Azghar {Water Resources Development in Rural Area (DGH)} — **Sheet No. 1 of 3**

Borehole No.:	**SO2**	**Location:**	**Dam Axis, River Bed** -
Ground EL. :	**833 m**	**Drilling period:**	
Total Length :	**67.8 m**	**Hole inclination:**	**Vertical**

Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	1				40	0												1
	1.50	831.50		Coluvial dep.														
	2				81	0												2
	3			Terrace dep.	90	0												3
	4				100	0												4
	4.50	828.50																
	5				100	52						M(L)	1 5.0m					5
	5.40	827.60		Weathered layer			5.40	D•E	3•5	b•c	CL	~L						
	6				100	60						M(L)	2 6.6m					6
	7				100	88												7
	8				100	100								Lu'=1.1 Pc=6.6				8
	9				100	100												9
	10				100	100												10
	11				100	100						H(M)		Lu'=1.1 Pc=6.6				11
	12				100	100												12
	13				100	100												13
	14			Formation of Shaly Marl with black Limestone layers	100	100								Lu'=1.3 Pc=6.6				14
	15				100	100												15
	16				100	100						M(L)						16
	17				100	100								Lu'=1.0 Pc=6.6				17
	18				100	100		C	1•3	a	CH							18
	19				100	100												19
	20				100	100								Lu=0.4 Pc= -				20
	21				100	100												21
	22				100	100						H(M)						22
	23				100	100								Lu=0.4 Pc= -				23
	24				100	100												24
	25				100	100												25
	26				100	100								Lu=0.3 Pc= -				26
	27				100	100												27
	28				100	100												28
	29				100	100								Lu=0.4 Pc= -				29
	30				100	100	30.00											30

Lu' : Converted Lugeon Value
Pc : Critical Pressure (kgf/cm^2)
Lu : Lugeon Value

Sheet No. 2 of 3

Borehole No.: SO2

Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	31			Formation of Shaly Marl with black Limestone layers	100	100												31
	32				100	100								Lu=0.3 Pc= -				32
	33				100	100												33
	34				100	100												34
	35				100	100								Lu=0.3				35
	36				100	100												36
	37				100	100												37
	38				100	100								Lu=0.3				38
	39				100	100												39
	40				100	100												40
	41				100	100								Lu=0.3				41
	42				100	100												42
	43				100	100												43
	44				100	100								Lu=0.3				44
	45				100	100		C	1	a	CH	II						45
	46				100	100												46
	47				100	100								Lu=0.3				47
	48				100	100												48
	49				100	100												49
	50				100	100								Lu=0.2				50
	51				100	100												51
	52				100	100												52
	53				100	100								Lu=0.3				53
	54				100	100												54
	55				100	100												55
	56				100	100								Lu=2.4				56
	57				100	100												57
	58				100	100												58
	59				100	100								Lu=0.4				59
	60				100	100	60.00											60

Lu' : Converted Lugeon Value

Pc : Critical Pressure (kgf/cm^2)

Lu : Lugeon Value

Sheet No. 3 of 3

Borehole No.: SO2

Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	61			Formation of Shaly Marl with black Limestone layers	100	100												61
	62				100	100								Lu=0.3				62
	63				100	100												63
	64				100	100												64
	65				100	100		C	1•2	a	CH	H		Lu=0.3				65
	66				100	100												66
	67				100	100												67
	68				100	100								Lu=0.6				68
	69				100	100	69.00											69
								End of Borehole										

Lu' : Converted Lugeon Value
Pc : Critical Pressure (kgf/cm^2)
Lu : Lugeon Value
k : Coefficient of Permeability (cm/sec)

Azghar {Water Resources Development in Rural Area (DGH)} — **Sheet No. 1 of 1**

Borehole No.: SO3 — **Location:** 30m downstream from Axis, River Bed

Ground EL. : 828 m — **Drilling period:**

Total Length : 27.0 m — **Hole inclination:** Vertical

Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	(large scale) Rock class	(small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	1			Coluvial dep.	5	0												1
	2	2.00	826.00		5	0												2
	3			Terrace dep.	9	0												3
	4				11	0												4
	5	5.00	823.00		30	0								Lu'=24.4 Pc=6.6				5
	6	6.00	822.00	Weathered layer	100	30	6.00	C•D	3	b•c	CL•CM	LM	1 6.1m					6
	7				100	95						M						7
	8				100	90						L M LM		Lu'=97.8 Pc= -				8
	9				100	89						M(L)						9
	10				100	100						LM M(L)						10
	11				100	100		C	2•4	a•b	CM	L M(L)		Lu'=218 Pc= -				11
	12				100	100						M L						12
	13				100	100												13
	14				100	100						M		Lu'=18.1 Pc=6.5				14
	15				100	100	15.00											15
	16				100	100		C	1	a	CH	M						16
	17				100	100	17.20							Lu=0.8 Pc= -				17
	18				100	100						LM M						18
	19				100	100		C	2•4	a	CM	LM						19
	20				100	100						M(L)		Lu=0.6 Pc= -				20
	21				100	100	21.00											21
	22				100	100		C	1	a	CH	M						22
	23				100	100	23.00							Lu=6.7 Pc= -				23
	24				100	100	24.10	C	4	a	CL•CM	L M(L) LM						24
	25				100	100												25
	26				100	100		C	3•4	a	CM	M(L)		Lu=4.9 Pc= -				26
	27				100	100	27.00											27

End of Borehole

Lu' : Converted Lugeon Value

Pc : Critical Pressure (kgf/cm^2)

Lu : Lugeon Value

Azghar {Water Resources Development in Rural Area (DGH)} — **Sheet No. 1 of 1**

Borehole No.:	**SO4**	**Location:**	**35m downstream from Axis, River Bed**
Ground EL. :	**832.5 m**	**Drilling period:**	
Total Length :	**27.0 m**	**Hole inclination:**	**Vertical**

Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	1			Colluvial dep.	59	0												1
	1.60	830.90																
	2			Terrace dep.	71	0												2
	3				83	0												3
	4				83	0												4
	4.00	828.50																
	5			Weathered layer	83	17		D	4	b•c	CL	L(M) LM						5
	5.70	826.80					5.70					M L(M) LM						
	6				96	69												6
	7				100	80		C	2•4	b	CM	M						7
	8				100	80						M(L)		Lu'=193 Pc= -				8
	9				100	80	8.20					LM	1 9.0m					9
	10				100	80		D	3•4	b	CL•CM							10
	11				100	80						M(L)		Lu=0.0 Pc= -				11
	12				100	80	12.00											12
	13			Formation of Shaly Marl with black Limestone layers	100	100												13
	14				100	100								Lu=0.4 Pc= -				14
	15				100	100		C	1•3	a	CM•CH	MH						15
	16				100	100												16
	17				100	100								Lu=0.2 Pc= -				17
	18				100	100	18.00					M						18
	19				100	100												19
	20				100	100								Lu=0.2 Pc= -				20
	21				100	100												21
	22				100	100												22
	23				100	100		C	1	a	CH	H		Lu=0.3 Pc= -				23
	24				100	100												24
	25				100	100												25
	26				100	100								Lu=0.4 Pc= -				26
	27				100	100	27.00											27

End of Borehole

Lu' : Converted Lugeon Value
Pc : Critical Pressure (kgf/cm^2)
Lu : Lugeon Value

Azghar {Water Resources Development in Rural Area (DGH)} — **Sheet No. 1 of 3**

Borehole No.:	**SG1**	**Location:**	**Dam Axis, Left Abutment** -
Ground EL. :	**890 m**	**Drilling period:**	
Total Length :	**80.2 m**	**Hole inclination:**	**Vertical**

Depth (m)	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation
1	Weathered layer	95	10						L					
2		100	40		D•E	4	c	CL	L(M)	1 2.2m				
2.40 (887.60)				2.40										
3		100	72											
4		100	91						M(L)					
5		100	95		C	2•3	b	CM	M	2 4.8m	Lu'=14.3 Pc= -			
6		100	95						M(L)					
7		100	82	6.55										
8		100	91	8.00	D	4•5	b	CL•CM	LM		Lu'=5.6 Pc=6.6			
9		100	100						M	3 9.5m				
10		100	100						L					
11		100	100								Lu'=12.2 Pc=6.5			
12	Formation of Shaly Marl with black Limestone layers	100	100		C	1•3	a•b	CM	M					
13		100	100						L					
14		100	100						M L		Lu'=41.8 Pc= -			
15		100	100	15.00					M					
16		100	93	15.80	C	4	b	CL•CM	LM					
17		100	100								Lu'=114 Pc=4.9			
18		100	93		C	1•3	a•b	CM	MH	4 18.0m				
19		100	100						LM					
20		100	100						H		Lu'=97 Pc=3.7			
21		100	100	20.50					LM	5 20.7m				
22		100	100											
23		100	100								Lu'=1.1 Pc= -			
24		100	100											
25		100	100											
26		100	91		C	1•2	a	CH	H(M)		Lu'=8.1 Pc= -			
27		100	100											
28		100	100							7 28.0m				
29		100	100								Lu'=3.7 Pc=8.1			
30		100	100	30.00										

Lu' : Converted Lugeon Value
Pc : Critical Pressure (kgf/cm^2)
Lu : Lugeon Value

Borehole No.: SG1

Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	31			Formation of Shaly Marl with black Limestone layers	100	100						H						31
	32				100	100						I-M		Lu=3.0				32
	33				100	100												33
	34				100	100												34
	35				100	100								Lu=0.8				35
	36				100	100												36
	37				100	100												37
	38				100	100								Lu=0.5				38
	39				100	100												39
	40				100	100												40
	41				100	100						H		Lu=0.5				41
	42				100	100												42
	43				100	100												43
	44				100	100								Lu=0.2				44
	45				100	100												45
	46				100	100		C	1	a	CH		6					46
	47				100	100							46.8m	Lu=0.3				47
	48				100	100												48
	49				100	100						M(L)						49
	50				100	100								Lu=3.0				50
	51				100	100												51
	52				100	100												52
	53				100	100								Lu=0.5				53
	54				100	100												54
	55				100	100						H						55
	56				100	100								Lu=0.3				56
	57				100	100												57
	58				100	100												58
	59				100	100								Lu=0.4				59
	60				100	100	60.00											60

Lu' : Converted Lugeon Value
Pc : Critical Pressure (kgf/cm^2)
Lu : Lugeon Value

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Borehole No.: **SG1**

Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	61			Formation of Shaly Marl with black Limestone layers	100	100						M(L)						61
	62				100	100								Lu=2.1				62
	63				100	100												63
	64				100	100												64
	65				100	100								Lu=2.0				65
	66				100	100												66
	67				100	100												67
	68				100	100								Lu=0.0				68
	69				100	100												69
	70				100	100												70
	71				100	100		C	1	a	CH	H(M)		Lu=0.0				71
	72				100	100												72
	73				100	100												73
	74				100	100								Lu=0.1				74
	75				100	100												75
	76				100	100												76
	77				100	100								Lu=0.4				77
	78				100	100												78
	79				100	100								Lu=1.4				79
	80				100	100	80.00											80
								End of Borehole										

Lu' : Converted Lugeon Value
Pc : Critical Pressure (kgf/cm^2)
Lu : Lugeon Value
k : Coefficient of Permeability (cm/sec)

Azghar {Water Resources Development in Rural Area (DGH)} — **Sheet No. 1 of 3**

Borehole No.:	**SG2**	**Location:**	**Dam Axis, Left Abutment** -
Ground EL. :	**850 m**	**Drilling period:**	
Total Length :	**80.3 m**	**Hole inclination:**	**15° to Left along Axis**

Depth (m)	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
1				Weathered layer	86	26	0.50	H	7	d	D	D						1
2					100	0		E	4	c	CL	L						2
3					100	34	2.20					M(L)						3
4					61	18		C•D	3•5	b	CL•CM	LM						4
5	4.80	845.20			100	80	4.80					M	1 5.3m	Lu'=783 Pc= -				5
6					100	100												6
7					100	100							2 7.3m					7
8					100	100								Lu=0.5 Pc= -				8
9					100	100							3 9.6m					9
10					100	100												10
11					100	100								Lu=1.0 Pc= -				11
12					100	100						H(M)						12
13					100	100												13
14					100	100								Lu=0.1 Pc= -				14
15					100	100												15
16					100	100		C	1•2	a•b	CM•CH							16
17					100	100						M(L)	4 17.3m	Lu'=274 Pc= -				17
18					100	100												18
19					100	100						H						19
20					100	100						M(L)		Lu=24 Pc= -				20
21					100	100												21
22					100	100							5 22.5m					22
23					100	100						H(M)		Lu'=51.5 Pc= -				23
24					100	100							6 24.5m					24
25					100	100						L MH						25
26					100	100	26.10					L H M(L)		Lu'=105 Pc= -				26
27					100	100												27
28					100	100		C	1	a	CH	H						28
29					100	100								Lu=0.1 Pc= -				29
30					100	100	30.00											30

Formation of Shaly Marl with black Limestone layers

Lu' : Converted Lugeon Value
Pc : Critical Pressure (kgf/cm^2)
Lu : Lugeon Value

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Borehole No.: SG2

Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	31				100	100												31
	32				100	100								Lu=0.2				32
	33				100	100												33
	34				100	96												34
	35				100	96								Lu=0.2				35
	36				100	96												36
	37				100	100												37
	38				100	100								Lu=0.2				38
	39				100	100												39
	40				100	100												40
	41				100	100								Lu=0.3				41
	42				100	100												42
	43				100	100												43
	44				100	100								Lu=0.2				44
	45				100	100												45
	46				100	100		C	1	a	CH	H						46
	47				100	100								Lu=0.2				47
	48				100	100												48
	49				100	100												49
	50				100	100												50
	51				100	100												51
	52				100	100												52
	53				100	100												53
	54				100	100												54
	55				100	100												55
	56				100	100												56
	57				100	100												57
	58				100	100												58
	59				100	100												59
	60				100	100	60.00											60

Formation of Shaly Marl with black Limestone layers

Lu' : Converted Lugeon Value
Pc : Critical Pressure (kgf/cm^2)
Lu : Lugeon Value

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Borehole No.: SG2

Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	61				100	100						MH						61
	62				100	100												62
	63				100	100												63
	64				100	100												64
	65				100	100												65
	66				100	100												66
	67				100	100												67
	68				100	100												68
	69				100	100												69
	70				100	100												70
	71			Formation of Shaly Marl with black Limestone layers	100	100		C	1	a	CH	H(M)						71
	72				100	100												72
	73				100	100												73
	74				100	100												74
	75				100	100												75
	76				100	100												76
	77				100	100												77
	78				100	100												78
	79				100	100												79
	80				100	100	80.00											80

End of Borehole

Lu' : Converted Lugeon Value
Pc : Critical Pressure (kgf/cm^2)
Lu : Lugeon Value
k : Coefficient of Permeability (cm/sec)

Azghar {Water Resources Development in Rural Area (DGH)} — **Sheet No. 1 of 3**

Borehole No.:	**SG3**	**Location:**	**20m down stream from Axis, Left Bank**
Ground EL. :	**855 m**	**Drilling period:**	
Total Length :	**80.3 m**	**Hole inclination:**	**15° to Left along Axis**

Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	1 0.75	854.25		**Weathered layer**	100	40	0.75	C•D	3•4	b	CL•CM	LM						1
	2				100	81		C	1•3	a•b	CM	M(L) M						2
	3				100	90	2.30											3
	4				100	100		C	1	a	CH	H(M)						4
	5				100	100								Lu'=543 Pc= -				5
	6				100	100	5.40						1 6.3m					6
	7				100	100	6.60	C	2•4	b	CM	LM M						7
	8				100	100						H(L)	2 8.0m	Lu'=27.6 Pc=6.5				8
	9				100	100												9
	10				100	100		C	1	a	CH							10
	11				100	100						H		Lu=0.4 Pc= -				11
	12				100	100												12
	13				100	100	12.60					M(L)						13
	14				100	100	14.00	C•D	2•5	b	CL•CM	L M	3 13.9m	Lu'=522 Pc= -				14
	15				100	100												15
	16				100	100												16
	17				100	100								Lu'=12.9 Pc=7.2				17
	18				100	100												18
	19				100	100						M(H)						19
	20				100	100		C	1•4	a•b	CM partly CL		4 20.1m	Lu'=13.6 Pc=7.5				20
	21				100	100												21
	22				100	100												22
	23				100	100						L(M)		Lu'=11.2 Pc=5.1				23
	24				100	100						MH						24
	25				100	100						L(M)						25
	26				100	100						M LM	5 26.8m	Lu'=584 Pc= -				26
	27				100	100						MH						27
	28				100	100	27.50					L(M)						28
	29				100	100		C	1•2	a	CH	H(M)		Leak				29
	30				100	100	30.00											30

Formation of Shaly Marl with black Limestone layers

Lu' : Converted Lugeon Value
Pc : Critical Pressure (kgf/cm^2)
Lu : Lugeon Value

Sheet No. 2 of 3

Borehole No.: SG3

Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	31				100	100						M(L)						31
	32				100	100								Lu'=5.5 Pc=8.7				32
	33				100	100		C	1	a	CH							33
	34				100	100						H(M)						34
	35				100	100								Lu=1.7				35
	36				100	100	35.30											36
	37				100	100		C	3•4	a	CM	M(L)						37
	38				100	100	38.00							Lu=0.8				38
	39				100	100												39
	40				100	100												40
	41				100	100								Lu=0.6				41
	42				100	100												42
	43				100	100												43
	44				100	100								Lu=0.5				44
	45				100	100												45
	46				100	100												46
	47				100	100								Lu=0.4				47
	48				100	100												48
	49				100	100		C	1	a	CH	H(M)						49
	50				100	100								Lu=0.3				50
	51				100	100												51
	52				100	100												52
	53				100	100								Lu=0.3				53
	54				100	100												54
	55				100	100												55
	56				100	100								Lu=0.3				56
	57				100	100												57
	58				100	100												58
	59				100	100								Lu=0.3				59
	60				100	100	60.00											60

Formation of Shaly Marl with black Limestone layers

Lu' : Converted Lugeon Value

Pc : Critical Pressure (kgf/cm^2)

Lu : Lugeon Value

Borehole No.: SG3

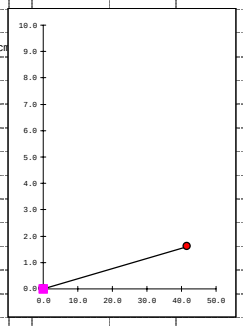
Date	Depth(m)	EL.(m)	Log.	Rock type	Core (%)	RQD (%)	Depth(m)	Hardness	Joint interval	Joint condition	Rock class (large scale)	Rock class (small scale)	G.W.L. S.P.T.	Lugeon value	Sample	Casing	Cementation	Depth (m)
	61			Formation of Shaly Marl with black Limestone layers	100	100												61
	62				100	100								Lu=0.4				62
	63				100	100												63
	64				100	100												64
	65				100	100								Lu=0.3				65
	66				100	100												66
	67				100	100												67
	68				100	100								Lu=0.3				68
	69				100	100												69
	70				100	100		C	l	a	CH	H(M)						70
	71				100	100								Lu=0.3				71
	72				100	100												72
	73				100	100												73
	74				100	100								Lu=0.3				74
	75				100	100												75
	76				100	100												76
	77				100	100								Lu=0.3				77
	78				100	100												78
	79				100	100								Lu=0.4				79
	80				100	100	80.00											80

End of Borehole

Lu' : Converted Lugeon Value
Pc : Critical Pressure (kgf/cm^2)
Lu : Lugeon Value
k : Coefficient of Permeability (cm/sec)

Location	**SD1**			
Injecting Section		**3 ~ 6**	**m**	
Ground Water Level		Nill	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter		$7*10^{-6}*Q_{av}^2$	kgf/cm	
Pipe Length of Injecting Pa		4.00	m	

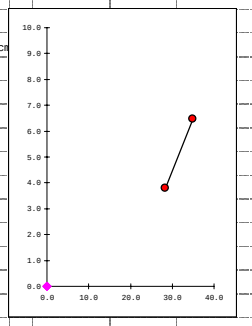
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
1.5	125.0	1.6	41.7
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0



Lu'=	258	
Pc=	-	kgf/cm^2

Location	**SD1**			
Injecting Section		**12 ~ 15**	**m**	
Ground Water Level		Nill		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter		$7*10^{-6}*Q_{av}^2$	kgf/cm	
Pipe Length of Injecting Pa		13.00	m	

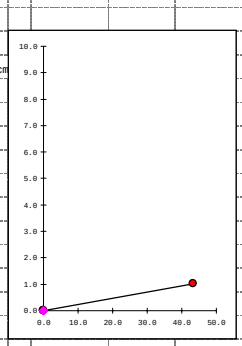
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	85.0	3.8	28.3
6.0	104.9	6.4	35.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0



Lu'=	43.8	
Pc=	-	kgf/cm^2

Location	**SD1**			
Injecting Section		**6 ~ 9**	**m**	
Ground Water Level		Nill	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter		$7*10^{-6}*Q_{av}^2$	kgf/cm	
Pipe Length of Injecting Pa		7.00	m	

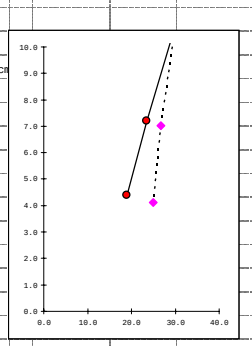
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
1.0	130.0	1.0	43.3
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0



Lu'=	424	
Pc=	-	kgf/cm^2

Location	**SD1**			
Injecting Section		**15 ~ 18**	**m**	
Ground Water Level		Nill		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter		$7*10^{-6}*Q_{av}^2$	kgf/cm	
Pipe Length of Injecting Pa		16.00	m	

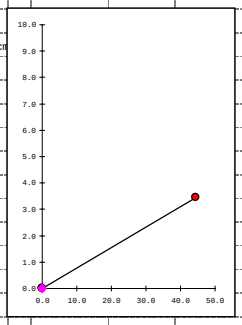
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	57.0	4.4	19.0
6.0	70.6	7.2	23.5
10.0	90.0	10.8	30.0
6.0	80.0	7.0	26.7
3.0	75.0	4.1	25.0



Lu=	28.5	
Pc=	10.0	kgf/cm^2

Location	**SD1**			
Injecting Section		**9 ~ 12**	**m**	
Ground Water Level		Nill	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter		$7*10^{-6}*Q_{av}^2$	kgf/cm	
Pipe Length of Injecting Pa		10.00	m	

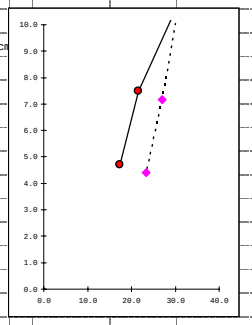
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
2.5	133.4	3.5	44.5
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0



Lu'=	129	
Pc=	-	kgf/cm^2

Location	**SD1**			
Injecting Section		**18 ~ 21**	**m**	
Ground Water Level		Nill		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter		$7*10^{-6}*Q_{av}^2$	kgf/cm	
Pipe Length of Injecting Pa		19.00	m	

P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	52.0	4.7	17.3
6.0	65.0	7.5	21.7
10.0	93.0	10.9	31.0
6.0	81.0	7.2	27.0
3.0	70.0	4.4	23.3

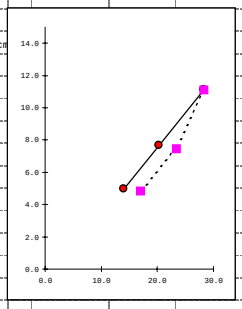


Lu'=	25.6	
Pc=	9.0	kgf/cm^2

Result of Lugeon Test at Borehole SD1(1)

Location	SD1			
Injecting Section		21 ~ 24	m	
Ground Water Level		21.3	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		22.00	m	

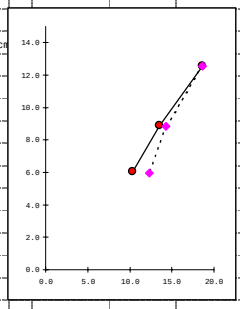
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	42.0	5.0	14.0
6.0	60.9	7.7	20.3
10.0	85.0	11.1	28.3
6.0	70.0	7.5	23.3
3.0	51.0	4.8	17.0



Lu'=	25.7	
Pc=	11.1	kgf/cm^2

Location	SD1			
Injecting Section		30 ~ 33	m	
Ground Water Level		Nill		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		31.00	m	

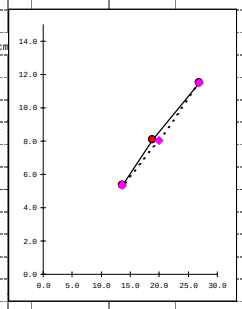
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	31.0	6.0	10.3
6.0	40.5	8.9	13.5
10.0	56.0	12.6	18.7
6.0	43.0	8.8	14.3
3.0	37.0	6.0	12.3



Lu=	15.1	
Pc=	-	kgf/cm^2

Location	SD1			
Injecting Section		24 ~ 27	m	
Ground Water Level		Nill	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		25.00	m	

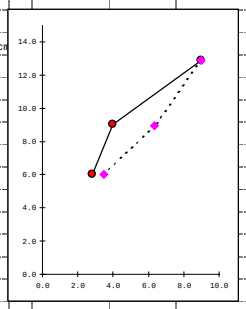
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	41.0	5.4	13.7
6.0	56.5	8.1	18.8
10.0	80.6	11.5	26.9
6.0	60.0	8.0	20.0
3.0	41.0	5.4	13.7



Lu=	23.3	
Pc=	-	kgf/cm^2

Location	SD1			
Injecting Section		33 ~ 36	m	
Ground Water Level		29.5		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		34.00	m	

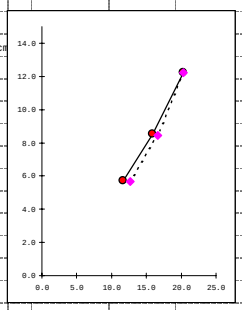
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	8.5	6.0	2.8
6.0	12.0	9.0	4.0
10.0	27.0	12.9	9.0
6.0	19.0	9.0	6.3
3.0	10.4	6.0	3.5



Lu'=	4.4	
Pc=	9.0	kgf/cm^2

Location	SD1			
Injecting Section		27 ~ 30	m	
Ground Water Level		Nill	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		28.00	m	

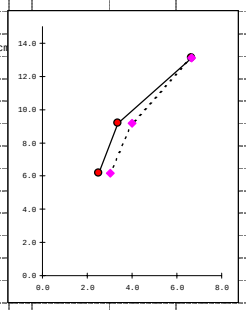
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	35.0	5.7	11.7
6.0	47.6	8.5	15.9
10.0	60.9	12.2	20.3
6.0	50.0	8.5	16.7
3.0	38.0	5.7	12.7



Lu=	17.6	
Pc=	-	kgf/cm^2

Location	SD1			
Injecting Section		36 ~ 39	m	
Ground Water Level		31.0		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		37.00	m	

P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	7.5	6.2	2.5
6.0	10.1	9.2	3.4
10.0	20.0	13.1	6.7
6.0	12.0	9.2	4.0
3.0	9.1	6.2	3.0

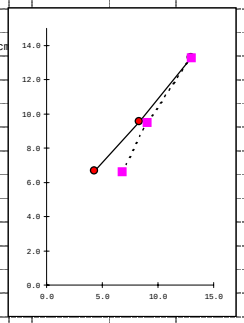


Lu'=	3.6	
Pc=	9.2	kgf/cm^2

Result of Lugeon Test at Borehole SD1(2)

Location	SD1			
Injecting Section		39 ~ 42	m	
Ground Water Level		36.2	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		40.00	m	

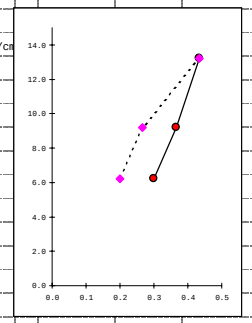
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	13.0	6.7	4.3
6.0	25.0	9.5	8.3
10.0	39.0	13.3	13.0
6.0	27.0	9.5	9.0
3.0	20.4	6.6	6.8



Lu=	8.9	
Pc=	13.3	kgf/cm^2

Location	SD1			
Injecting Section		48 ~ 51	m	
Ground Water Level		31.0		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		49.00	m	

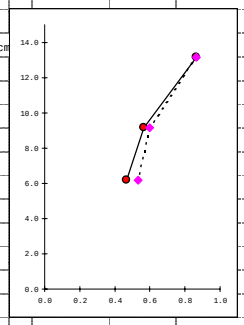
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	0.9	6.2	0.3
6.0	1.1	9.2	0.4
10.0	1.3	13.2	0.4
6.0	0.8	9.2	0.3
3.0	0.6	6.2	0.2



Lu=	0.4	
Pc=	-	kgf/cm^2

Location	SD1			
Injecting Section		42 ~ 45	m	
Ground Water Level		30.6	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		43.00	m	

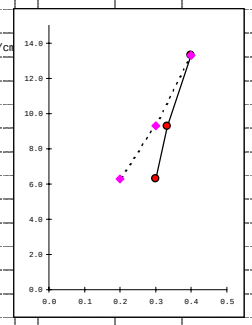
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	1.4	6.2	0.5
6.0	1.7	9.2	0.6
10.0	2.6	13.2	0.9
6.0	1.8	9.2	0.6
3.0	1.6	6.2	0.5



Lu'=	0.6	
Pc=	9.2	kgf/cm^2

Location	SD1			
Injecting Section		51 ~ 54	m	
Ground Water Level		31.8		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		52.00	m	

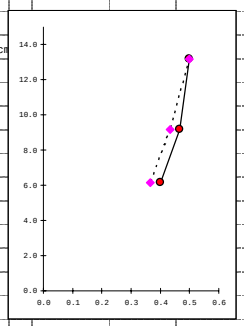
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	0.9	6.3	0.3
6.0	1.0	9.3	0.3
10.0	1.2	13.3	0.4
6.0	0.9	9.3	0.3
3.0	0.6	6.3	0.2



Lu=	0.3	
Pc=	-	kgf/cm^2

Location	SD1			
Injecting Section		45 ~ 48	m	
Ground Water Level		30.7	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		46.00	m	

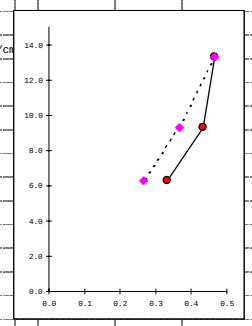
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	1.2	6.2	0.4
6.0	1.4	9.2	0.5
10.0	1.5	13.2	0.5
6.0	1.3	9.2	0.4
3.0	1.1	6.2	0.4



Lu=	0.5	
Pc=	-	kgf/cm^2

Location	SD1			
Injecting Section		54 ~ 57	m	
Ground Water Level		31.9		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		55.00	m	

P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	1.0	6.3	0.3
6.0	1.3	9.3	0.4
10.0	1.4	13.3	0.5
6.0	1.1	9.3	0.4
3.0	0.8	6.3	0.3

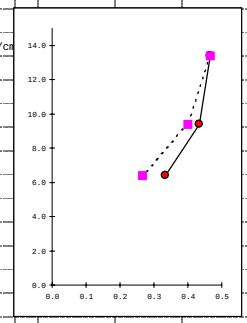


Lu=	0.4	
Pc=	-	kgf/cm^2

Result of Lugeon Test at Borehole SD1(3)

Location	SD1			
Injecting Section		57 ~ 60	m	
Ground Water Level		32.9	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		58.00	m	

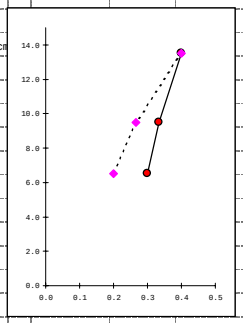
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	1.0	6.4	0.3
6.0	1.3	9.4	0.4
10.0	1.4	13.4	0.5
6.0	1.2	9.4	0.4
3.0	0.8	6.4	0.3



Lu=	0.4	
Pc=	-	kgf/cm^2

Location	SD1			
Injecting Section		66 ~ 69	m	
Ground Water Level		34.0		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		67.00	m	

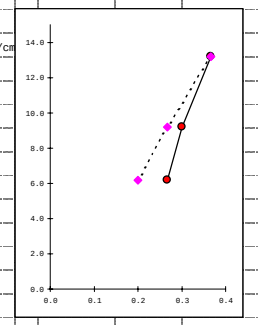
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	0.9	6.5	0.3
6.0	1.0	9.5	0.3
10.0	1.2	13.5	0.4
6.0	0.8	9.5	0.3
3.0	0.6	6.5	0.2



Lu=	0.3	
Pc=	-	kgf/cm^2

Location	SD1			
Injecting Section		60 ~ 63	m	
Ground Water Level		30.8	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		61.00	m	

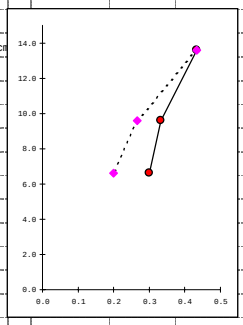
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	0.8	6.2	0.3
6.0	0.9	9.2	0.3
10.0	1.1	13.2	0.4
6.0	0.8	9.2	0.3
3.0	0.6	6.2	0.2



Lu=	0.3	
Pc=	-	kgf/cm^2

Location	SD1			
Injecting Section		69 ~ 72	m	
Ground Water Level		35.0		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		70.00	m	

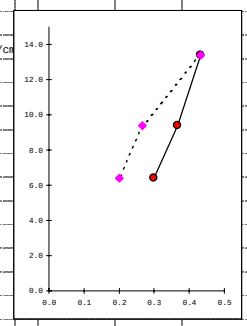
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	0.9	6.6	0.3
6.0	1.0	9.6	0.3
10.0	1.3	13.6	0.4
6.0	0.8	9.6	0.3
3.0	0.6	6.6	0.2



Lu=	0.3	
Pc=	-	kgf/cm^2

Location	SD1			
Injecting Section		63 ~ 66	m	
Ground Water Level		33.0	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		64.00	m	

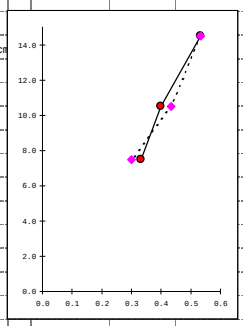
P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	0.9	6.4	0.3
6.0	1.1	9.4	0.4
10.0	1.3	13.4	0.4
6.0	0.8	9.4	0.3
3.0	0.6	6.4	0.2



Lu=	0.4	
Pc=	-	kgf/cm^2

Location	SD1			
Injecting Section		72 ~ 75	m	
Ground Water Level		44.0		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		73.00	m	

P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	Q(l/min/m)
3.0	1.0	7.5	0.3
6.0	1.2	10.5	0.4
10.0	1.6	14.5	0.5
6.0	1.3	10.5	0.4
3.0	0.9	7.5	0.3

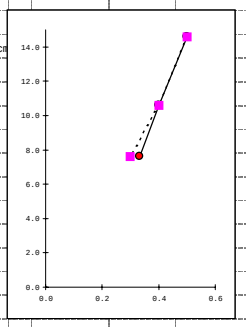


Lu=	0.4	
Pc=	-	kgf/cm^2

Result of Lugeon Test at Borehole SD1(4)

Location	**SD1**			
Injecting Section			**75 ~ 78**	**m**
Ground Water Level			45.0	m
Height of Pressure Gauge			100.0	cm
Length of Test Section			3.0	m
Friction Loss per meter		$7*10^{-6}*Q_{av}^2$		kgf/cm
Pipe Length of Injecting Pa			76.00	m

P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	η(l/min/m)
3.0	1.0	7.6	0.3
6.0	1.2	10.6	0.4
10.0	1.5	14.6	0.5
6.0	1.2	10.6	0.4
3.0	0.9	7.6	0.3

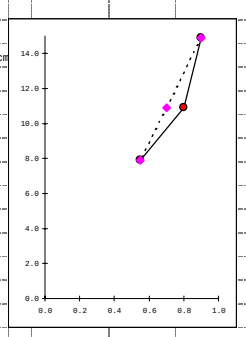


Lu= 0.4

Pc= - kgf/cm^2

Location	**SD1**			
Injecting Section			**78 ~ 80**	**m**
Ground Water Level			48.0	m
Height of Pressure Gauge			100.0	cm
Length of Test Section			2.0	m
Friction Loss per meter		$7*10^{-6}*Q_{av}^2$		kgf/cm
Pipe Length of Injecting Pa			79.00	m

P_0(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	η(l/min/m)
3.0	1.1	7.9	0.6
6.0	1.6	10.9	0.8
10.0	1.8	14.9	0.9
6.0	1.4	10.9	0.7
3.0	1.1	7.9	0.6



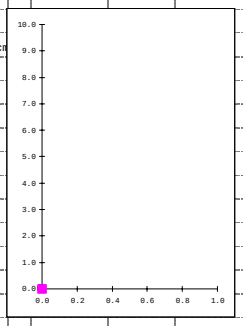
Lu= 0.8

Pc= - kgf/cm^2

Result of Lugeon Test at Borehole SD1(5)

Location	SD2			
Injecting Section		3 ~ 6	m	
Ground Water Level		Nill	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		4.00	m	

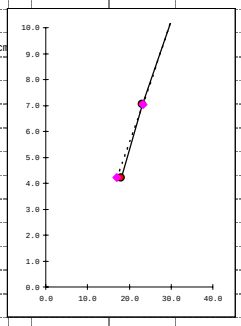
P_θ(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	q(l/min/m)
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0



Lu'=	-		
Pc=	-	kgf/cm^2	

Location	SD2			
Injecting Section		12 ~ 15	m	
Ground Water Level		13.7		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		13.00	m	

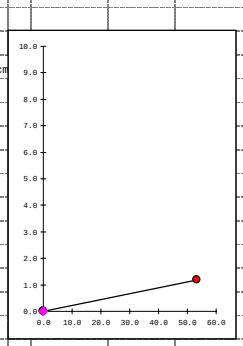
P_θ(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	q(l/min/m)
3.0	54.3	4.2	18.1
6.0	69.6	7.0	23.2
10.0	93.1	10.7	31.0
6.0	69.7	7.0	23.2
3.0	51.0	4.2	17.0



Lu=	29.6		
Pc=	-	kgf/cm^2	

Location	SD2			
Injecting Section		6 ~ 9	m	
Ground Water Level		8.5	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		7.00	m	

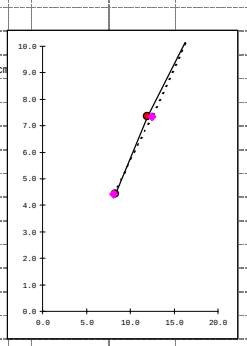
P_θ(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	q(l/min/m)
1.5	160.0	1.2	53.3
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0



Lu'=	446		
Pc=	-	kgf/cm^2	

Location	SD2			
Injecting Section		15 ~ 18	m	
Ground Water Level		13.9		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		16.00	m	

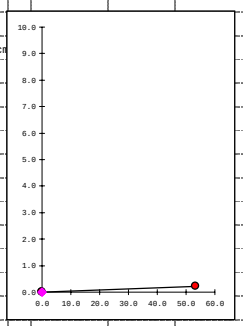
P_θ(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	q(l/min/m)
3.0	25.0	4.4	8.3
6.0	36.0	7.3	12.0
10.0	53.4	11.2	17.8
6.0	37.5	7.3	12.5
3.0	24.3	4.4	8.1



Lu=	16.0		
Pc=	-	kgf/cm^2	

Location	SD2			
Injecting Section		9 ~ 12	m	
Ground Water Level		9.0	m	
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		10.00	m	

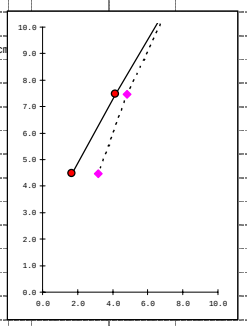
P_θ(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	q(l/min/m)
1.0	160.0	0.2	53.3
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0



Lu'=	2,564		
Pc=	-	kgf/cm^2	

Location	SD2			
Injecting Section		18 ~ 21	m	
Ground Water Level		13.8		
Height of Pressure Gauge		100.0	cm	
Length of Test Section		3.0	m	
Friction Loss per meter	$7*10^{-6}*Q_{av}^2$		kgf/cm	
Pipe Length of Injecting Pa		19.00	m	

P_θ(kgf/cm^2)	Q_{av}(l/min)	P(kgf/cm^2)	q(l/min/m)
3.0	5.0	4.5	1.7
6.0	12.5	7.5	4.2
10.0	23.0	11.4	7.7
6.0	14.5	7.5	4.8
3.0	9.5	4.5	3.2



Lu=	6.4		
Pc=	11.4	kgf/cm^2	

Result of Lugeon Test at Borehole SD2(1)