ENGINEERING BORELOG

Main Roads

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM BQF 075:191/95

BOREHOLE No : 234
SHEET : 1 OF 2
REFERENCE No : H8172

PROJECT : SOUTH EAST TRANSIT PROJECT - SECTION 2
LOCATION : 4145.2E 162007.1N
PROJECT No : C60117 SURFACE R.L. : 14.85 DRILLER : DALY BROTHERS PTY LTD
JOB No : 650302CN DATUM : AHD DATE DRILLED : 28/11/97

DEPTH (m)	R.L. (m)	AUGER / CORE DRILLING / CASING / OTHER	RQD ( )% CORE REC%	SAMPLE	MATERIAL DESCRIPTION	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
0	14.85				**SUBBASE** Pale brown gravelly silty clay.						Driller's log only		
	14.25				**XW TUFF** XW: exhibits engineering properties of pale green, moist to dry, hard sandy silty clay; medium plasticity. isolated mottled zones; some gravel particles.	XW					10,20,30/70=>50		SPT
1	13.48				**HW TUFF** Brown, corestones and rock kernels throughout.								
			(0) 100										
2											Is(50)=0.07MPa	x	
	11.83										Sheared zone;F/D = 017/27 28/11/97		
3			(20) 75										
											Is(50)=0.05MPa	x	
4						HW							
			(95) 97										
5											16.30MPa		UCS
											Is(50)=0.03MPa	x	
6			(25) 97										
	7.95				**MW TUFF** Orange brown; completely red-brown iron-staining.								
7													
			(91) 100								4.95MPa		UCS
8											Is(50)=0.07MPa	x	
	6.35					MW							
9											Is(50)=0.60MPa	x	
			(67) 100								Is(50)=0.36MPa	x	
10													

REMARKS : *See attached list for defect descriptions.
Some of the defect data were extracted from BIPS.

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ENGINEERING BORELOG

Main Roads

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM BQF 075:191/95

BOREHOLE No : 234
SHEET : 2 OF 2
REFERENCE No : H8172

PROJECT : SOUTH EAST TRANSIT PROJECT - SECTION 2
LOCATION : 4145.2E 162007.1N
PROJECT No : C60117 SURFACE R.L. : 14.85 DRILLER : DALY BROTHERS PTY LTD
JOB No : 650302CN DATUM : AHD DATE DRILLED : 28/11/97

DEPTH (m)	R.L. (m)	AUGER / CORE DRILLING / CASING / OTHER	RQD ( )% CORE REC%	SAMPLE	MATERIAL DESCRIPTION	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
10	4.85				**MW TUFF** as above	MW							
	4.15		(88) 100		**SW TUFF** Pale green, massive, prophyritic texture	SW					Is(50)=1.41MPa		x
11													
12			(100) 100								Is(50)=1.14MPa		x
	2.35				END OF HOLE								
13													
14													
15													
16													
17													
18													
19													
20													

REMARKS :

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Main Roads
Queensland Department of Main Roads

DEFECT DESCRIPTIONS OF BORELOGS

[FOR GEOTECHNICAL TERMS AND SYMBOLS

REFER FORM BQF 075:191/95]

BOREHOLE NO :	234
SHEET :	1 of 1
REFERENCE NO :	H8172

PROJECT		SOUTH EAST TRANSIT PROJECT - SECTION 2					
LOCATION	:	4155.205E	162007.144N				
PROJECT NO	:	C60117	SURFACE R.L	:	14.75	DRILLER	: DALY BROTHERS PTY LTD
JOB NO	:	650302CN	DATUM	:	AHD	DATE DRILLED	: 28/11/97

DEPTH	DEFECT TYPE	DIP(Degrees)	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
8.25	J	15	Ir	R		CoFeSt	
8.39		15			T	CoFeSt	
8.42	J	15	Ir	R		CoFeSt	
8.72		15	Ir			CoFeSt	
8.95		20	Ir				Cn
9.7	J		Ir			CoFeSt	H
9.85			Ir		T	CoFeSt	H
10.15			Ir			CoFeSt	
10.21		15		R		CoFeSt	
10.28	J	15		R		CoFeSt	

Abbreviations

ROUGHNESS		WALL ALTERATIONS		TYPE		OTHER	
R	Rough	FeSt	Iron Stained	J	Joint	P	Partly
Sm	Smooth	W	Weathered	B	Bedding	QZ	Quartz Vein
SL	Slickensided			BP	Bedding Parting	Co	Completely
				F	Folliation	In	Incipient
PLANARITY		**APERTURE**		SZ	Sheared Zone	SI	Sand Infil
Pl	Planar	C	Closed	WS	Weathered Seam	H	Horizontal
St	Stepped	O	Open	CZ	Crushed Zone	V	Vertical
Un	Undulating	F	Filled	SM	Secondary Mineralisation	Cl	Clay Infill
Cu	Curved	T	Tight	BZ	Broken Zone	Cn	Clean
Ir	Irregular			HFZ	Highly Fractured Zone		

NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog.

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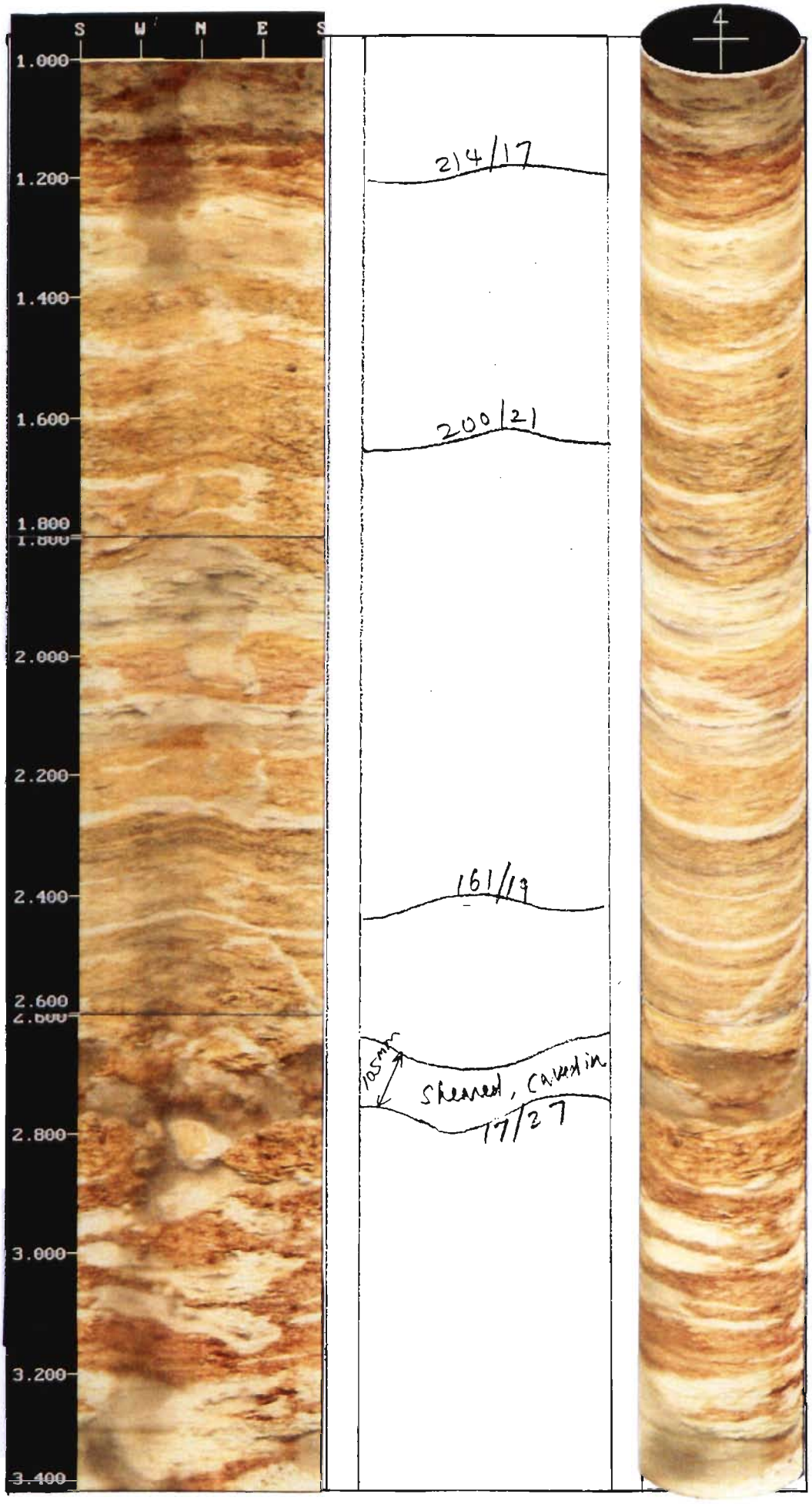
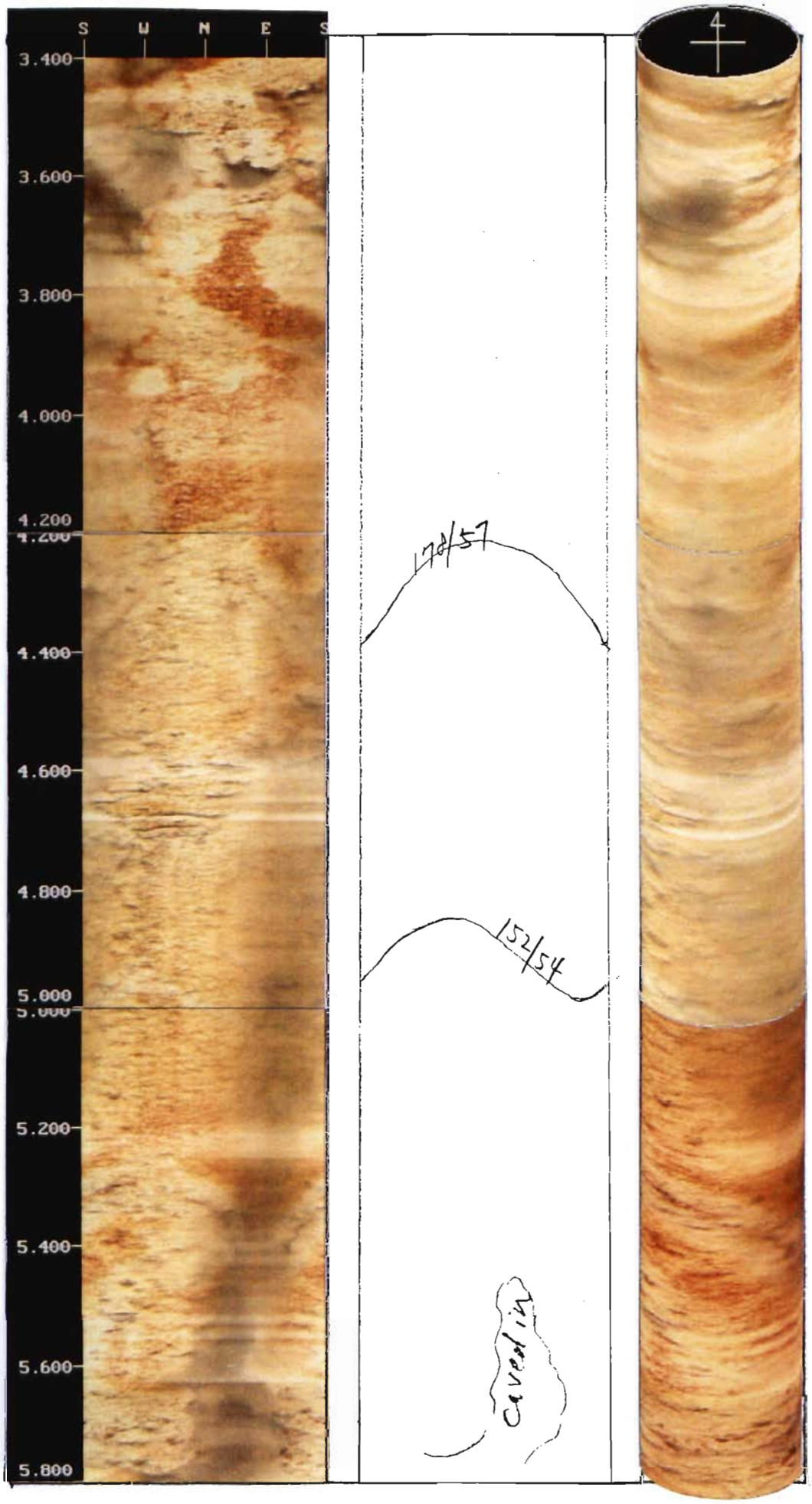
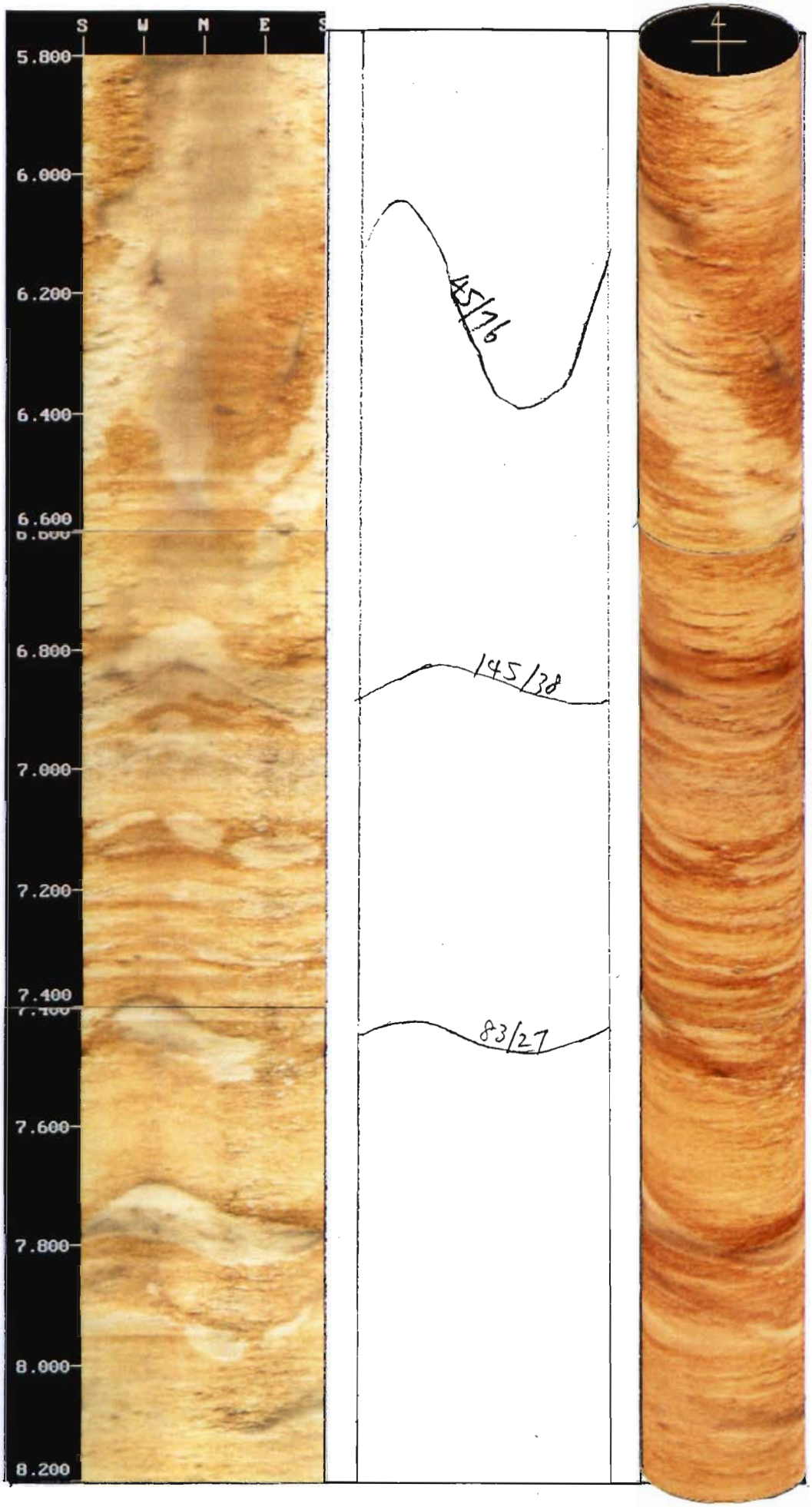
SOUTH EAST TRANSIT PROJECT
BH 234 1.00 - 3.40 M



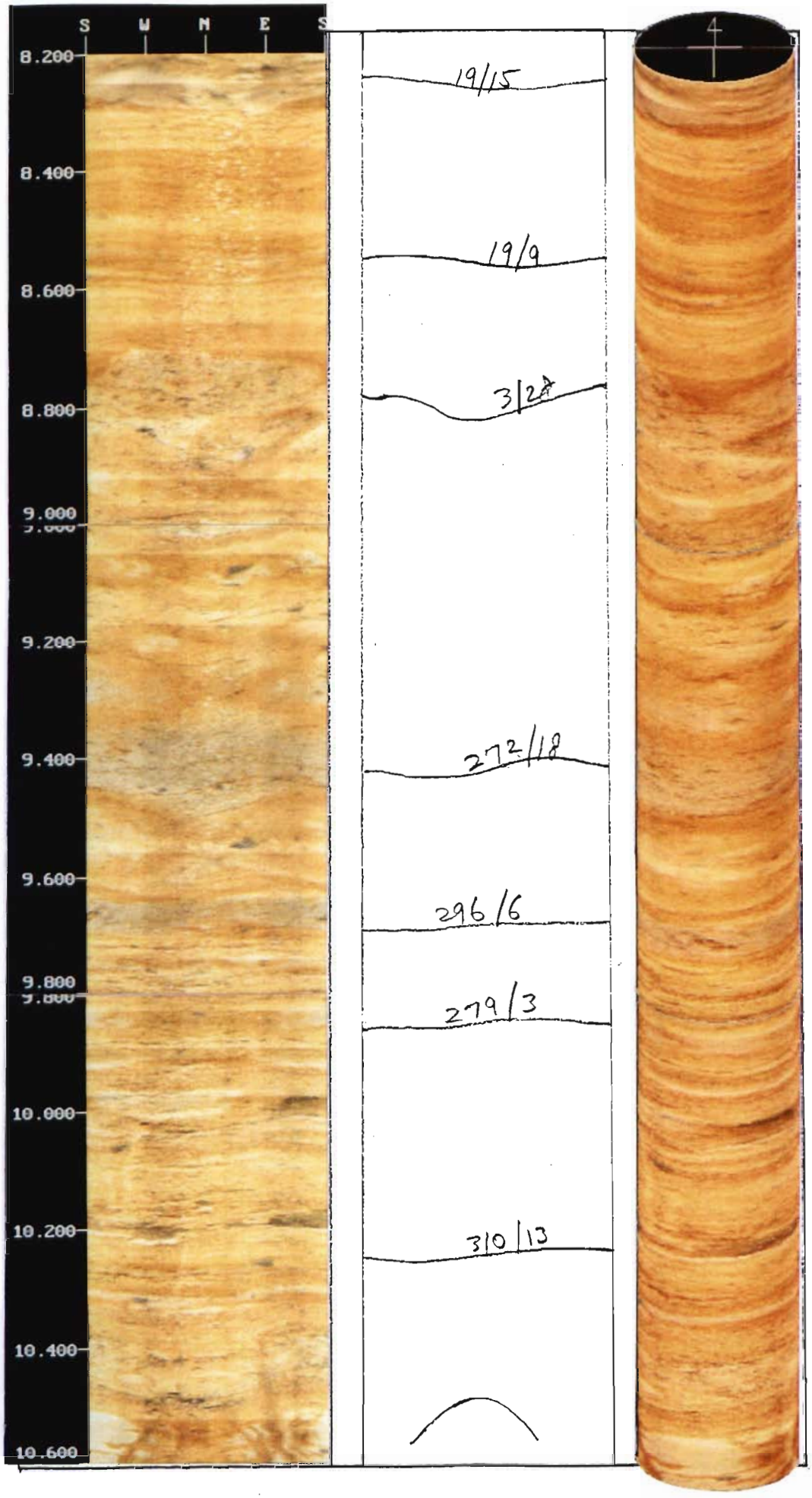
SOUTH EAST TRANSIT PROJECT
BH 234 3.40 - 5.80 M



SOUTH EAST TRANSIT PROJECT
BH 234 5.80 - 8.20 M

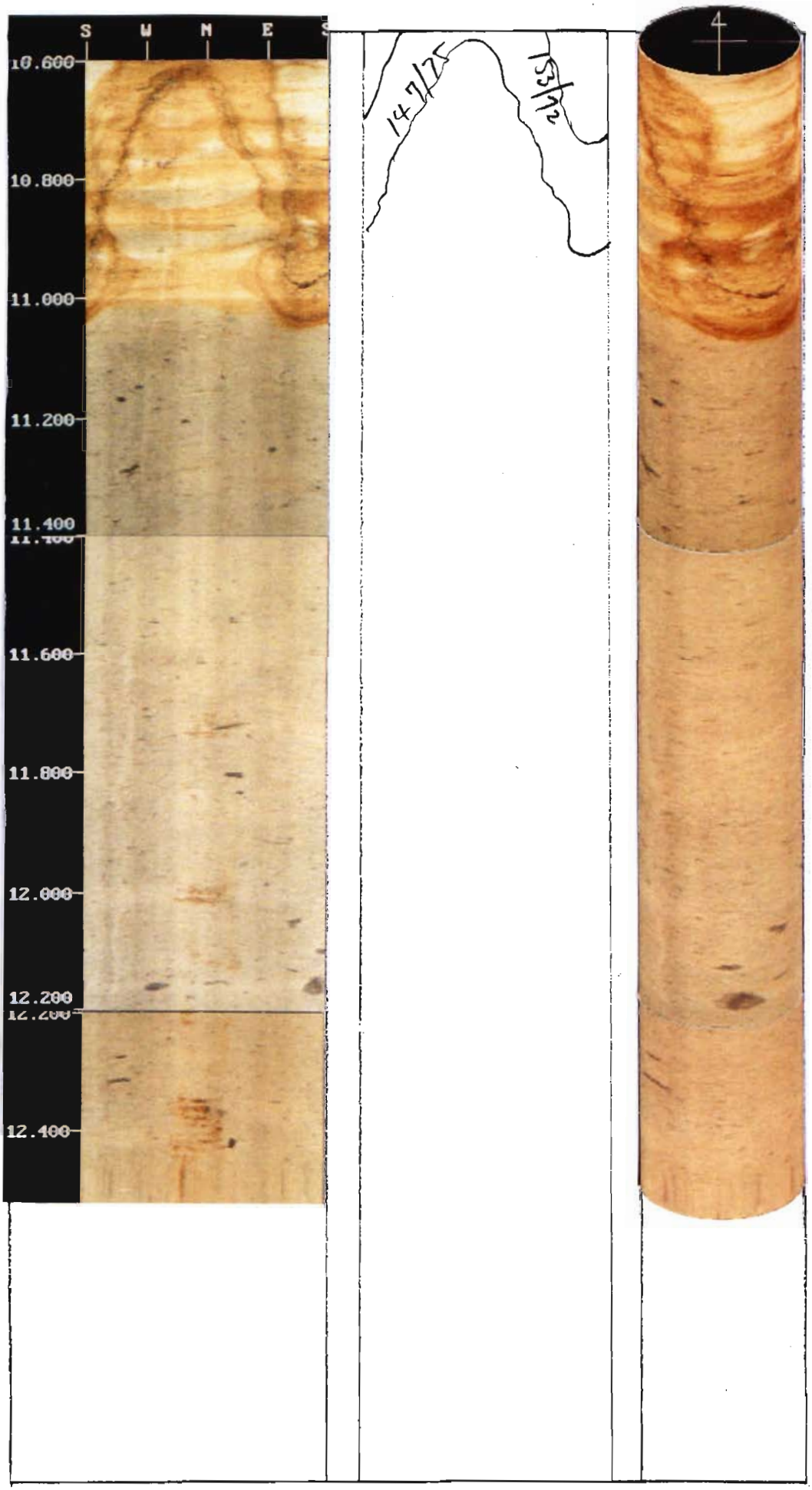


SOUTH EAST TRANSIT PROJECT
BH 234 8.20 - 10.60 M



SOUTH EAST TRANSIT PROJECT

BH 234 10.60 - 12.45 M



SOUTH EAST TRANSIT PROJECT, SECTION 2

WATER PRESSURE TEST RESULTS

2 LUGEONS

Drill Hole: 234 Date: 1/12/97

Test No: 1

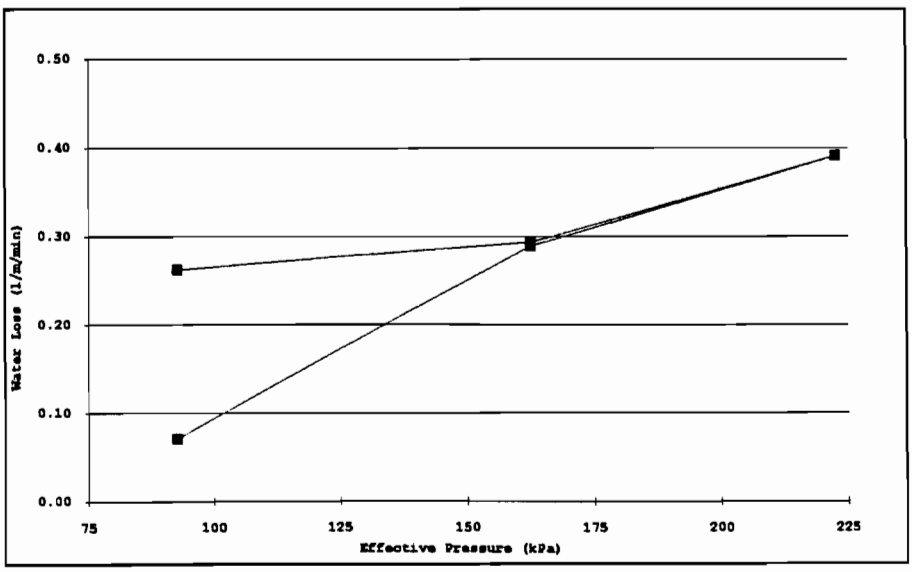
	From (m)	To (m)	Length (m)
Test Section:	8.00	12.50	4.50

Groundwater Depth (m): 3.02

Gauge Height (m): 1.23

Hydrostatic Head (kPa): 42.5

Gauge Pressure (kPa)	Effective Pressure (kPa)	Test Duration (min)	Meter Start (litres)	Meter End (litres)	Water Loss (litres)	Leakage (l/m/min)	Lugeons
50	92.5	5	50.3	51.9	1.6	0.07	0.77
120	162.5	5	55.1	61.6	6.5	0.29	1.78
180	222.5	5	73.5	82.3	8.8	0.39	1.76
120	162.5	5	100	106.6	6.6	0.29	1.81
50	92.5	5	109.9	115.8	5.9	0.26	2.83



Main Roads

SOUTH EAST TRANSIT PROJECT, SECTION 2

WATER PRESSURE TEST RESULTS

<1 LUGEONS

Drill Hole: 234 Date: 1/12/97

Test No: 2

	From (m)	To (m)	Length (m)
Test Section:	5.00	12.50	7.50

Groundwater Depth (m): 3.02

Gauge Height (m): 1.13

Hydrostatic Head (kPa): 41.5

Gauge Pressure (kPa)	Effective Pressure (kPa)	Test Duration (min)	Meter Start (litres)	Meter End (litres)	Water Loss (litres)	Leakage (l/m/min)	Lugeons
50	91.5	5	74.2	74.2	0	0.00	0.00
80	121.5	5	74.9	78.3	3.4	0.09	0.75
130	171.5	5	85.2	90.3	5.1	0.14	0.79
80	121.5	5	101	105.2	4.2	0.11	0.92
50	91.5	5	116.1	117.7	1.6	0.04	0.47