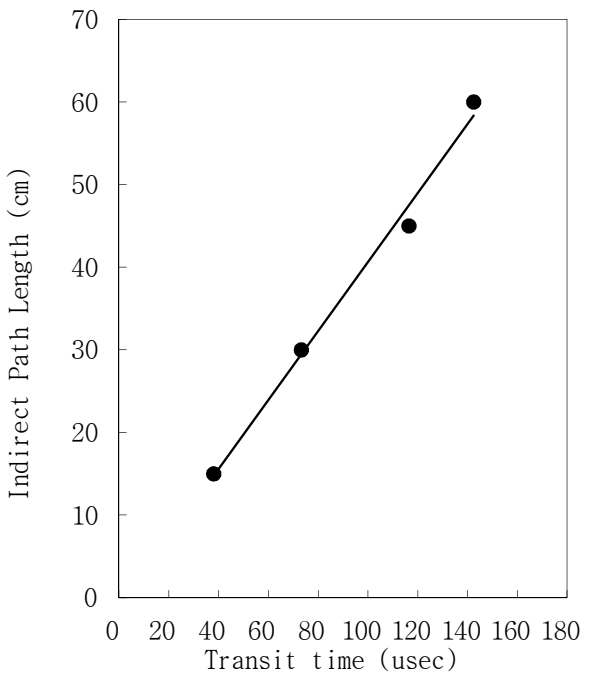
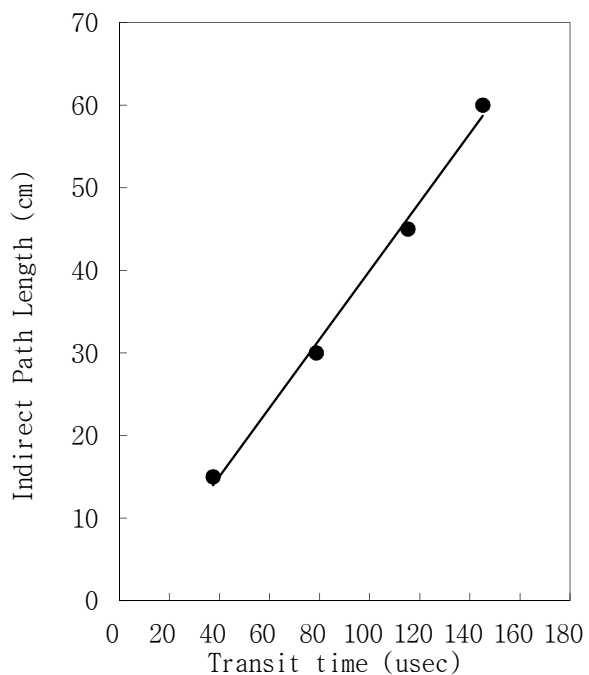


PUNDIT		웅진대교 천안방향 초음파탐사 DATA	
PROJECT TITLE :		시설물 정밀안전진단 용역[2공구]	
Company	 (주) 한국구조물안전연구원	Client	 (주)천안논산고속도로
	 (주) 한 맥 기 술	Method	초음파법
Pulse Velocity Data			
(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)			
부 재 명	S1(건전부)	부 재 명	S2(건전부)
X	Transit Time (usec)	X	Transit Time (usec)
Y	Indirect Path Length (cm)	Y	Indirect Path Length (cm)
X	Y	X	Y
38.0	15	37.4	15
73.2	30	78.6	30
116.4	45	115.2	45
142.4	60	145.1	60
Best fit line (Equation)		Best fit line (Equation)	
$Y = 4.174 X - 11.093$		$Y = 4.150 X - 15.367$	
Vi (km/s)	4.174	Vi (km/s)	4.150
Correction Ration (Vi → Vd)	4.383	Correction Ration (Vi → Vd)	4.358
압축강도(F')	31.6	압축강도(F')	31.1
			

Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	S3(건전부)		부 재 명	S4(건전부)	
X	Transit Time (usec)		X	Transit Time (usec)	
Y	Indirect Path Length (cm)		Y	Indirect Path Length (cm)	
X	Y		X	Y	
37.2	15		32.1	15	
76.8	30		78.7	30	
113.4	45		109.2	45	
142.8	60		141.4	60	
Best fit line (Equation)			Best fit line (Equation)		
$Y = 4.226 X - 16.142$			$Y = 4.142 X + 0.804$		
Vi (km/s)	4.226		Vi (km/s)	4.142	
Correction Ration (Vi → Vd)	4.437		Correction Ration (Vi → Vd)	4.349	
압축강도(F')	32.8		압축강도(F')	30.9	

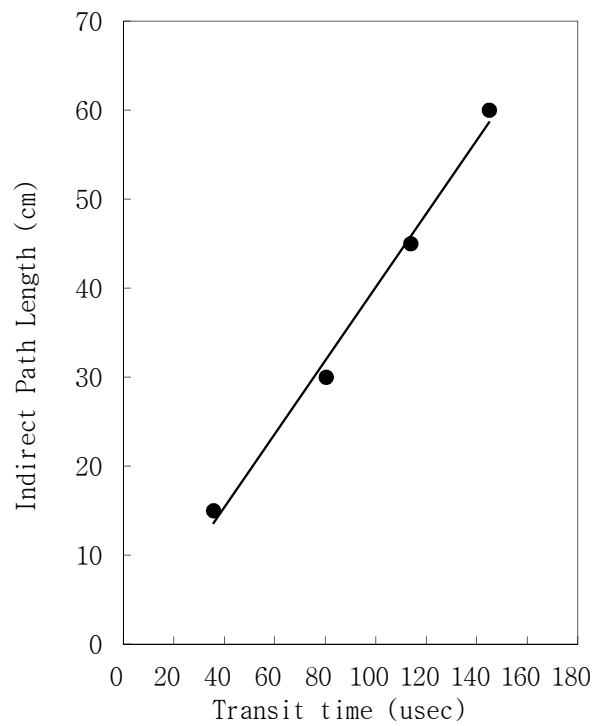
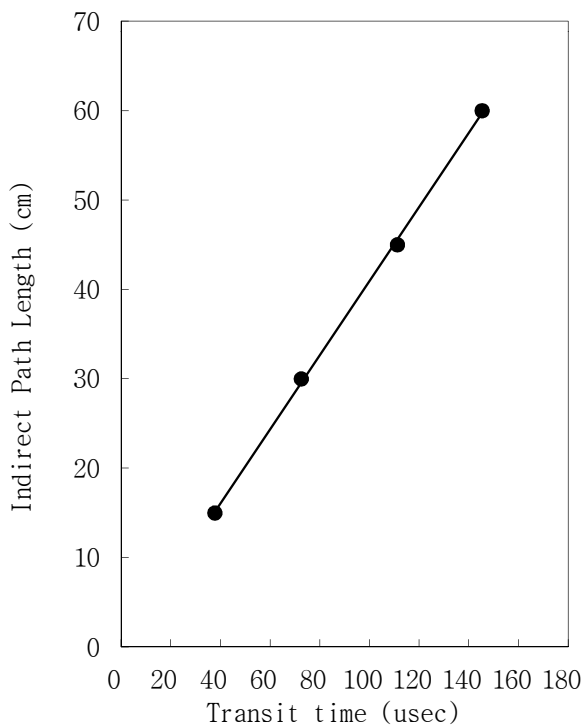
Graph for S3: Indirect Path Length (cm) vs Transit time (usec). The data points are (37.2, 15), (76.8, 30), (113.4, 45), and (142.8, 60). A linear regression line is fitted to the data.

Graph for S4: Indirect Path Length (cm) vs Transit time (usec). The data points are (32.1, 15), (78.7, 30), (109.2, 45), and (141.4, 60). A linear regression line is fitted to the data.

Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

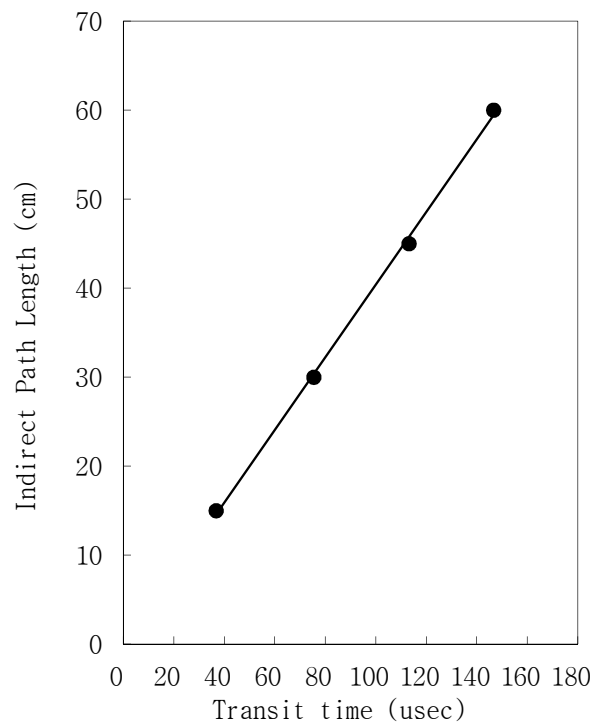
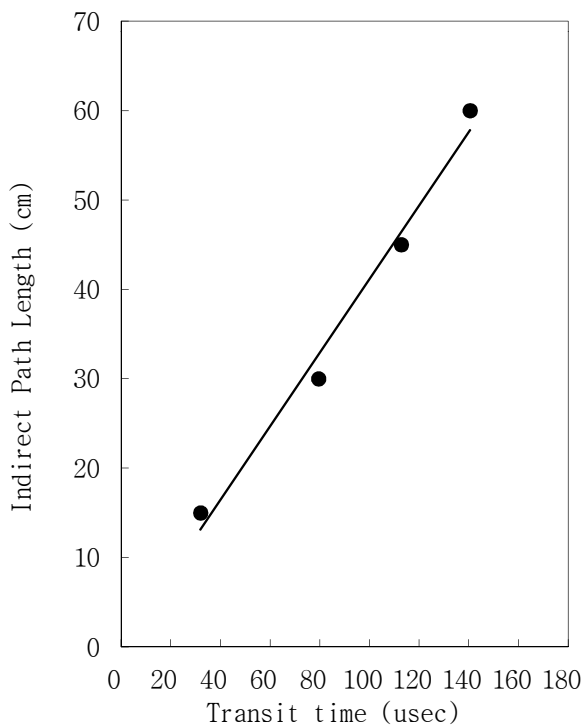
부 재 명	S5(건전부)	부 재 명	S6(건전부)
X	Transit Time (usec)	X	Transit Time (usec)
Y	Indirect Path Length (cm)	Y	Indirect Path Length (cm)
X	Y	X	Y
37.7	15	35.7	15
72.5	30	80.3	30
111.2	45	113.8	45
145.3	60	144.9	60
Best fit line (Equation)		Best fit line (Equation)	
$Y = 4.147 X - 5.177$		$Y = 4.123 X - 11.2$	
Vi (km/s)	4.147	Vi (km/s)	4.123
Correction Ration (Vi → Vd)	4.354	Correction Ration (Vi → Vd)	4.329
압축강도(F')	31.0	압축강도(F')	30.5



Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	S7(건전부)	부 재 명	S8(건전부)
X	Transit Time (usec)	X	Transit Time (usec)
Y	Indirect Path Length (cm)	Y	Indirect Path Length (cm)
X	Y	X	Y
32.0	15	36.7	15
79.5	30	75.4	30
112.8	45	113.1	45
140.5	60	146.6	60
Best fit line (Equation)		Best fit line (Equation)	
$Y = 4.116 X - 0.34$		$Y = 4.078 X - 4.083$	
Vi (km/s)	4.116	Vi (km/s)	4.078
Correction Ration (Vi → Vd)	4.322	Correction Ration (Vi → Vd)	4.282
압축강도(F')	30.3	압축강도(F')	29.5



Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	S9(건전부)		부 재 명	S10(건전부)	
X	Transit Time (usec)		X	Transit Time (usec)	
Y	Indirect Path Length (cm)		Y	Indirect Path Length (cm)	
X	Y		X	Y	
38.2	15		38.9	15	
79.5	30		80.0	30	
113.2	45		110.4	45	
147.1	60		148.4	60	
Best fit line (Equation)			Best fit line (Equation)		
Y = 4.151 X - 17.302			Y = 4.167 X - 18.474		
Vi (km/s)	4.151		Vi (km/s)	4.167	
Correction Ration (Vi → Vd)	4.359		Correction Ration (Vi → Vd)	4.375	
압축강도(F')	31.1		압축강도(F')	31.5	

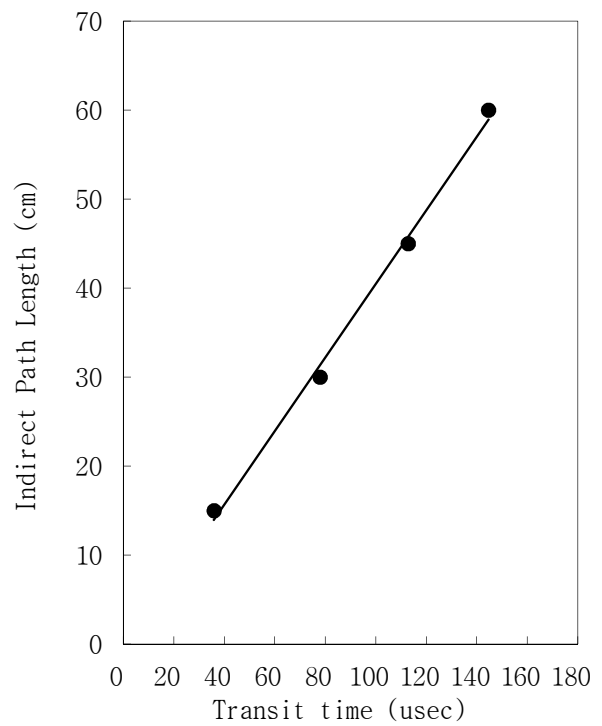
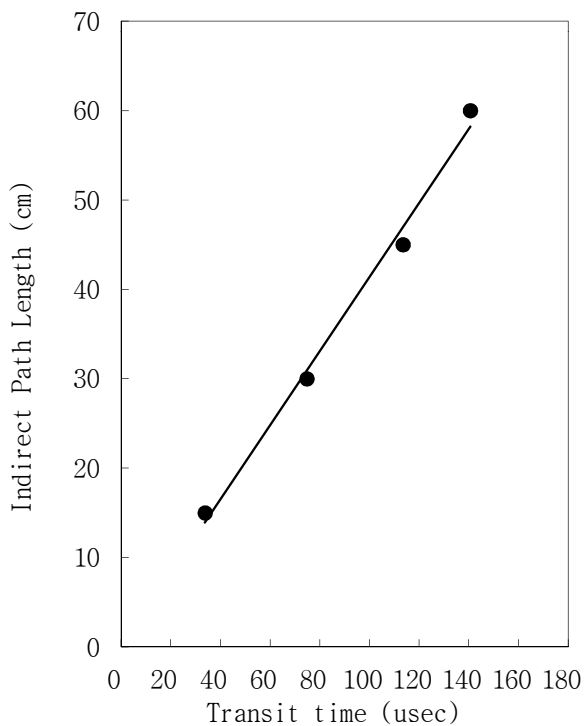
Scatter plot for S9 showing Indirect Path Length (cm) vs Transit time (usec). The data points are (38.2, 15), (79.5, 30), (113.2, 45), and (147.1, 60). A linear best-fit line is drawn through the points.

Scatter plot for S10 showing Indirect Path Length (cm) vs Transit time (usec). The data points are (38.9, 15), (80.0, 30), (110.4, 45), and (148.4, 60). A linear best-fit line is drawn through the points.

Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

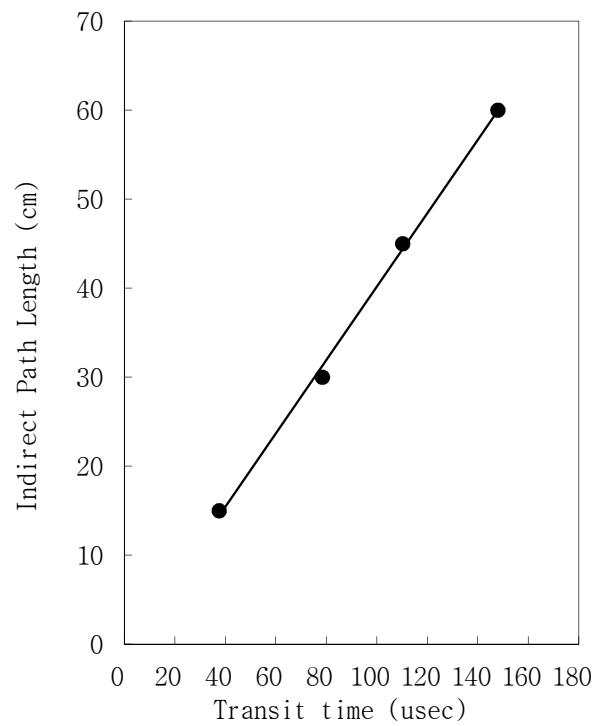
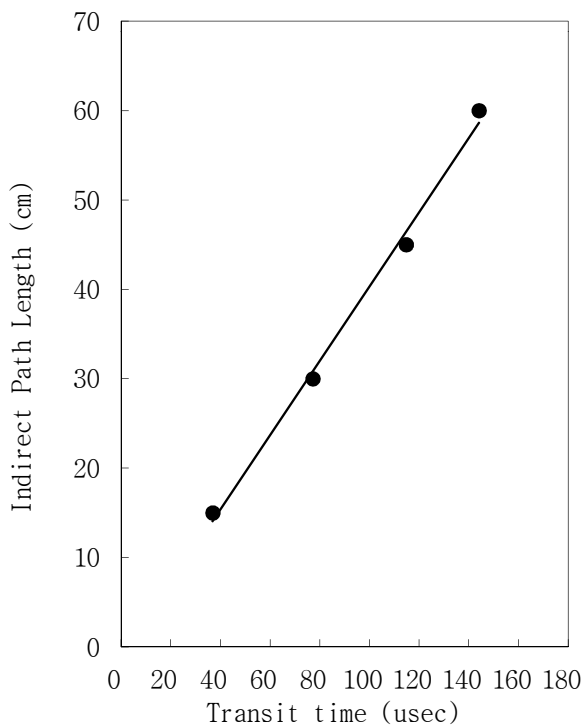
부 재 명	S11(건전부)	부 재 명	S12(건전부)
X	Transit Time (usec)	X	Transit Time (usec)
Y	Indirect Path Length (cm)	Y	Indirect Path Length (cm)
X	Y	X	Y
33.8	15	35.9	15
74.8	30	77.9	30
113.5	45	112.8	45
140.6	60	144.6	60
Best fit line (Equation)		Best fit line (Equation)	
$Y = 4.143 X - 0.693$		$Y = 4.138 X - 9.016$	
Vi (km/s)	4.143	Vi (km/s)	4.138
Correction Ration (Vi → Vd)	4.350	Correction Ration (Vi → Vd)	4.345
압축강도(F')	30.9	압축강도(F')	30.8



Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	S13(건전부)	부 재 명	S14(건전부)
X	Transit Time (usec)	X	Transit Time (usec)
Y	Indirect Path Length (cm)	Y	Indirect Path Length (cm)
X	Y	X	Y
36.9	15	37.5	15
77.2	30	78.4	30
114.8	45	110.2	45
144.1	60	147.9	60
Best fit line (Equation)		Best fit line (Equation)	
$Y = 4.155 X - 12.496$		$Y = 4.124 X - 10.555$	
Vi (km/s)	4.155	Vi (km/s)	4.124
Correction Ration (Vi → Vd)	4.363	Correction Ration (Vi → Vd)	4.330
압축강도(F')	31.2	압축강도(F')	30.5



Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	S15(건전부)		부 재 명	S16(건전부)	
X	Transit Time (usec)		X	Transit Time (usec)	
Y	Indirect Path Length (cm)		Y	Indirect Path Length (cm)	
X	Y		X	Y	
32.9	15		36.9	15	
77.5	30		77.8	30	
113.6	45		113.1	45	
142.7	60		144.4	60	
Best fit line (Equation)			Best fit line (Equation)		
$Y = 4.067 X + 2.128$			$Y = 4.177 X - 13.685$		
Vi (km/s)	4.067		Vi (km/s)	4.177	
Correction Ration (Vi → Vd)	4.270		Correction Ration (Vi → Vd)	4.386	
압축강도(F')	29.2		압축강도(F')	31.7	

S15 Data Plot

S16 Data Plot

Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	S17(건전부)		부 재 명	S18(건전부)	
X	Transit Time (usec)		X	Transit Time (usec)	
Y	Indirect Path Length (cm)		Y	Indirect Path Length (cm)	
X	Y		X	Y	
36.8	15		35.5	15	
78.9	30		75.7	30	
112.8	45		111.3	45	
145.4	60		144.4	60	
Best fit line (Equation)			Best fit line (Equation)		
$Y = 4.154 X - 13.307$			$Y = 4.132 X - 4.021$		
Vi (km/s)	4.154		Vi (km/s)	4.132	
Correction Ration (Vi → Vd)	4.362		Correction Ration (Vi → Vd)	4.339	
압축강도(F')	31.2		압축강도(F')	30.7	

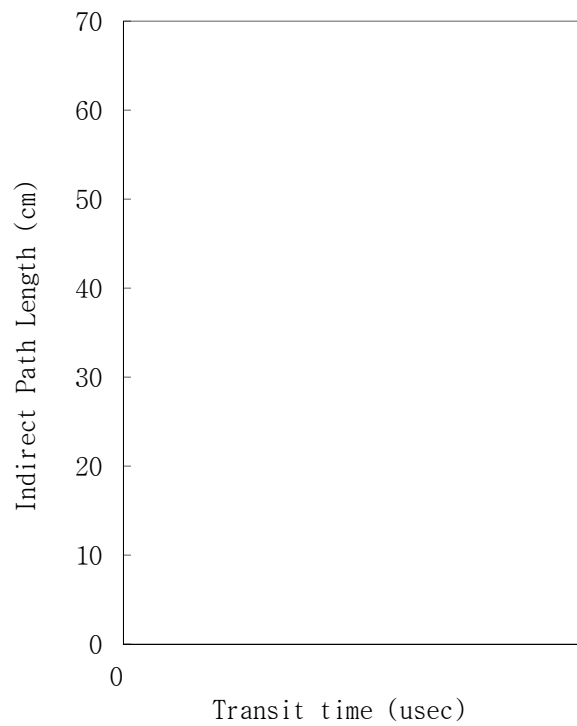
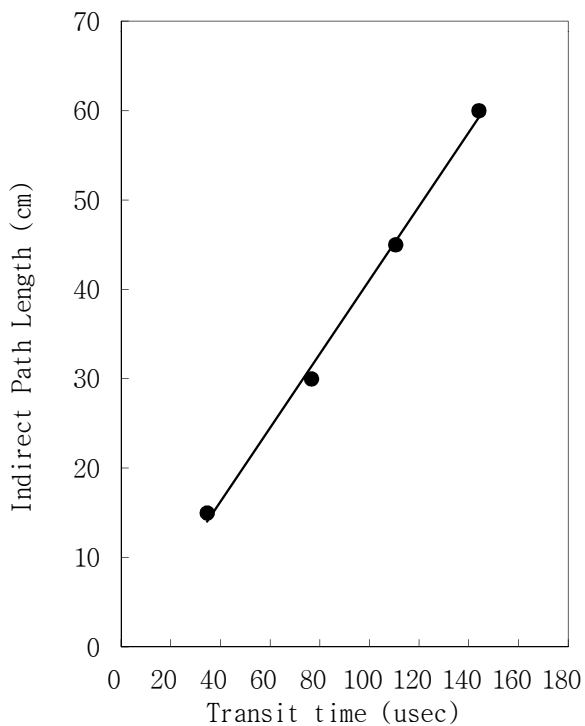
Transit time (usec)

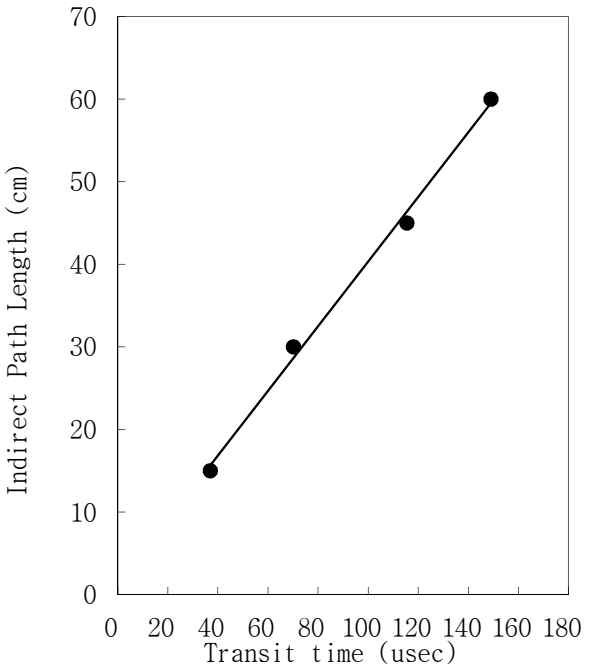
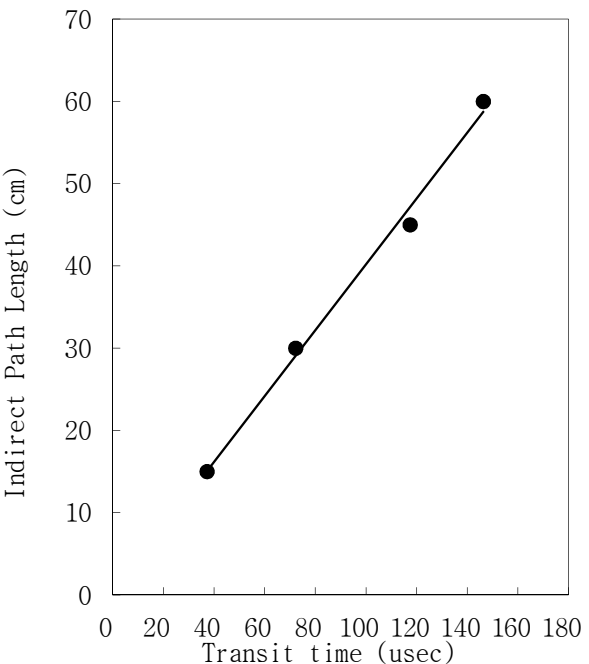
Transit time (usec)

Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	S19(건전부)	부 재 명	
X	Transit Time (usec)	X	Transit Time (usec)
Y	Indirect Path Length (cm)	Y	Indirect Path Length (cm)
X	Y	X	Y
34.6	15		15
76.6	30		30
110.5	45		45
144.0	60		60
Best fit line (Equation)		Best fit line (Equation)	
$Y = 4.129 X - 2.517$		#DIV/0!	
Vi (km/s)	4.129	Vi (km/s)	
Correction Ration (Vi → Vd)	4.335	Correction Ration (Vi → Vd)	
압축강도(F')	30.6	압축강도(F')	



PUNDIT		웅진대교 천안방향 초음파탐사 DATA	
PROJECT TITLE :		시설물 정밀안전진단 용역[2공구]	
Company	 (주) 한국구조물안전연구원  (주) 한 맥 기 술	Client	 (주)천안논산고속도로
		Method	초음파법
Pulse Velocity Data			
(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)			
부 재 명	A1 벽체	부 재 명	A2 벽체
X	Transit Time (usec)	X	Transit Time (usec)
Y	Indirect Path Length (cm)	Y	Indirect Path Length (cm)
X	Y	X	Y
36.9	15	37.2	15
70.1	30	72.2	30
115.4	45	117.4	45
149.0	60	146.3	60
Best fit line (Equation)		Best fit line (Equation)	
$Y = 3.916 X + 11.44$		$Y = 4.001 X + 1.785$	
Vi (km/s)	3.916	Vi (km/s)	4.001
Correction Ration (Vi → Vd)	4.112	Correction Ration (Vi → Vd)	4.201
압축강도(F')	25.9	압축강도(F')	27.8
			

Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	P1 기동부		부 재 명	P2 기동부	
X	Transit Time (usec)		X	Transit Time (usec)	
Y	Indirect Path Length (cm)		Y	Indirect Path Length (cm)	
X	Y		X	Y	
31.4	15		32.3	15	
71.9	30		73.5	30	
112.5	45		111.6	45	
143.4	60		144.3	60	
Best fit line (Equation)			Best fit line (Equation)		
$Y = 3.967 X + 18.725$			$Y = 3.999 X + 13.377$		
Vi (km/s)	3.967		Vi (km/s)	3.999	
Correction Ration (Vi → Vd)	4.165		Correction Ration (Vi → Vd)	4.199	
압축강도(F')	27.0		압축강도(F')	27.8	

Indirect Path Length (cm) Transit time (usec)	Indirect Path Length (cm) Transit time (usec)
---	---

Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	P3 코펑부		부 재 명	P4 기둥부	
X	Transit Time (usec)		X	Transit Time (usec)	
Y	Indirect Path Length (cm)		Y	Indirect Path Length (cm)	
X		Y	X		Y
33.9		15	34.8		15
76.2		30	72.5		30
118.4		45	116.8		45
144.1		60	146.1		60
Best fit line (Equation)			Best fit line (Equation)		
$Y = 3.976 X + 4.59$			$Y = 3.944 X + 10.023$		
Vi (km/s)		3.976	Vi (km/s)		3.944
Correction Ration (Vi → Vd)		4.175	Correction Ration (Vi → Vd)		4.141
압축강도(F')		27.3	압축강도(F')		26.5

Indirect Path Length (cm)

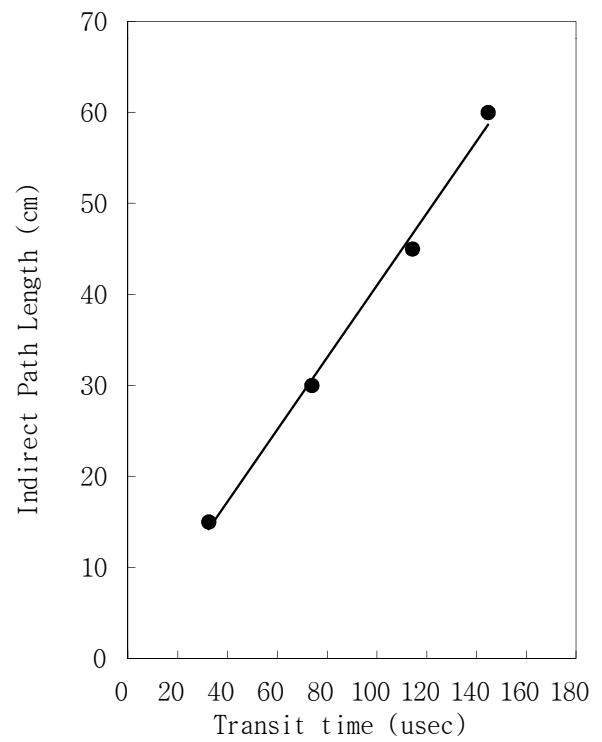
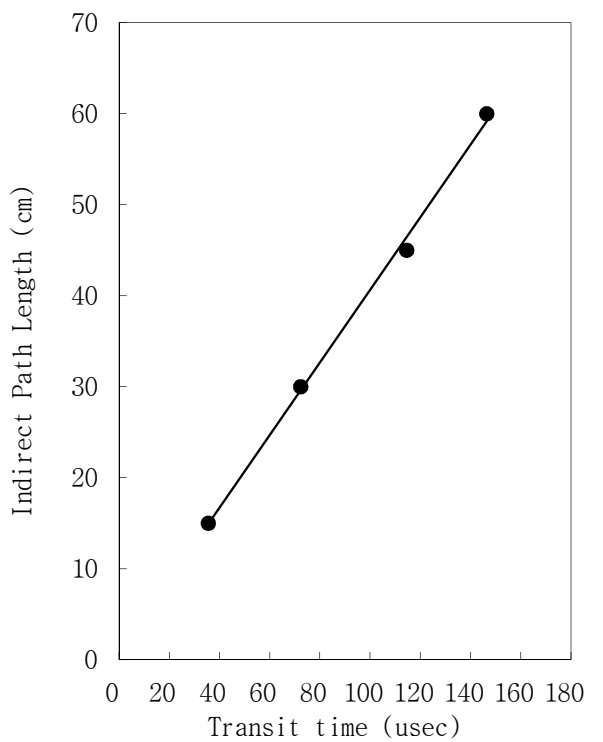
Transit time (usec)

Indirect Path Length (cm)

Transit time (usec)

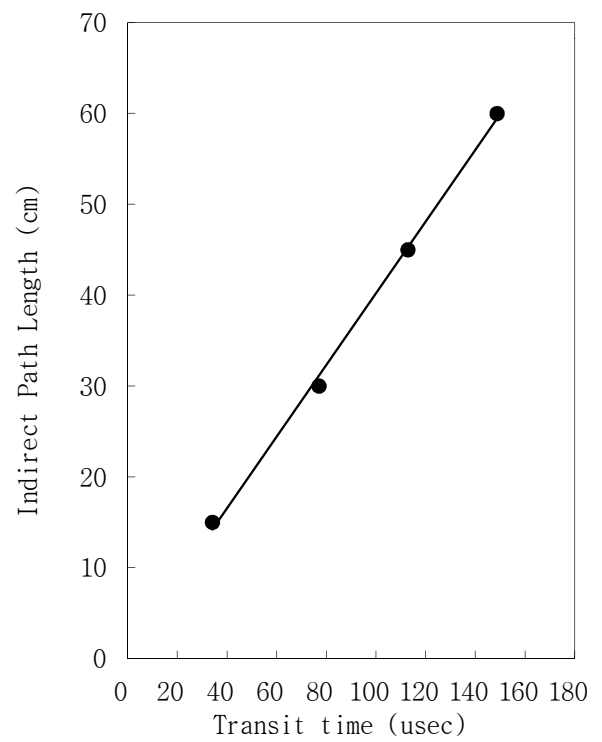
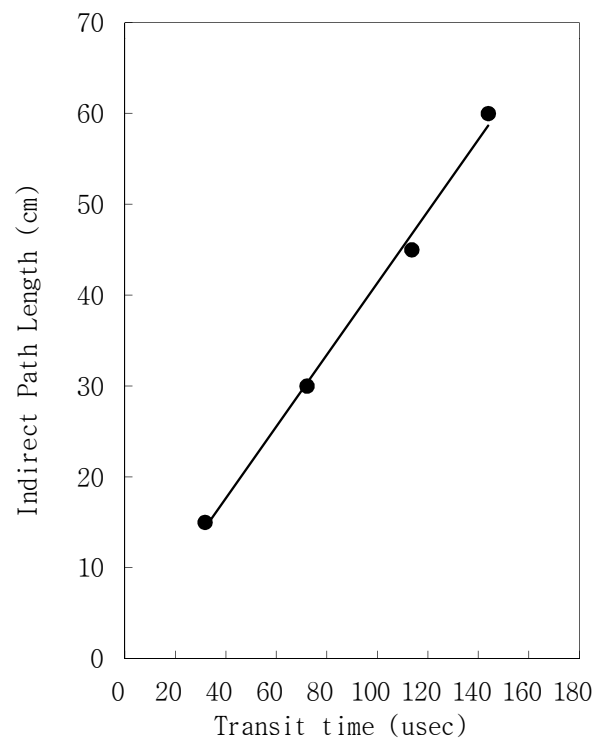
Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	P5 코펑부		부 재 명	P6 기둥부	
X	Transit Time (usec)		X	Transit Time (usec)	
Y	Indirect Path Length (cm)		Y	Indirect Path Length (cm)	
X	Y		X	Y	
32.4	15		35.5	15	
73.8	30		72.3	30	
114.2	45		114.5	45	
144.6	60		146.4	60	
Best fit line (Equation)			Best fit line (Equation)		
Y = 3.960 X + 13.68			Y = 3.991 X + 7.161		
Vi (km/s)	3.960		Vi (km/s)	3.991	
Correction Ration (Vi → Vd)	4.158		Correction Ration (Vi → Vd)	4.191	
압축강도(F')	26.9		압축강도(F')	27.6	
					

Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	P7 기둥부		부 재 명	P8 코핑부	
X	Transit Time (usec)		X	Transit Time (usec)	
Y	Indirect Path Length (cm)		Y	Indirect Path Length (cm)	
X	Y		X	Y	
34.1	15		31.7	15	
77.0	30		72.1	30	
112.8	45		113.6	45	
148.7	60		143.9	60	
Best fit line (Equation)			Best fit line (Equation)		
Y = 3.943 X + 7.672			Y = 3.949 X + 18.312		
Vi (km/s)	3.943		Vi (km/s)	3.949	
Correction Ration (Vi → Vd)	4.140		Correction Ration (Vi → Vd)	4.146	
압축강도(F')	26.5		압축강도(F')	26.6	
					

Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

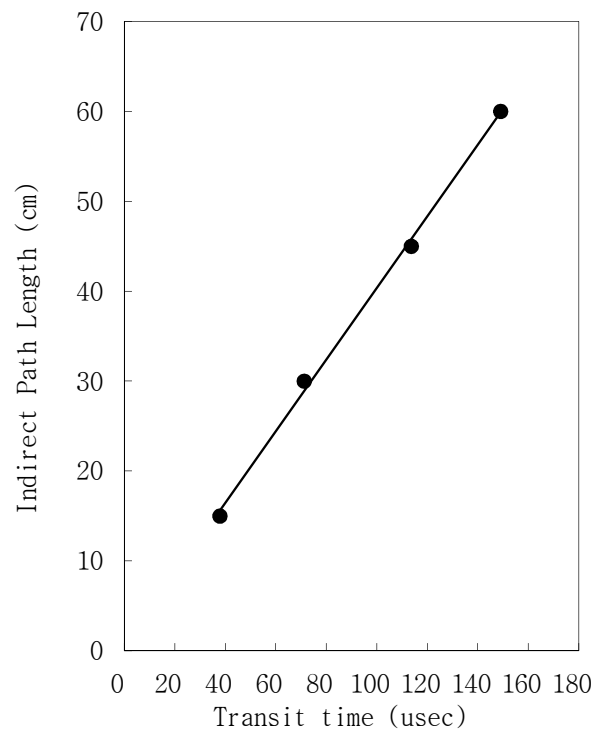
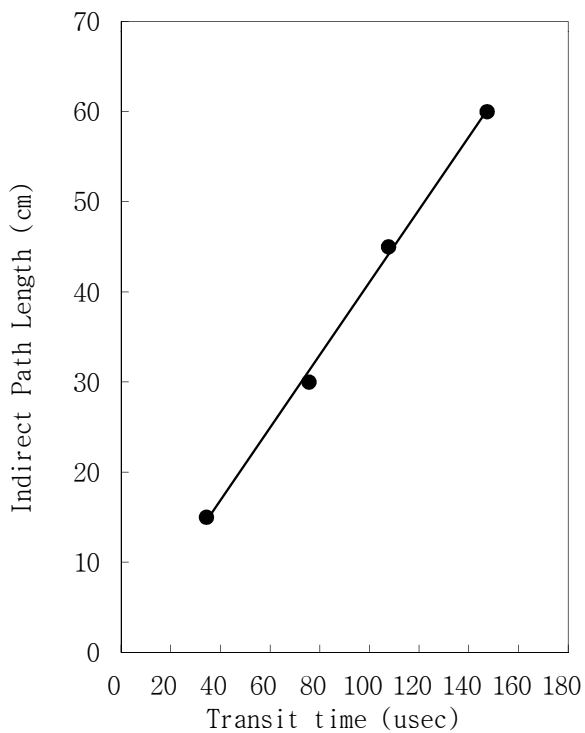
부 재 명	P9 코펑부		부 재 명	P10 코펑부	
X	Transit Time (usec)		X	Transit Time (usec)	
Y	Indirect Path Length (cm)		Y	Indirect Path Length (cm)	
X	Y		X	Y	
30.6	15		34.8	15	
70.9	30		72.1	30	
110.5	45		112.3	45	
142.5	60		146.2	60	
Best fit line (Equation)			Best fit line (Equation)		
$Y = 3.986 X + 21.767$			$Y = 4.002 X + 9.386$		
Vi (km/s)	3.986		Vi (km/s)	4.002	
Correction Ration (Vi → Vd)	4.185		Correction Ration (Vi → Vd)	4.202	
압축강도(F')	27.5		압축강도(F')	27.8	

Indirect Path Length (cm) Transit time (usec)	Indirect Path Length (cm) Transit time (usec)
---	---

Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

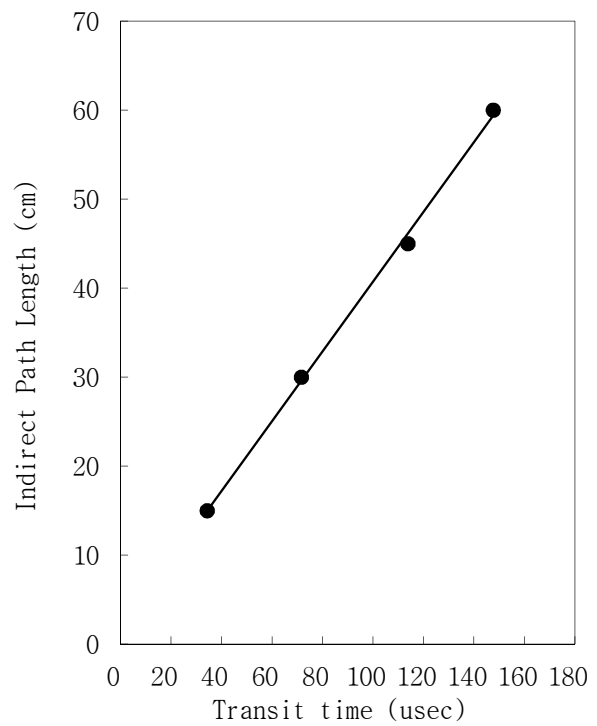
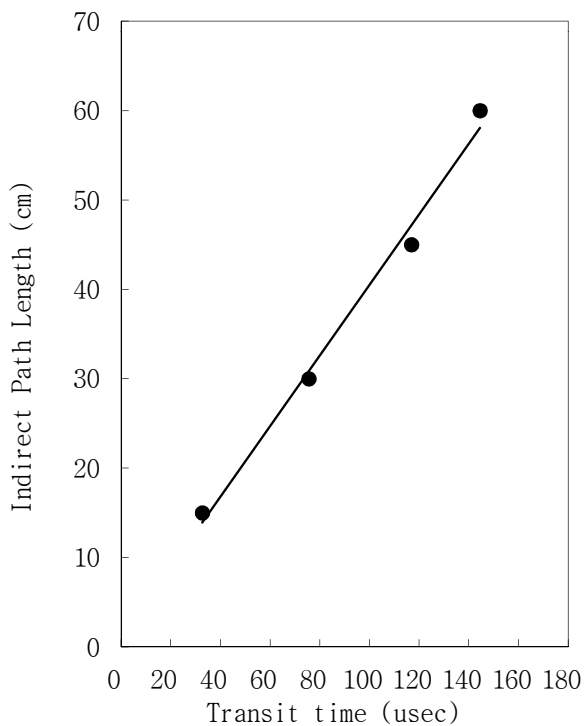
부 재 명	P11 코핑부	부 재 명	P12 기둥부
X	Transit Time (usec)	X	Transit Time (usec)
Y	Indirect Path Length (cm)	Y	Indirect Path Length (cm)
X	Y	X	Y
34.3	15	37.8	15
75.6	30	71.2	30
107.6	45	113.6	45
147.3	60	149.0	60
Best fit line (Equation)		Best fit line (Equation)	
$Y = 4.034 X + 7.074$		$Y = 3.982 X + 5.11$	
Vi (km/s)	4.034	Vi (km/s)	3.982
Correction Ration (Vi → Vd)	4.236	Correction Ration (Vi → Vd)	4.181
압축강도(F')	28.5	압축강도(F')	27.4



Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

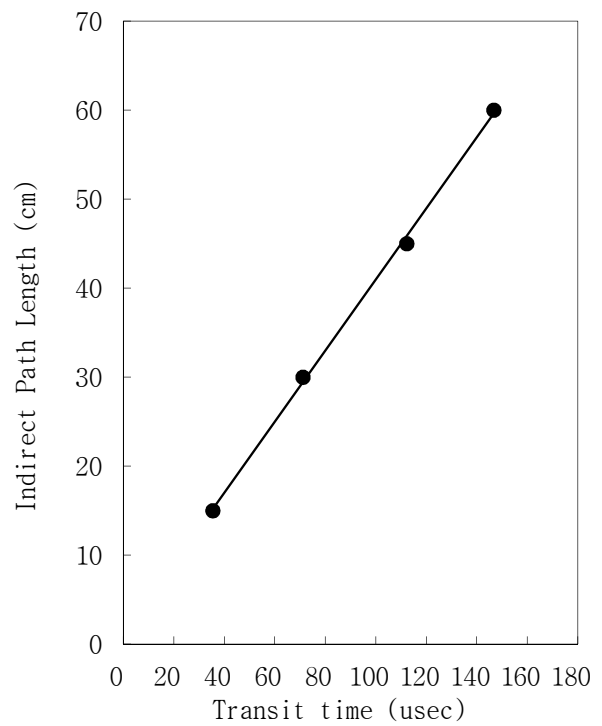
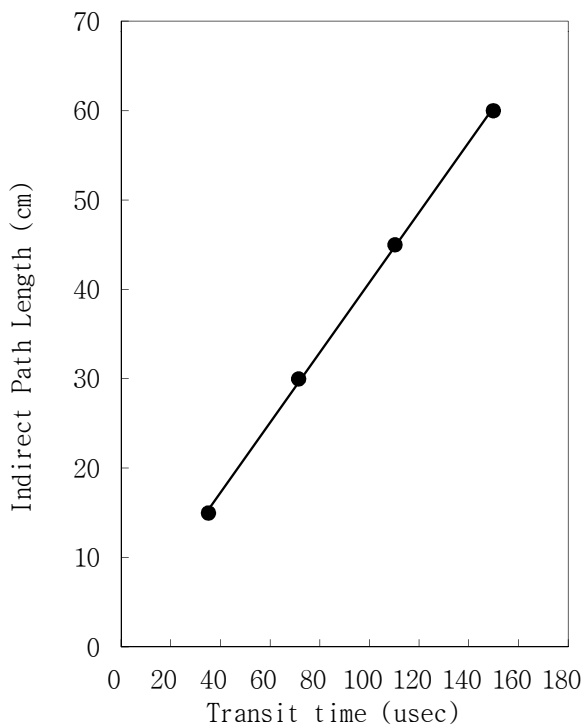
부 재 명	P13 코핑부	부 재 명	P14 기둥부
X	Transit Time (usec)	X	Transit Time (usec)
Y	Indirect Path Length (cm)	Y	Indirect Path Length (cm)
X	Y	X	Y
32.7	15	34.3	15
75.6	30	71.6	30
116.9	45	113.8	45
144.5	60	147.6	60
Best fit line (Equation)		Best fit line (Equation)	
$Y = 3.945 X + 10.352$		$Y = 3.919 X + 15.112$	
Vi (km/s)	3.945	Vi (km/s)	3.919
Correction Ration (Vi → Vd)	4.142	Correction Ration (Vi → Vd)	4.115
압축강도(F')	26.6	압축강도(F')	26.0



Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	P15 코핑부	부 재 명	P16 기둥부
X	Transit Time (usec)	X	Transit Time (usec)
Y	Indirect Path Length (cm)	Y	Indirect Path Length (cm)
X	Y	X	Y
35.1	15	35.4	15
71.4	30	71.1	30
110.2	45	112.2	45
149.8	60	146.7	60
Best fit line (Equation)		Best fit line (Equation)	
$Y = 3.916 X + 16.202$		$Y = 3.996 X + 9.992$	
Vi (km/s)	3.916	Vi (km/s)	3.996
Correction Ration (Vi → Vd)	4.112	Correction Ration (Vi → Vd)	4.196
압축강도(F')	25.9	압축강도(F')	27.7



Pulse Velocity Data

(Vi : Indirect Pluse Velocity, Vd : Direct Pluse Velocity)

부 재 명	P17 기둥부	부 재 명	P18 코핑부
X	Transit Time (usec)	X	Transit Time (usec)
Y	Indirect Path Length (cm)	Y	Indirect Path Length (cm)
X	Y	X	Y
37.4	15	34.6	15
70.6	30	72.8	30
116.6	45	111.1	45
146.8	60	148.2	60
Best fit line (Equation)		Best fit line (Equation)	
$Y = 3.984 X + 5.086$		$Y = 3.957 X + 12.285$	
Vi (km/s)	3.984	Vi (km/s)	3.957
Correction Ration (Vi → Vd)	4.183	Correction Ration (Vi → Vd)	4.155
압축강도(F')	27.4	압축강도(F')	26.8

