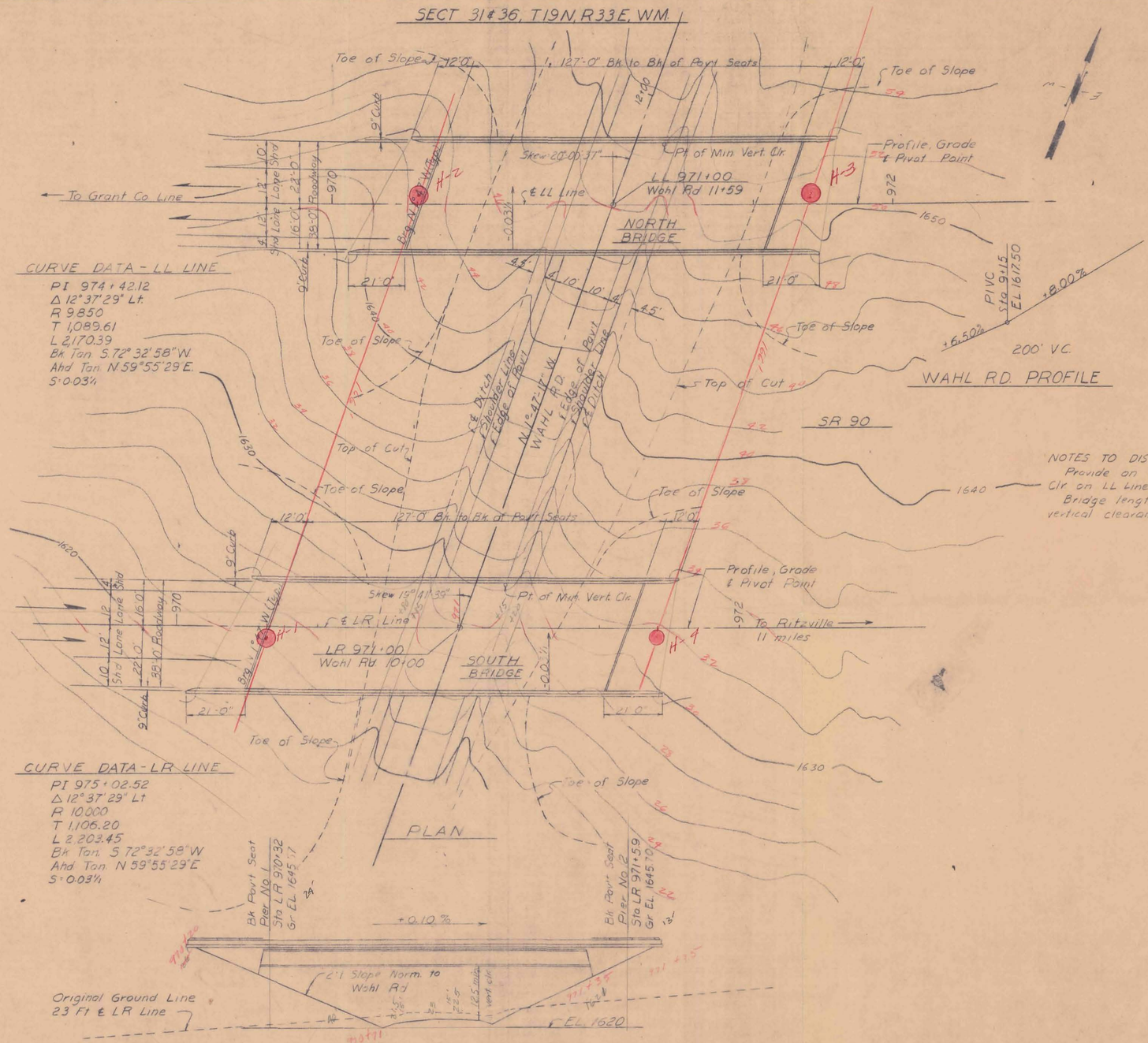
MAY 29 1969

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8	WASH.				

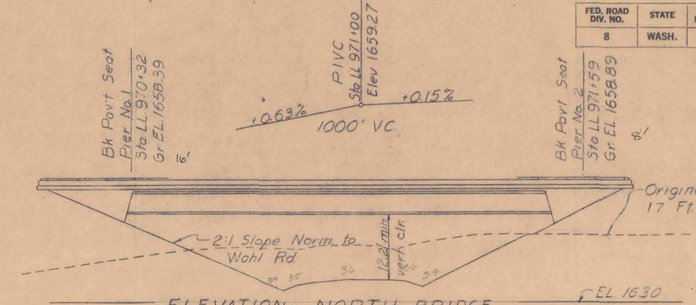


CURVE DATA - LL LINE

PI 974+42.12
Δ 12°37'29" Lt
R 9850
T 1,089.61
L 2,170.39
Bk Tan S 72°32'58" W
Ahd Tan N 59°55'29" E
S 0.03%

CURVE DATA - LR LINE

PI 975+02.52
Δ 12°37'29" Lt
R 10,000
T 1,106.20
L 2,203.45
Bk Tan S 72°32'58" W
Ahd Tan N 59°55'29" E
S 0.03%



ELEVATION - NORTH BRIDGE

Grade elevations shown are finish grades on ℄ LR Line and are equal to Profile Grade.

WAHL RD. PROFILE

NOTES TO DISTRICT:
Provide an additional 2.4' of Vert Clr on LL Line & 2.0' Vert Clr on LR Line. Bridge length is based on 14.5' vertical clearance.

ELEVATION - SOUTH BRIDGE

Grade elevations shown are finish grades on ℄ LR Line and are equal to Profile Grade.

LOADING: HS 20
OR
2-24" AXLES @ 4' CTRS

ADT 1990 11,250
DVH 1990 1,400
Class I-1

DATUM
Mean Sea Level

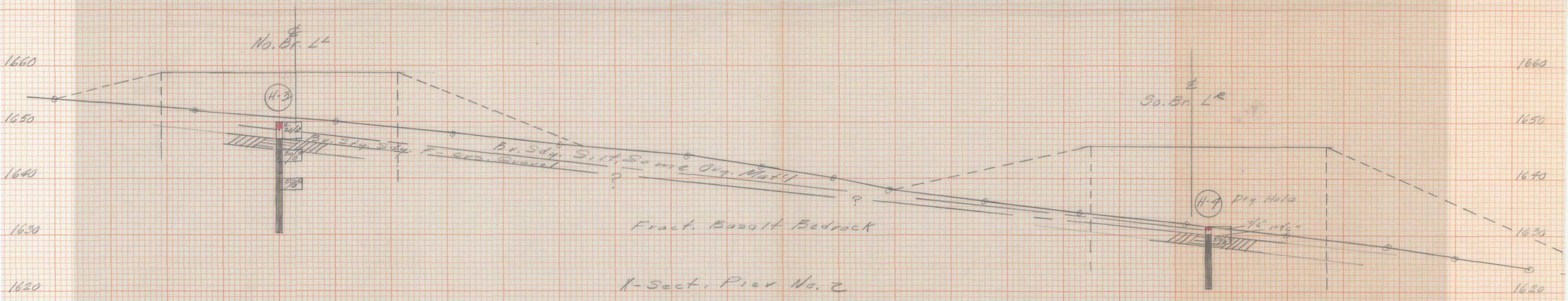
Engineer of Bridge Design		
Supervising Bridge Engr.		
Designed		
Design. Checked	R.E.T.	April 1969
Quantities Figured		
Quantities Checked		

Layout checked NSJ 5-20-69

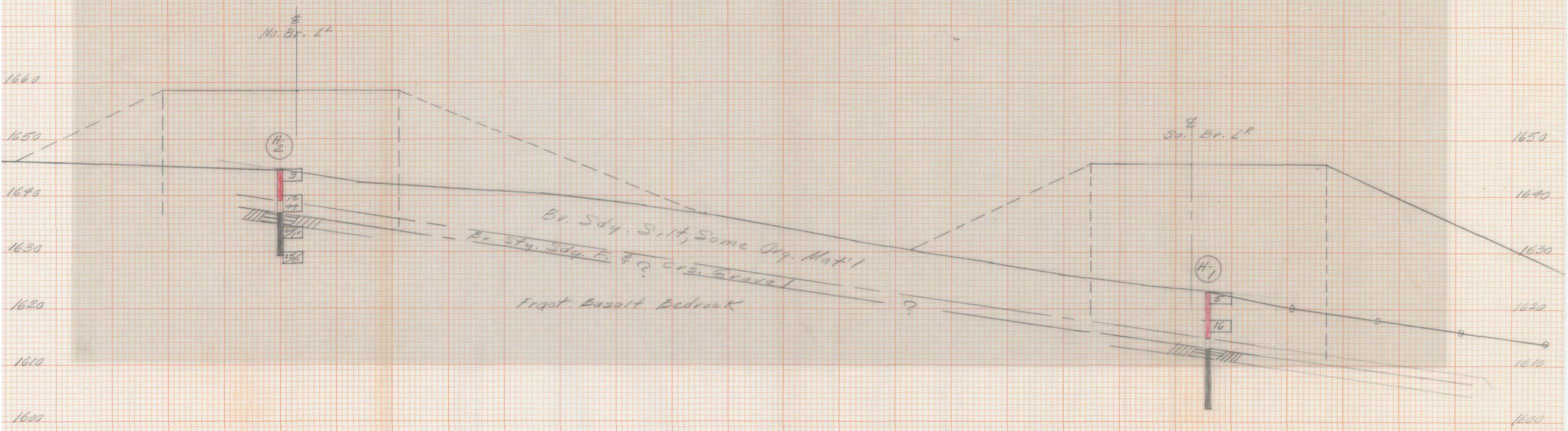
120 Series P.S. Girs
℄ Ext Gir @ 1'-9" from Curb
A dim = 9" + 1½" Asph. overlay
Bridge will be constructed with approach fills

SR 90-1539-1

Program No. 6506000 CS 0101 R BL 604 G SR 90 ~ Grant County Line to Ritzville ~ Wahl Rd. Overcrossing



X-Sect. Pier No. 2



X-Sect. Pier No. 1

CROSS SECTION
INCH
KEUFFEL & ESSER CO.
MADE IN U.S.A.
K+E STANDARD CROSS SECTION
10 X 10 TO THE INCH
KEUFFEL & ESSER CO.
MADE IN U.S.A.

H. F. 26.66 (Rev. 5-67)

WASHINGTON
STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Original to Materials Engineer
Copy to Bridge Engineer
Copy to District Engineer
Copy to

LOG OF TEST BORING

P S.H. 18 S.R. 90 Section Grant Co. Line to Ritzville Job No. L-2323
Hole No. H-1 Sub Section Wahl Road O'Xing: Pier 1-S Cont. Sec. 0101-R
Station L^R 970+32 Offset 4' Rt. ℄ Ground El. 1623.0
Type of Boring Rotary with mud 8C48-8 Casing 4" 10.5 W.T. El. Dry Hole
Inspector Calvin Lockwood Date 9 April 1969 Sheet 1 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
	5		1 2 3 2 Std. Pen 1	SILT & SAND - Very loose to slightly compact, brown, fine
5				
	16		7 8 8 8 Std. Pen 2	
				SILTY SAND & GRAVEL - Dense, brown all sizes (Basalt)
10			CORE 3	(10'0" - 13'5") BEDROCK - Brown & Black, badly shattered, basalt
15			CORE 4	(13'5" - 15'5")
			CORE 5	(15'5" - 17'5")
20			CORE 6	(17'5" - 20'5"

H. F. 26.66-A (Rev. 5-67)

Hole No. H-1 Sub Section Wahl Road O'Xing: Pier 1-S Sheet 2 of 2

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
				TEST BORING STOPPED AT 20'5"
				Dry Hole
25				Samples moist to bedrock

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DEPARTMENT OF HIGHWAYS

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LOG OF TEST BORING

P S.H. 18 S.R. _____ Section Grant Co. Line to Ritzville Job No. L-2323
Hole No. H-2 Sub Section Wahl Road O'Xing: Pier 1-N Cont. Sec. 0101-R
Station L^1 970+30 Offset 3' Lt. ℄ Ground El. 1644.5
Type of Boring Rotary with mud 8C48-8 Casing 4" 5.5 W.T. El. Dry Hole
Inspector Calvin Lockwood Date 10 April 1969 Sheet 1 of 1

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			1 Std.	
	3		2 Pen	SILT & SAND - Very loose to slightly compact
			1 1	
			2	Brown, fine
5				
			5 Std.	
	12		7 Pen	
			17 2	
	44		27	SILTY SAND & GRAVEL - Dense, brown, all
				sizes (Basalt)
			W	
			A	BEDROCK - Brown & Black, badly
10			S H	shattered, basalt
	60/1"		Std. Pen 3	
			W A	
			S H	
15				
	25/0"		Std. Pen 4	TEST BORING STOPPED AT 15.5
				Dry Hole
				Samples moist to 5.0 - Dry thereon
20				

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DEPARTMENT OF HIGHWAYS

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LOG OF TEST BORING

P S.H. 18 S.R. 90 Section Grant Co. Line to Ritzville Job No. L-2323
Hole No. H-3 Sub Section Wahl Road O'Xing: Pier 2-N Cont. Sec. 0101-R
Station L1 971+70 Offset 3' Lt. ℄ Ground El. 1650.0
Type of Boring Rotary with mud 8C48-8 Casing 4" 8.0 W.T. El. Dry Hole
Inspector Calvin Lockwood Date 10 April 1969 Sheet 1 of 1

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
			2 Std.	SILT & SAND - Very loose, brown, fine
	2		1 Pen	
			1 1	
	21/6"		21	SILTY SAND & GRAVEL - Dense, brown, all sizes
				Basalt
			WASH	BASALT - Brown & black, badly shattered
5	30/0"		Std Pen 2	
			WASH	BASALT - Very dense, badly shattered, bedded in silt
10	50/0"		Std. Pen 3	
			WASH	BEDROCK - Brown & Black, badly shattered, basalt
			4	
15				
			CORE 5	(15'0" - 16'8")
				(16'8" - 19'8") Dry Hole Moist to 1.5 - Dry thereon
			CORE 6	
20				TEST BORING STOPPED AT 19'8"

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DEPARTMENT OF HIGHWAYS

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LOG OF TEST BORING

P S.H. 18 S.R. 90 Section Grant Co. Line to Ritzville Job No. L-2323
Hole No. H-4 Sub Section Wahl Road O'Xing: Pier 2-S Cont. Sec. 0101-R
Station L^r 971+70 Offset 3' Rt. ℄ Ground El. 1631.6
Type of Boring Rotary 8C48-8 Casing -0- W.T. El. Dry Hole
Inspector Calvin Lockwood Date 10 April 1969 Sheet 1 of 1

DEPTH	BLOWS PER FT.	PROFILE	SAMPLE TUBE NOS.	DESCRIPTION OF MATERIAL
	2/6"		2 Std. Pen 1	Silt & Sand - Very loose, brown, fine
	100/6"		100	Silty Sand & Gravel - Very dense, brown, all sizes (Basalt)
	50/0"		Std Pen 2	
			W	BEDROCK - Badly shattered, brown & black
			A	
			S	basalt
			H	
5				
10				
				TEST BORING STOPPED AT 11.0
				Dry Hole
				Moist 0.5 - Dry thereon
15				

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LORENZ GOETZ, SECRETARY
OLYMPIA

STATE OF WASHINGTON
DANIEL J. EVANS, GOVERNOR

WASHINGTON STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

XXXXXXXXXXXXXX
HIGHWAYS-LICENSES BUILDING
OLYMPIA

DISTRICT OFFICES
NO. 1 SEATTLE 98108
6431 SO. CORSON AVE.
NO. 2 WENATCHEE 98801
P. O. BOX 98
NO. 3 OLYMPIA 98501
P. O. BOX 327
NO. 4 VANCOUVER 98663
4200 MAIN STREET
NO. 5 YAKIMA 98901
P. O. BOX 52
NO. 6 SPOKANE 99205
N. 2714 MAYFAIR ST.
NO. 7 BELLEVUE 98004
10506 N.E. 4TH ST.

July 28, 1969

Mr. George Stevens
Bridge Engineer
Room 641
Highways - Licenses Building
Olympia, Washington

C.S. 0101, SR-90, L-2323
Grant Co. Line to Ritzville
Wahl Road Overcrossing Sta 971
FA No. I-90-4( )
Foundation Investigation

Dear Sir:

Four test holes were drilled in order to determine the foundation conditions for the subject twin structures. The test hole locations and the foundation soil stratification are shown on the attached soil profile.

The foundation material consists of fractured basalt bedrock overlain by from 2 to 10 ft of loose sandy silt.

The two structures may be supported by spread footings with bearing values of 3 to 10 tsf placed at the elevations shown on the attached recommendation sheet, provided the loose sandy silt is removed to a depth of 8 ft in the vicinity of piers 1-N and 1-S and backfilled with good quality granular material compacted to 95 percent of maximum density as determined by Section 11-3.13E5 of the Standard Specifications. It will also be necessary to construct the west approach embankments out of similar material with the same density requirement. Removal should extend full depth over an area which extends 5 ft in front and 5 ft in back of the pier including the retaining wall sections. In order to reduce the possibility of a bump developing at the transition from no removal to full removal, the end of the removal cavity should be tapered on a 10:1 slope. Since the spread footings at piers 2-N and 2-S will be placed on bedrock, special embankment compaction is not needed.

The removal as recommended at piers 1-N and 1-S and the bedrock foundation at piers 2-N and 2-S will insure stable embankments at the four approaches with little or no settlement at the bridge ends.

Because of the sloping surface of the bedrock (north to south), spread footings at piers 2-N and 2-S should be stepped or sloped. Complete foundation recommendations are detailed on the attached foundation recommendation sheet.

Very truly yours,

G. H. ANDREWS, P.E.
ACTING DIRECTOR OF HIGHWAYS

By: R. V. LE CLERC, P.E.
MATERIALS ENGINEER

GHA:ar
RVL/JMB
cc: W. R. Horning
A. P. Sinclair
V. G. Rinehart
BPR

Attach: 1. Data Summary Sheet
2. Soil Profile
3. Foundation Recommendations

Check Cont Plans 10-12-71 RW

WASHINGTON STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS
MATERIALS LABORATORY

FOUNDATION DESIGN RECOMMENDATIONS

S.H NO. SR 90 PROJECT Grant Co. Line to Ritzville
Wahl Rd Overcrossing

JOB NUMBER L-2323 CONTROL SECTION 0101 DATE

PIER NO.	STATION	PILE SUPPORT	MINIMUM TIP ELEVATION	SPREAD FOOTINGS	FOOTING ELEV. AS SHOWN ON LAYOUT	RECOMENDED FOOTING ELEVATION	ALLOWABLE BEARING VALUE
South Bridge L^R Line							
1 S	970+~~32~~ 33.1	- -	- -	Yes	- -	In Fill *	3 tsf
2 S	971+~~59~~ 60.1	- -	- -	Yes	- -	1632 to 1628 **	10 tsf
North Bridge L^1 Line							
1 N	970+32	- -	- -	Yes	- -	In Fill *	3 tsf
2 N	971+59	- -	- -	Yes	- -	1649 to 1645 **	10 tsf

REMARKS: Ground water was not reached in any of the borings.

* The loose overlying sandy silt should be removed to a depth of 8 ft. with the backfill and the approach fills constructed of good quality granular material compacted to 95 percent of maximum density as determined by Section 11-3.13E5 of the Standard Specifications.

** The bedrock slope is from north to south (left to right).

APPROACH FILLS

STABILITY The 10- to 24- ft approach fills should be stable.

SETTLEMENT Negligible.

WASHINGTON STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS
Materials Laboratory

(1)

SR 90

UNDISTURBED SAMPLES – TEST DATA

S.H.No. _____ Section Grant Co. Line to Ritzville, WAHL ROAD O'xing Pipe 2-N

Job No. L-2323 Date Sampled APRIL 11, 1969

Field Sample No.	Lab.No.	Station & Offset	Depth	Description	% H_2O	Density Wet (#/ft^3)	One-Half Unconfined Compressive Strength (#/ft^2)	Cohesion (#/ft^2)	Angle of Internal Friction
Hole #	H-1	LR 970+32							
1	4552-1	4' Rt. ℄	0.0-2.0	BRN. SANDY SILT trc. ORG MAT.			I.D. ONLY		
2	-2		5.0-7.0	" " " " fine gravel			" "		
3	53-1		10.0-13.5	GREY MOD. FRAC. 6" long-weathered			CORE		
4	-2		13.5-15.5	" " " Basalt-Pin Point Bubs			CORE		
5	-3		15.5-17.5	" " " scattered weather zones			"		
6	-4		17.5-20.5	Highly Frac. Grey basalt-3rd 'weathered			"		
Hole #	H-2	LR 970+30							
1	4554-1	3' Lt. ℄	0.0-2.0	BRN. SANDY SILT			I.D. ONLY		
2-A	-2		5.0-6.0	" " "			" "		
2-B	-3		6.0-7.0	BRN. SANDY SILTY Gravel to 1/2" frac.			" "		
3	-4		8.0-10.5	BRN. SILTY fine Gravel			" "		
4	-5		10.5-15.5	GREY " " "			" "		
Hole #	H-3	LR 971+70							
1-A	4555-1	3' Lt. ℄	0.0-0.5	BRN. SANDY SILT w/ORG. MAT.					
1-B	-2		1.5-2.0	GREY SILTY SANDY GRAVEL to 3/4" frac.					
2	-3		3.0-5.0	" " " " " 1/4" "					
3	-4		7.0-10.0	" " " " " " "					

H.F. 26.07 (Rev.)

(2)

WASHINGTON STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS
Materials Laboratory

SR.90

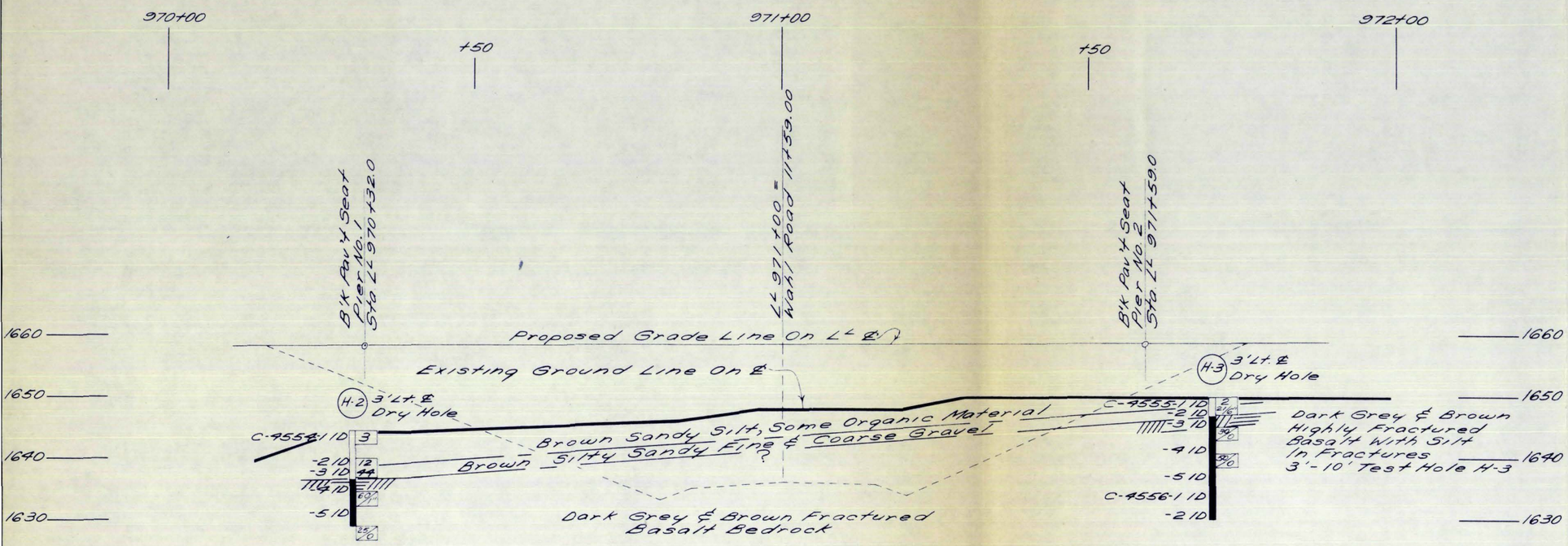
UNDISTURBED SAMPLES - TEST DATA

S.H.No. ____ Section Grant Co. Line to Ritzville, Wahl Road O'xing: Pier 2-5

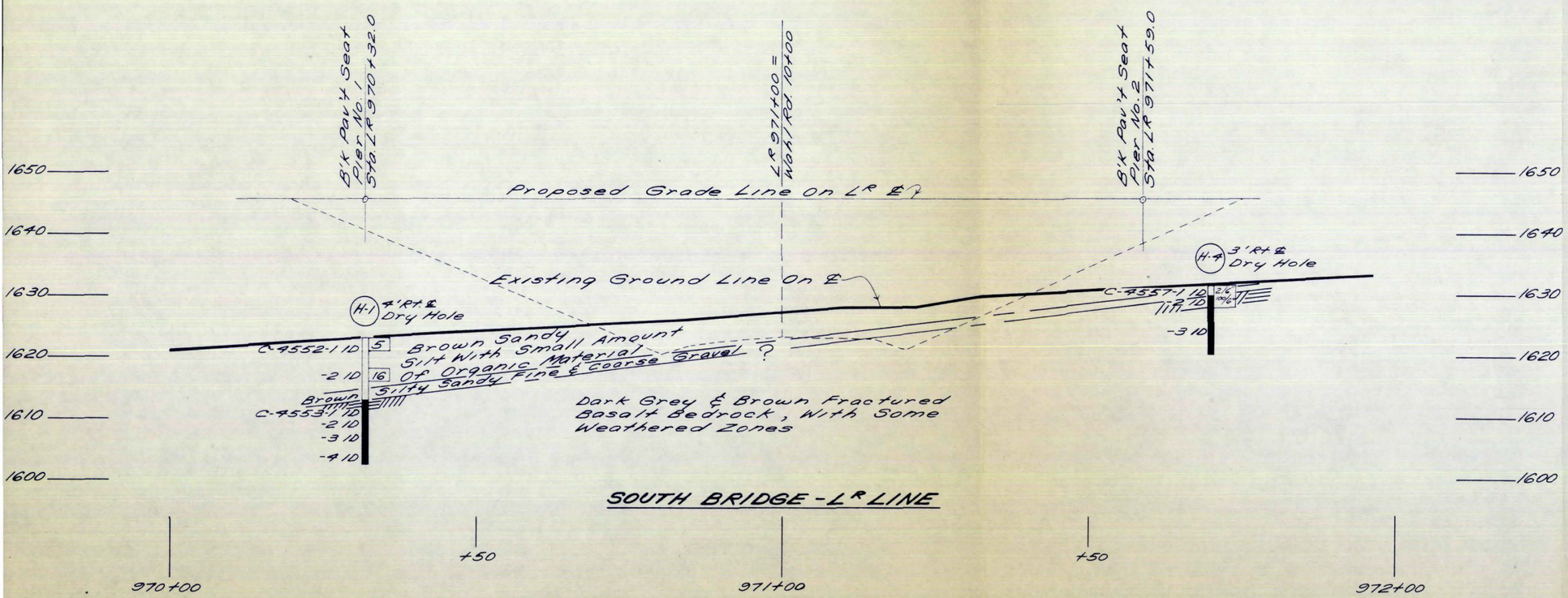
Job No. 12323 Date Sampled April 11, 1969

Field Sample No.	Lab.No.	Station & Offset	Depth	Description	% H_2O	Density Wet (#/ft^3)	One-Half Unconfined Compressive Strength (#/ft^2)	Cohesion (#/ft^2)	Angle of Internal Friction
4	4555-5		10.0-15.0	Brn. silty sandy gravel to 1/4 frac			I.D. ONLY		
5	56-1		15-16.8				CORE		
6	-2		16.8-19.8				CORE		
Hole #	H-4	LR97+70							
1-A	4557-1	3' Rt ℄	0.0-0.5	Brown sandy silt			I.D. ONLY		
1-B	-2		0.5-1.0	Brn. sandy silty gravel to 1 1/4" frac			" "		
2	-3		1.0-11.0	Grey silty sandy gravel to 1/4" frac			" "		

H.F. 26.07 (Rev.)

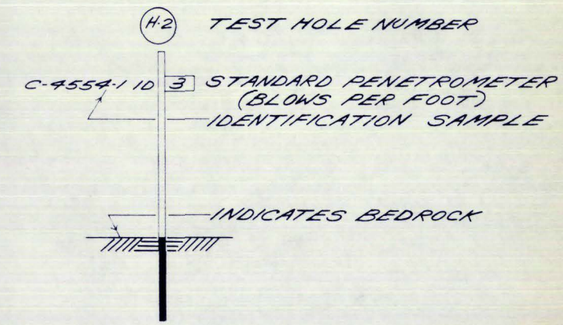


NORTH BRIDGE - L' LINE



SOUTH BRIDGE - LR LINE

TEST HOLE LEGEND



THIS PRINT REDUCED 50%

JOB NO. L-2323 (S.R. 90) C.S. 010

GRANT CO. LINE TO RITZVILL
WAHL ROAD O'X-ING

FOUNDATION PROFILE

WASHINGTON STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS
MATERIALS DIVISION
R. V. LECLERC MATERIALS ENGINEER

DATE June 196
SCALE 1" = 10' VER
1" = 10' HO
SHEET 1 OF 1