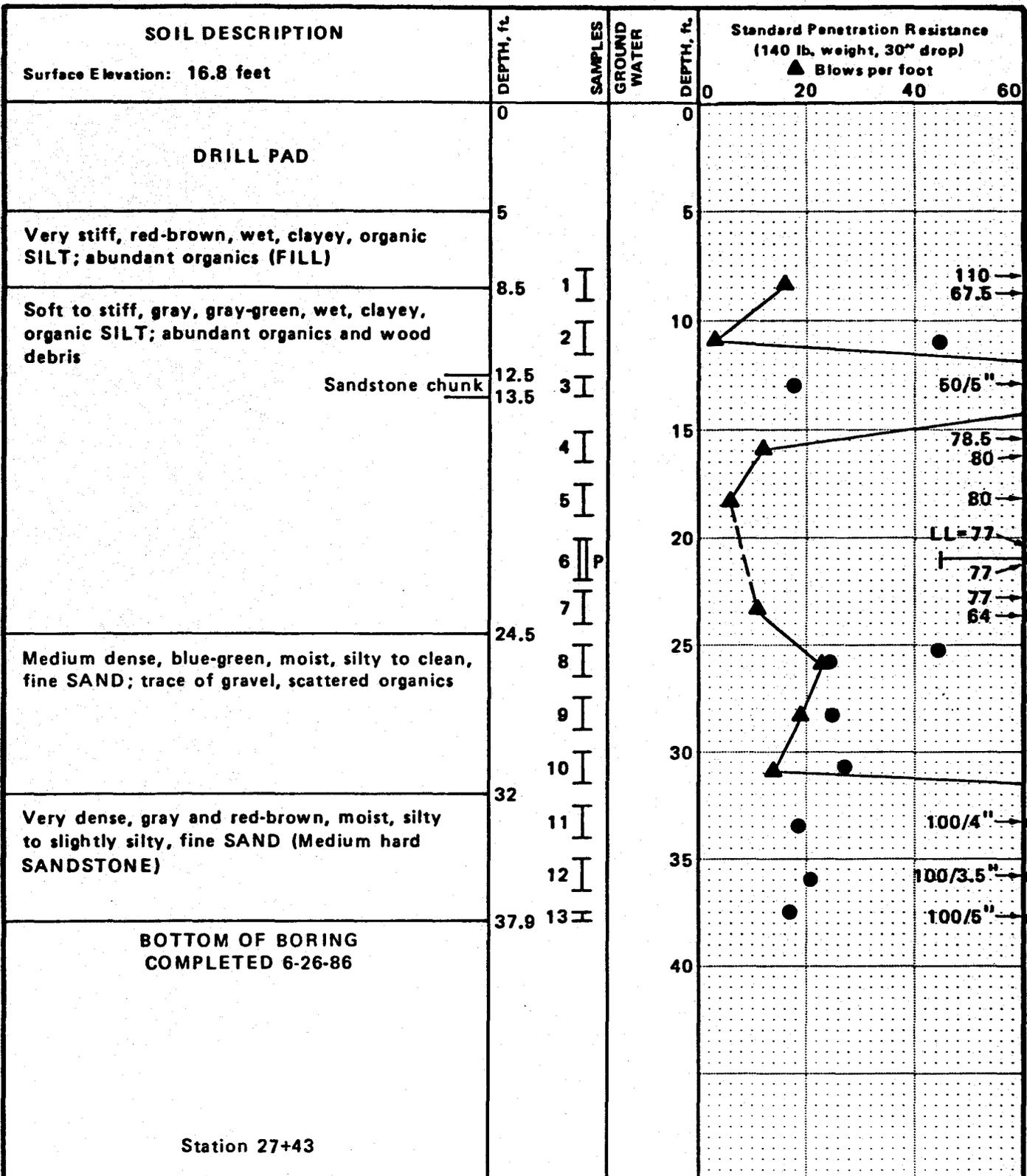
September 1986

W-4365-03

SHANNON & WILSON, INC.  
Geotechnical Consultants

FIG. 14

NOTE: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.



0      20      40      60

● % Water content

**LEGEND**

I 2" O.D. split spoon sample	Impervious seal
II 3" O.D. thin-wall sample	Water level
*Sample not recovered	Piezometer tip
Atterberg Limits:	P Sample pushed
● Liquid limit	
○ Natural water content	
— Plastic limit	

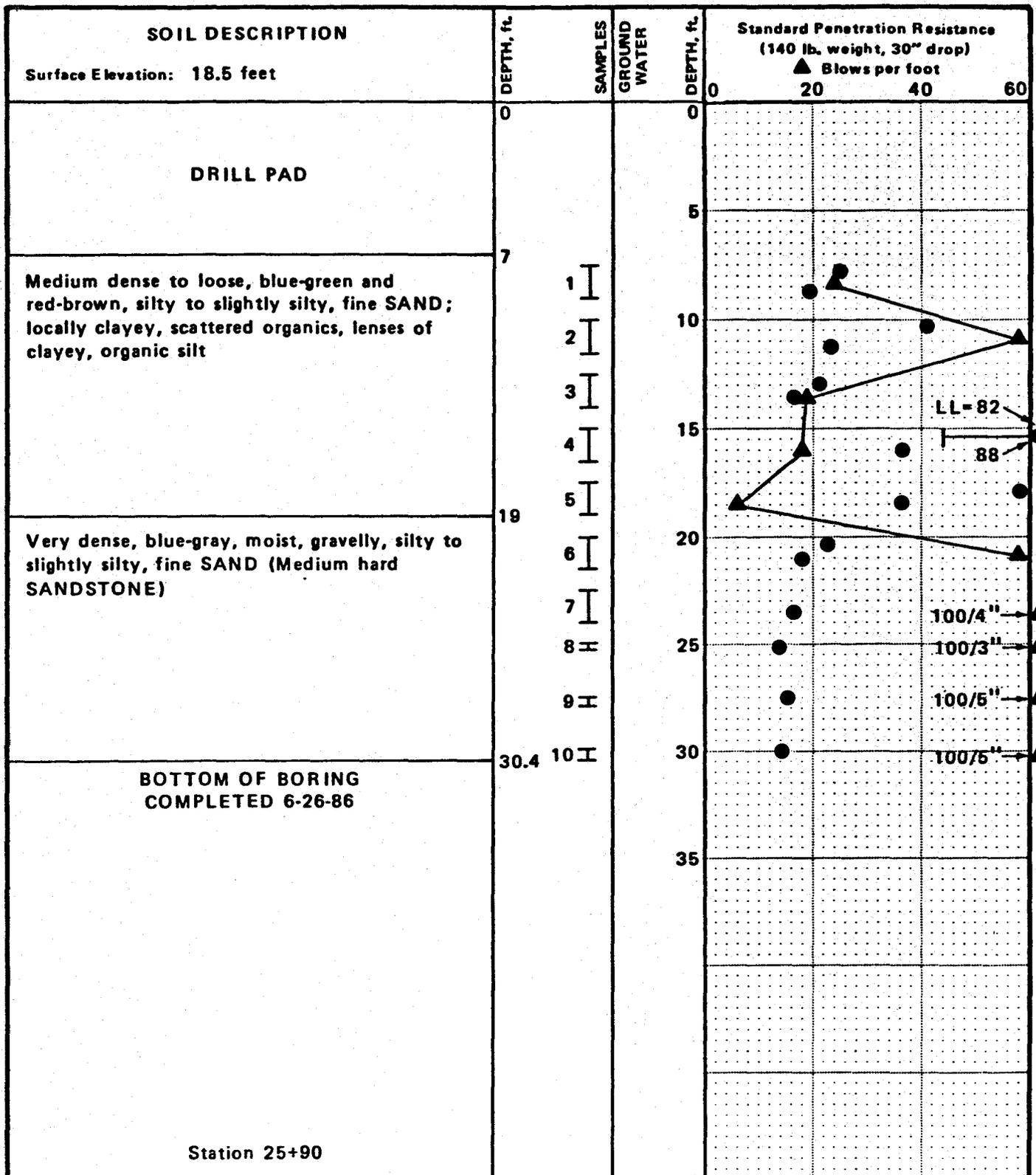
**NOTE:** The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

Grays Harbor County  
Department of Public Works  
Wishkah Road Improvements

LOG OF BORING TB-10

September 1986
W-4365-03

SHANNON & WILSON, INC.  
Geotechnical Consultants
FIG. 15



**LEGEND**

I 2" O.D. split spoon sample	▲ Impervious seal
II 3" O.D. thin-wall sample	▽ Water level
*Sample not recovered	⊥ Piezometer tip
Atterberg Limits:	P Sample pushed
● Liquid limit	
○ Natural water content	
— Plastic limit	

NOTE: The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.

Grays Harbor County  
Department of Public Works  
Wishkah Road Improvements

**LOG OF BORING TB-11**

September 1986 W-4365-03

SHANNON & WILSON, INC. FIG. 16  
Geotechnical Consultants

**LEGEND FOR CORE BORINGS**

**psig - Point Load Test guage pressure**

**S.H. - Schmidt Hammer guage reading**

**$\sigma_c$  - Uniaxial compressive strength in pounds per square inch as estimated from Schmidt Hammer and Point Load Test results.**

**%REC - Accumulated length of recovered core fragments as a percent of the length of the cored run.**

**%RQD - Accumulated length of recovered core fragments greater than 4 inches in length as a percent of the length of the cored run.**

SHANNON & WILSON, INC.  
GEOTECHNICAL CONSULTANTS

SEATTLE, PORTLAND, BURLINGAME, FAIRBANKS, SPOKANE, ST. LOUIS

LOG OF BORING  
BORING NO. CH-1

PROJECT WISHKAH ROAD		JOB NO. W-4365-03		SHEET OF 1 4		
CLIENT GRAYS HARBOR COUNTY			DRILLING CONTRACTOR PACIFIC TESTING LAB			
SIZE AND TYPE OF BIT NY DIAMOND CORE 2 1/8" ID 3" O.D.			LOCATION (COORDINATES OR STATION)			
DIRECTION AND INCLINATION OF HOLE ↓ TO SLOPE 5° DOWN			SOIL SAMPLING FOOTAGE 0	CORING FOOTAGE 35.6'	TOTAL DEPTH 35.6'	
ELEVATION		MFR. DESIGNATION OF DRILL SIMCO	NUMBER OF SOIL SAMPLES PENETRATION 0 TUBES 0			
DEPTH TO WATER NONE ENCOUNTERED		NO. OF CORE BOXES 3	DATE STARTED 11/5/86	DATE COMPLETED 11/5/86	INSPECTOR(S) RNE	
DEPTH IN FEET	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	%REC. %RQD	BOX NUMBER	REMARKS
1 2 2.4		Run #1 28" RECOVERY 26" Very soft, dark gray, micaceous, SANDSTONE medium grained	1	93/32	1	POINT LOAD = 0 PSIG $\sigma_c = 0$ PSI CUTTINGS ON CORE ARE CLAYEY EASY DRILLING NO INNER TUBES 18/29 BPD SCHMIDT HAMMER TEST, BRUCE CORE
3 4 5 6 7		Dark gray, medium grained joint, weathered (red-brown) sand 1/4" thick 30° Light gray, fine grained, medium hard, SANDSTONE joint - brown, weathered Dark gray, medium grained, soft Left in hole	2	92/68	1	POINT LOAD = 0 PSIG $\sigma_c = 0$ PSI 35"/MIN 2:25/85" S.H. = 30, 31, 30 ↓ $\sigma_c = 4570, 4710, 4570$ PSI 56" RUN 4:24/17" 6:00/25.5" POINT LOAD = 450 PSIG 7:42/34" 38" RECOVERY 11:05/51" POINT LOAD = 0 PSIG APPROX. 17" LEFT IN $\sigma_c = 0$ PSI HOLE S.H. = 0, 0, 0 ↓
8		Soft, dark gray SANDSTONE, massive, little bedding, occasional brown weathered joints, as noted, mostly healed	3		1	52" RECOVERY JOINTS 4' RUN FIG. 17 Sheet 1 of 4

PROJECT		CLIENT			DATE	JOB NO.	SHEET OF
WISHKAH ROAD		GRAYS HARBOR COUNTY			11/5/86	W-4365-03	2 OF 4
DEPTH IN FEET	GRAPHIC LOG	CLASSIFICATION OF MATERIAL (DESCRIPTION)	SAMPLE OR RUN NUMBER	%REC. %ROD	BOX NUMBER	REMARKS	
8		BREAK	3	110/95	1	PICKED UP PIECE FROM RUN 2	
9	25°	BREAK iron stained joint				S.H. = 0, 0, 0 ↓ $\sigma_c = 0$ PSI BROKE CORE DURING TESTING POINT LOAD = 0 PSIG $\sigma_c = 0$ PSI	
10	18° / 18°	Healed joint brown iron oxide weathered 1/2" both sides of joint					
11	80° FRESH	Soft, dark gray medium grained SANDSTONE, with micaceous flakes, massive	4	111/100	1	S.H. = 0, 12, 13 ↓ $\sigma_c = 0, 2320, 2465$ PSI 60" RECOVERY 54" RUN 2 BRAKES, NO JOINTS OR WEATHERED ZONES	
12							
13							
14							
15	MECH.					POINT LOAD = ~ 50 PSIG $\sigma_c = 1850$ PSI S.H. = < 10, 10, 11 ↓ $\sigma_c = < 2175, 2175, 2250$ PSI	
16		Soft, dark gray, SANDSTONE, massive, no weathered joints fracture @ 16', not stained, fresh	5	84/68	2	50.5" RECOVERY 60" RUN	
17							

FIG. 17  
 Sheet 2 of 4

PROJECT		CLIENT		DATE	JOB NO.	SHEET OF	REMARKS
WISHKAH ROAD		GRAYS HARBOR COUNTY		11/5/86	W-4365-03	3 4	RNB
DEPTH IN FEET	GRAPHIC LOG	CLASSIFICATION OF MATERIAL (DESCRIPTION)	SAMPLE OR RUN NUMBER	%REC. %RQD	BOX NUMBER	REMARKS	
17		Soft, dark gray, SANDSTONE massive, no weathered joints	5		Z	41/60	
18							
19							
20	MECH.						S.H. = <10, 12.14 $\sigma_c = <2175, 2320, 2540$ PSI  POINT LOAD = ~ 50 PSIG $\sigma_c = 1850$ PSI
21	FRACTURED SANDSTONE	Dark gray, medium grained, SANDSTONE, changes to darker, medium soft, fine grained, SANDSTONE / SILTSTONE, with coarser sandstone stringers	6	100/93	Z	8.5" / 3.25 MIN → 2.6" / MIN	60" RECOVERY 60" RQD
22	SS	4' SILTSTONE, back to SANDSTONE					
23	Healed fractures					55/60 = RQD	S.H. = 10, 10, 13 ↓ IN SILTSTONE $\sigma_c = 2175, 2175, 2465$ PSI POINT LOAD = 100 PSIG $\sigma_c = 3700$ PSI
24	SILTSTONE						
25	2" very soft SS	Dark gray, SANDSTONE					
26		Dark gray, SANDSTONE, with occasional siltstone chunks	7		Z		

FIG. 17  
 Sheet 3 of 4

PROJECT		CLIENT		DATE	JOB NO.	SHEET OF	INSPECTOR(S)
WISUKAH ROAD		GRAYS HARBOR COUNTY		11/5/86	W-4365-03	4 OF 4	ENB
DEPTH IN FEET	GRAPHIC LOG	CLASSIFICATION OF MATERIAL (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC. % RQD	BOX NUMBER	REMARKS	
26		Soft, dark gray, SANDSTONE with occasional siltstone chunks	7	100 87	2	S.H. = 11, 12, 14 ↓ $\sigma_c = 2250, 2320, 2540$ PSI 60" RUN 60" RECOVERY $\frac{52}{60} = RQD$	
27		Top or bottom of light gray, medium hard, medium grained, SS layer.	8	$\frac{33}{20}$	3	POINT LOAD = ~ 50 PSIG $\sigma_c = 1850$ PSI S.H. = 12, 15, 11 ↓ $\sigma_c = 2320, 2610, 2250$ PSI	
28						20" RECOVERY 60" RUN LEFT SOME IN HOLE $\frac{12}{60} = RQD$	
29						S.H. = 12, 8, 13 ↓ $\sigma_c = 2320, 2030, 2465$ PSI	
30						35' 7" TOTAL DEPTH	
31	Bottom 35' 7"						
32							
33							
34							
35							

FIG. 17  
 Sheet 4 of 4

SHANNON & WILSON, INC.  
 GEOTECHNICAL CONSULTANTS

SEATTLE, PORTLAND, BURLINGAME, FAIRBANKS, SPOKANE, ST. LOUIS

LOG OF BORING  
 BORING NO. CH-2

PROJECT <b>WISHKAM ROAD</b>		JOB NO. <b>W-4365-03</b>	SHEET OF <b>1 3</b>
CLIENT <b>GRAYS HARBOR COUNTY</b>		DRILLING CONTRACTOR <b>PACIFIC TESTING LAB</b>	
SIZE AND TYPE OF BIT <b>NY DIAMOND CORE 2 1/2" ID 3" OD.</b>		LOCATION (COORDINATES OR STATION)	
DIRECTION AND INCLINATION OF HOLE <b>↓ TO SLOPE 5° DOWN</b>		SOIL SAMPLING FOOTAGE <b>0</b>	CORING FOOTAGE <b>22</b>
ELEVATION		NUMBER OF SOIL SAMPLES PENETRATION <b>0</b>	TUBES <b>0</b>
MFR. DESIGNATION OF DRILL <b>SIMCO</b>		DATE STARTED DATE COMPLETED <b>11/5/86 11/5/86</b>	
DEPTH TO WATER <b>NONE ENCOUNTERED</b>		INSPECTOR(S) <b>RJE</b>	
NO. OF CORE BOXES <b>2</b>			

DEPTH IN FEET	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC. % RQD	BOX NUMBER	REMARKS
0		Very soft, weathered, brown and gray, layered SANDSTONE, fine grained, brownish to 17"	1	83/25	1	20 RECOVERY 24
1	FRABLE WEATHERED (LOW STRAINED)					6 24 = RQD S.H. = 11, 9, 12 ↓ σ <sub>c</sub> = 2250, 2100, 2320 PSI POINT LOAD = 0 PSIG σ <sub>c</sub> = 0 PSI
2		Vary soft, gray and brown, SANDSTONE, with siltstone layers, with weathered seams.	2	67/12	1	40 RECOVERY 60 RUN
3	POOR CLIPS SOFT WEATHERED					11 60 = RQD POINT LOAD = ~40 PSIG σ <sub>c</sub> = 1480 PSI
4	15" WEATHERED 25" FRESH					S.H. = 8, 11, 5 ↓ σ <sub>c</sub> = 2030, 2250, 1740 PSI
5						
6						
7		WEATHERED TO RED-BROWN SILT				
8	FLAT FLAT	Dark gray SANDSTONE, soft Clay filled joints 1/8" to 1/4" wide	3	98/28	1	59 RECOVERY 60 RUN 32 60 = RQD

SHANNON & WILSON, INC.  
 GEOTECHNICAL CONSULTANTS

SEATTLE, PORTLAND, BURLINGAME, FAIRBANKS, SPOKANE, ST. LOUIS

LOG OF BORING  
 BORING NO. CH-1

PROJECT		CLIENT		DATE	JOB NO.	SHEET OF
WISHKAM ROAD		GRAYS HARBOR COUNTY		11/5/86	W-4365-03	2 OF 3
DEPTH IN FEET	GRAPHIC LOG	CLASSIFICATION OF MATERIAL (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC. % ROD	BOX NUMBER	REMARKS
8	FLAT	Dark gray SANDSTONE, soft clay filled joints very soft 1/8" - 3/8" wide	3			S.H. = 11, 14, 12 ↓ $\sigma_c = 2250, 2540, 2320$ PSI POINT LOAD = 0 PSIG $\sigma_c = 0$ PSI FAILED ALONG BEDDING PLANE
9	FLAT					
10	MECH. 30° FRESH 5° FRESH	iron stained fracture				POINT LOAD = 0 PSIG
11	MECH. 20° FRESH					
12		Soft, gray SANDSTONE, with thin siltstone lenses	4	100/49	1	S.H. = 19, 12, 12 ↓ $\frac{60}{60} \sigma_c = 2175, 2320, 2320$ PSI
13		FRACTURES WEATHERED SLIGHTLY to bedding			2	$\frac{29}{60}$  POINT LOAD = 50-60 PSIG $\sigma_c = 1850 - 2220$ PSI
14	15° 20° FRESH					
15		10" THICK ZONE OF GRAY SAND WITH SILT LENSES (COMPLETELY WEATHERED SANDSTONE)				S.H. = <10, <10, <10 ↓ $\sigma_c = <2175, <2175, <2175$ PSI
16	SS					
17	10° FRESH	Gray SANDSTONE				

FIG. 18

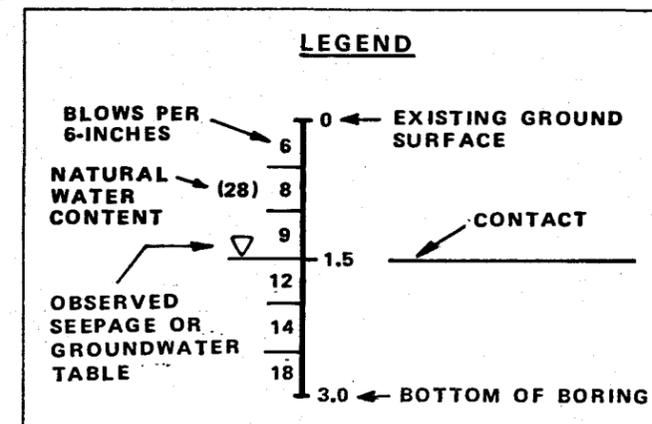
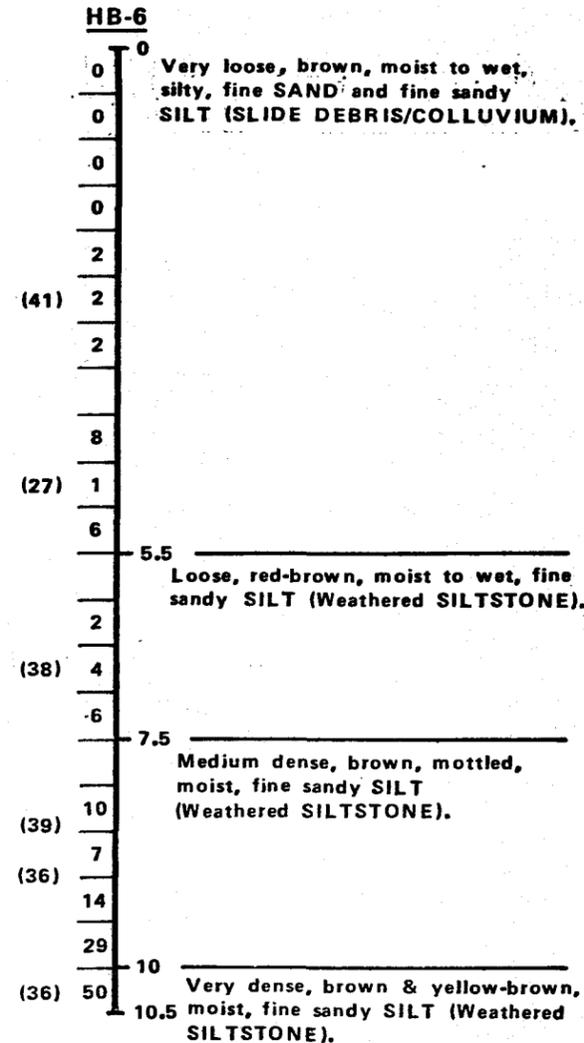
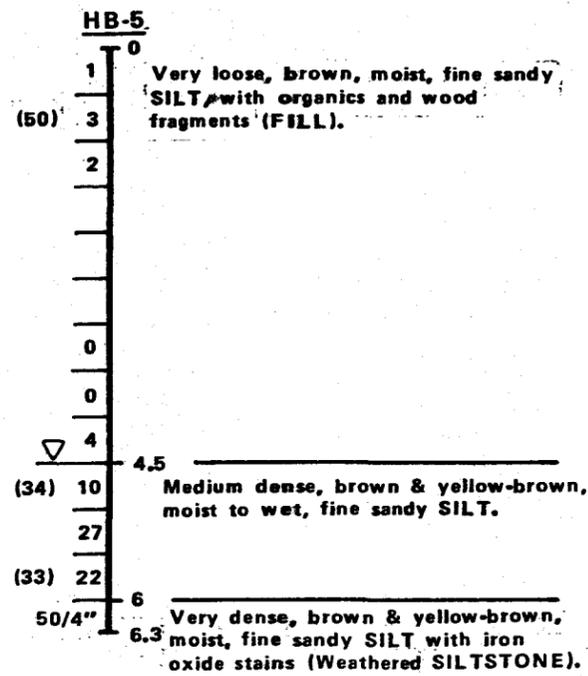
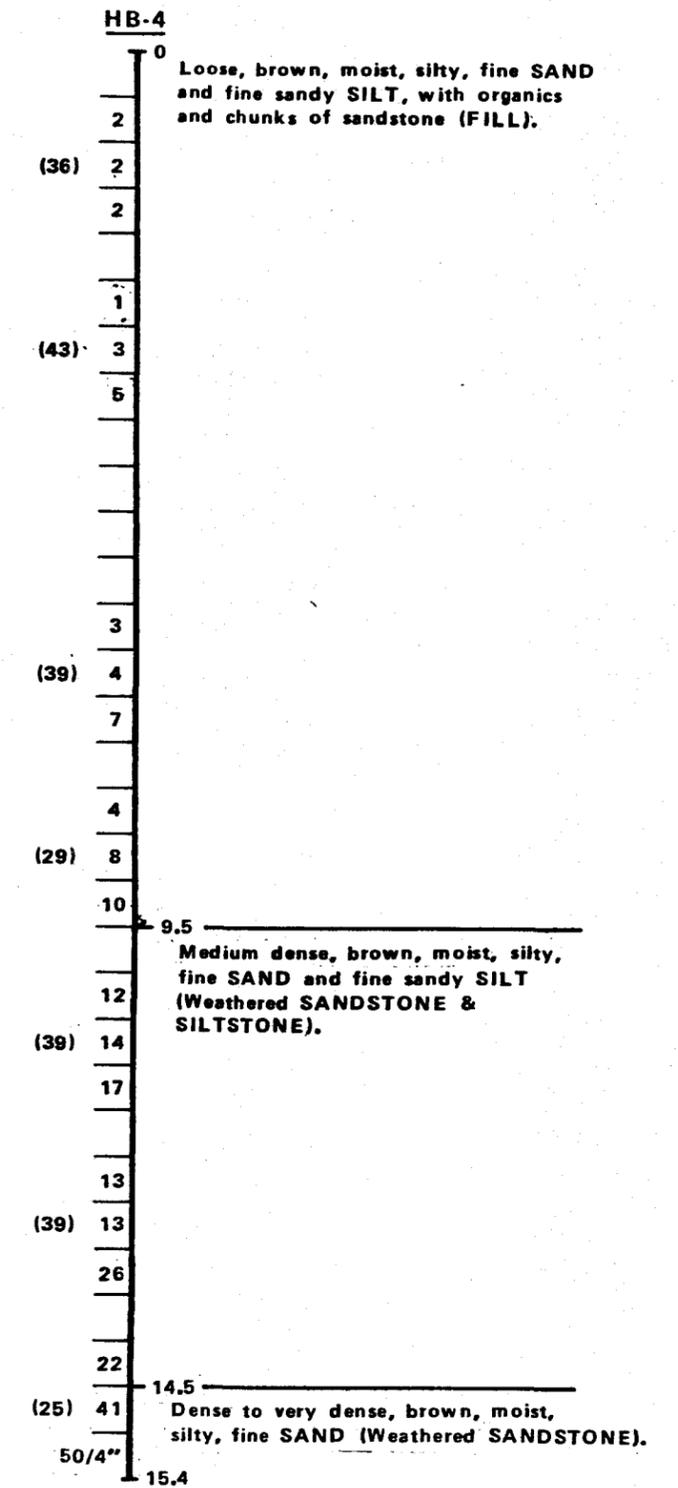
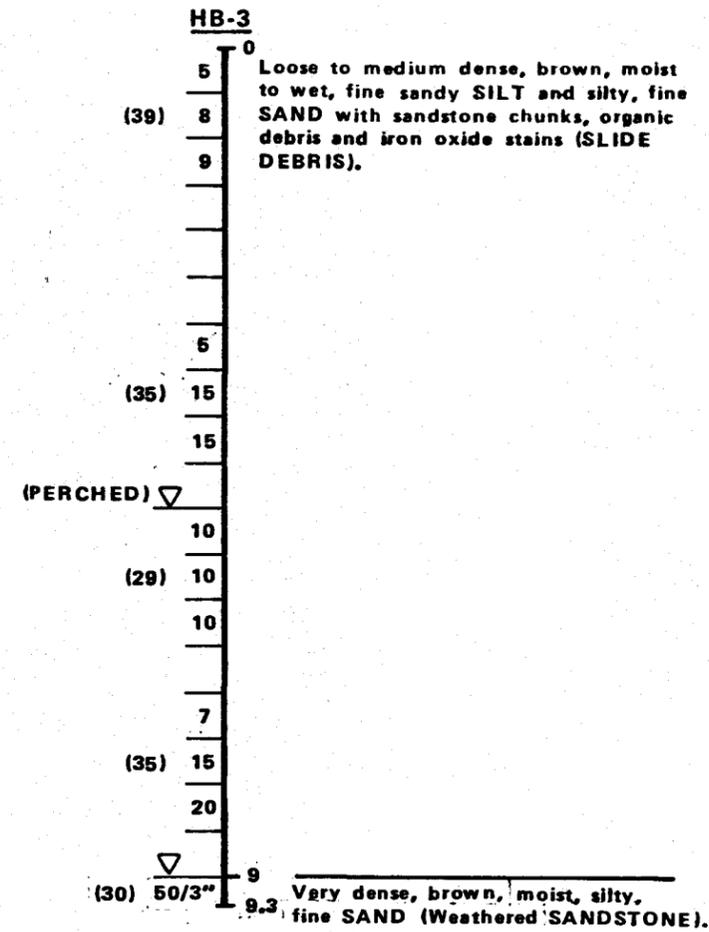
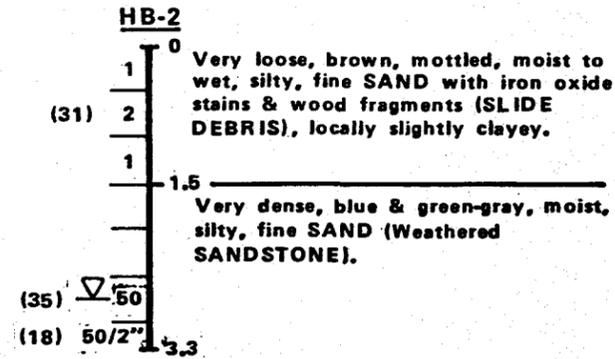
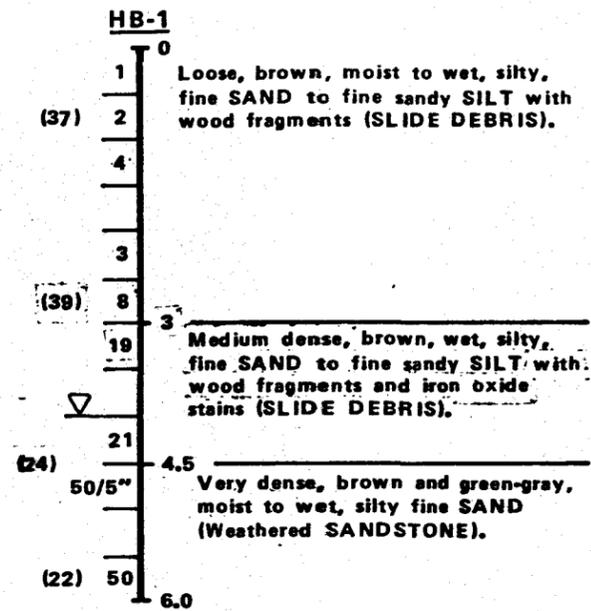
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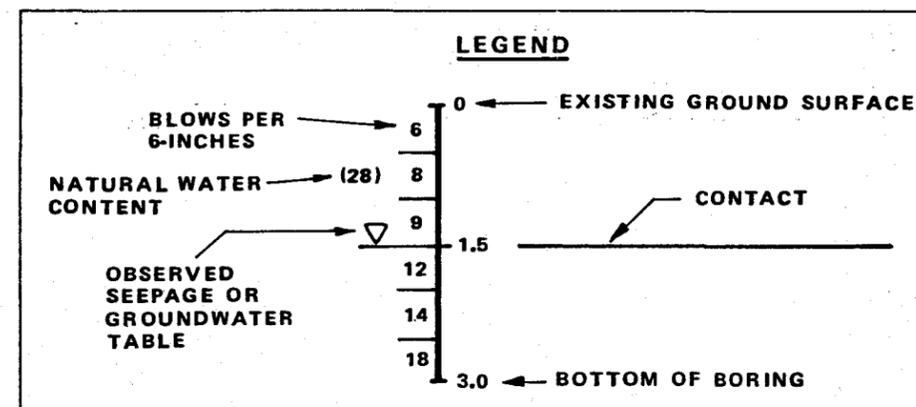
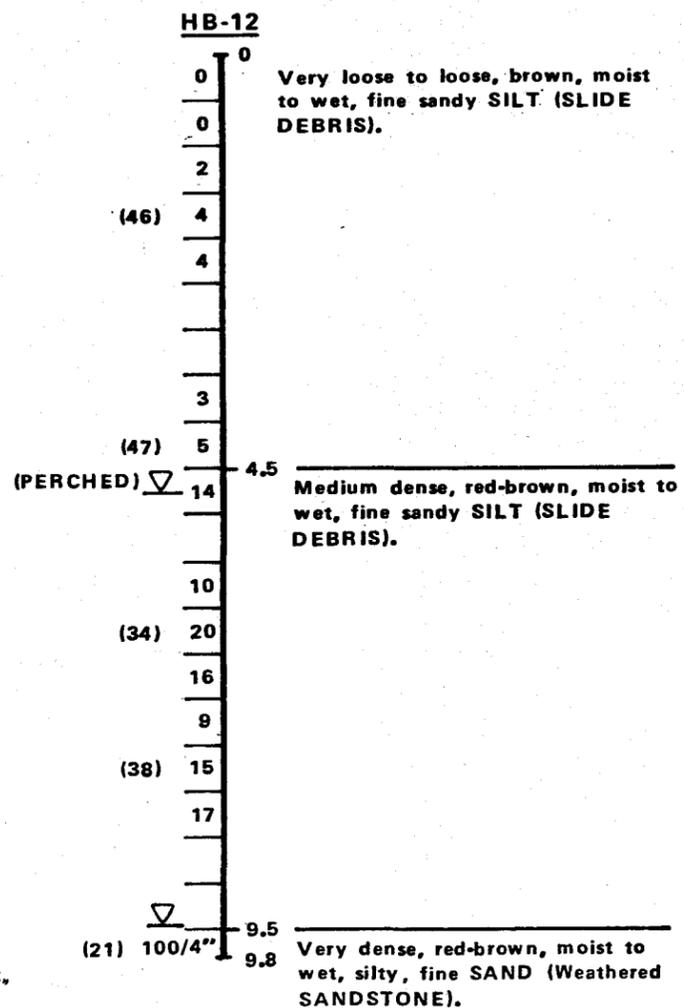
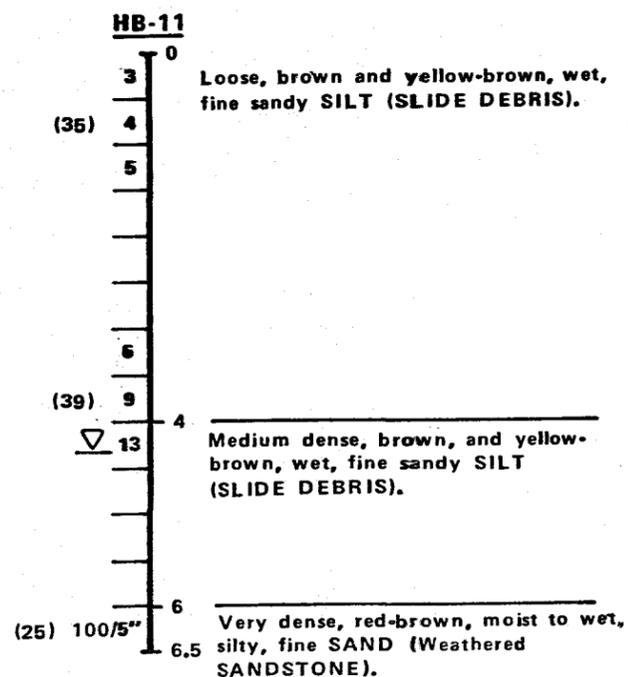
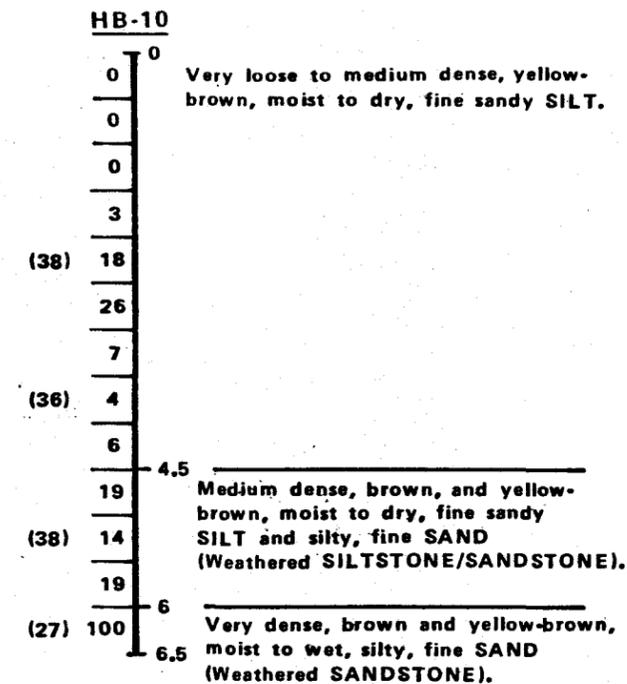
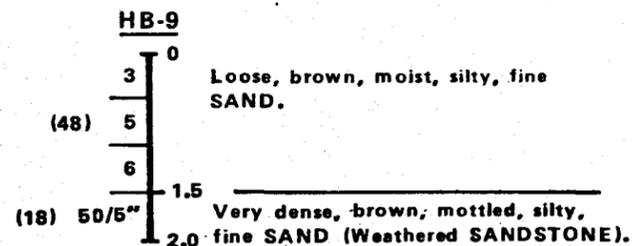
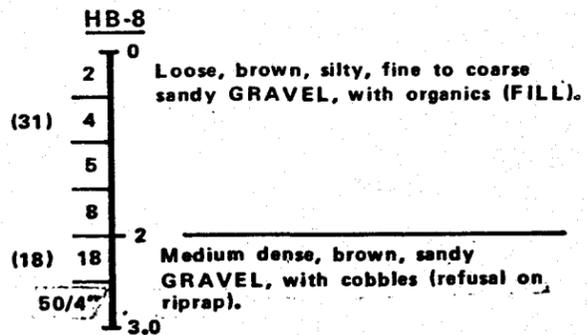
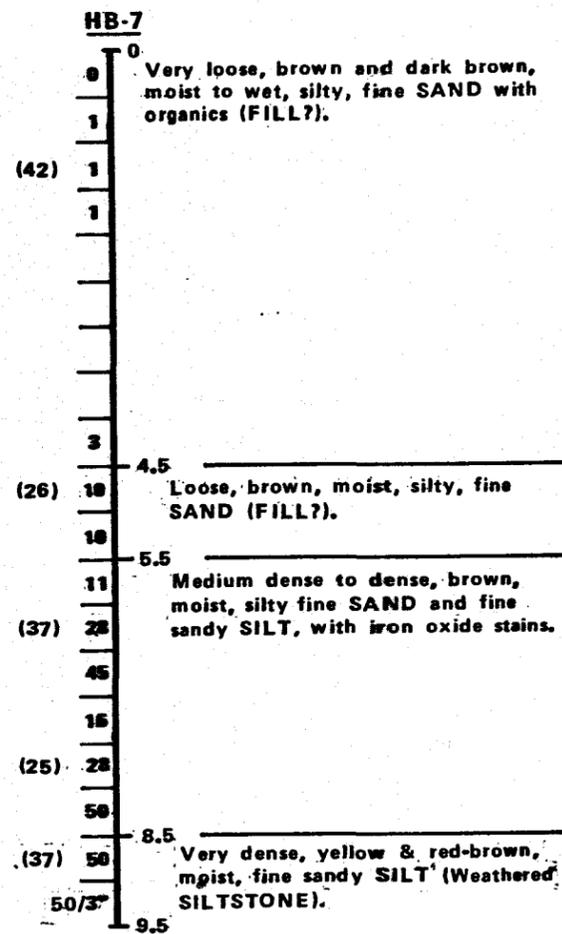
SEATTLE, PORTLAND, BURLINGAME, FAIRBANKS, SPOKANE, ST. LOUIS

LOG OF BORING  
 BORING NO. CH-1

PROJECT		CLIENT		DATE	JOB NO.	SHEET OF	
WISHKAM ROAD		GRAYS HARBOR COUNTY		11/5/86	W-4365-03	3	3
INSPECTOR(S)		EJB					
DEPTH IN FEET	GRAPHIC LOG	CLASSIFICATION OF MATERIAL (DESCRIPTION)	SAMPLE OR RUN NUMBER	%REC. %RQD	BOX NUMBER	REMARKS	
17		Soft, gray, SANDSTONE, with thin siltstone lenses horizontal bedding	5	$\frac{68}{48}$	2	$\frac{41}{60}$	POINT LOAD = 0 PSIG $\sigma_c = 0$ PSI
18						$\frac{29}{60}$	
19							
20							
21							$\sigma_c = <2175, <2175, <2175$ PSI S.H. = <10, <10, <10 ↓
22		BOTTOM OF HOLE					
23							
24							
25							

FIG. 18  
 Sheet 3 of 3





GRAYS HARBOR COUNTY  
DEPARTMENT OF PUBLIC WORKS  
WISHKAH ROAD IMPROVEMENTS

LOGS OF HAND BORINGS  
HB-7 THROUGH HB-12

APRIL 1985

W-4365-01

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FIG. 20