Doc. No. S0319A-17

# Asian Institute of Technology

Km. 42 Paholyothin Highway, Klong Luang, Pathumthani, Thailand 12120

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STRUCTURAL ENGINEERING LABORATORY STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

COMPRESSIVE STRENGTH TEST (ASTM C109)

TEST SPECIMEN: Three (3) cubes having a nominal size of 50x50x50 mm made of "Weber.tec non-shrink grout"

were prepared in SE laboratory. The water to "Weber.tec non-shrink grout\*" ratio was 12%

by weight.

CLIENT:

SAINT-GOBAIN WEBER CO., LTD.

DATE OF TEST:

July 8, 2017

TEST METHOD:

After mixed thoroughly, the mixed specimen was cast in the 2" standard test cubes. The cubes are cured for 24 hours in the molds, then stripped and cured in room temperature until they reached the required test age.

#### **TEST RESULTS:**

Specimen	Date	Date	Age	Weight	Cross	Maximum	Compressive	Remarks
No.	of	of	of	of	Sectional	Load	Strength	
, ,,,,	Cast	Test	Specimen	Specimen			//£/2\	
			(days)	(g)	(cm²)	(kgf)	(kgf/cm²)	
1	07/07/17	08/07/17	1	279	25.33	12,390	489.23	*1 kgf/cm² = 0.0981 MPa.
2	07/07/17	08/07/17	1	277	25.25	11,980		Average compressive strength is 47.37 MPa
3	07/07/17	08/07/17	1	278	25.20	12,230	485.31	at 1 day(s) aged.
						Average	482.99	

Note: This report certifies the adequacy and representative character of the test sample(s) only.

TESTED BY:

CHECKED & APPROVED BY:

DR. ANAWAT CHOTESUWAN SENIOR LABORATORY SUPERVISOR

August 8, 2017

Doc. No. S0319B-17



#### Asian Institute of Technology

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STRUCTURAL ENGINEERING LABORATORY

STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

COMPRESSIVE STRENGTH TEST (ASTM C109)

TEST SPECIMEN: Three (3) cubes having a nominal size of 50x50x50 mm made of "Weber.tec non-shrink grout" were prepared in SE laboratory. The water to "Weber.tec non-shrink grout\*" ratio was 12%

by weight.

CLIENT:

SAINT-GOBAIN WEBER CO., LTD.

DATE OF TEST:

July 14, 2017

TEST METHOD:

After mixed thoroughly, the mixed specimen was cast in the 2" standard test cubes. The cubes are cured for 24 hours in the molds, then stripped and cured in room temperature until they reached the required test age.

TEST RESULTS:

Specimen	Date	Date	Age	Weight	Cross	Maximum	Compressive	Remarks
No.	of	of	of	of	Sectional	Load	Strength	
	Cast	Test	Specimen	Specimen	Area		100	
			(days)	(g)	(cm²)	(kgf)	(kgf/cm²)	
1	07/07/17	14/07/17	7	281	25.43	21,110	830.23	*1 kgf/cm² = 0.0981 MPa.
2	07/07/17	14/07/17	7	288	25.35	21,610		Average compressive strength is 81.29 MPa
3	07/07/17	14/07/17	7	283	25.38	20,400		at 7 day(s) aged.
	9		ĵ			Average	828.85	e e e e e e e e e e e e e e e e e e e

Note: This report certifies the adequacy and representative character of the test sample(s) only.

TESTED BY:

CHECKED & APPROVED BY:

DR. ANAWAT CHOTESUWAN

SENIOR LABORATORY SUPERVISOR

August 8, 2017

**TECHNICIAN** 

Doc. No. S0319C-17

#### Asian Institute of Technology

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# STRUCTURAL ENGINEERING LABORATORY STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

COMPRESSIVE STRENGTH TEST (ASTM C109)

TEST SPECIMEN: Three (3) cubes having a nominal size of 50x50x50 mm made of "Weber.tec non-shrink grout\* were prepared in SE laboratory. The water to "Weber.tec non-shrink grout" ratio was 12%

by weight,

CLIENT:

SAINT-GOBAIN WEBER CO., LTD.

DATE OF TEST:

August 4, 2017

**TEST METHOD:** 

After mixed thoroughly, the mixed specimen was cast in the 2" standard test cubes. The cubes are cured for 24 hours in the molds, then stripped and cured in room temperature until they reached the required test age.

**TEST RESULTS:** 

Specimen	Date	Date	Age	Weight	Cross	Maximum	Compressive	Remarks
No.	of	of	of	of	Sectional	Load	Strength	sporting distributed with what in all the state of
	Cast	Test	Specimen	Specimen	Area			
			(days)	(g)	(cm²)	(kgf)	(kgf/cm²)	
1	07/07/17	04/08/17	28	285	25.45	24,330	955.92	*1 kgf/cm² = 0.0981 MPa.
2	07/07/17	04/08/17	28	282	25.38	24,230		Average compressive
3	07/07/17	04/08/17	28	279	25.28	24,030		strength is 93.54 MPa at 28 day(s) aged.
			4			Average	953.82	

Note: This report certifies the adequacy and representative character of the test sample(s) only.

TESTED BY:

**TECHNICIAN** 

MR. RUNGROJ JANGJIT

CHECKED & APPROVED BY:

DR. ANAWAT CHOTESUWAN

SENIOR LABORATORY SUPERVISOR



Doc. No. S0319D-17

# Asian Institute of Technology

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## STRUCTURAL ENGINEERING LABORATORY

STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

COMPRESSIVE STRENGTH TEST (ASTM C109)

TEST SPECIMEN: Three (3) cubes having a nominal size of 50x50x50 mm made of "Weber.tec non-shrink grout" were prepared in SE laboratory. The water to "Weber.tec non-shrink grout⁺" ratio was 16%

by weight.

CLIENT:

SAINT-GOBAIN WEBER CO., LTD.

DATE OF TEST:

July 8, 2017

TEST METHOD:

After mixed thoroughly, the mixed specimen was cast in the 2" standard test cubes. The cubes are cured for 24 hours in the molds, then stripped and cured in room temperature until they reached the required test age.

TEST RESULTS:

Specimen	Date	Date	Age	Weight	Cross	Maximum	Compressive	Remarks
No.	of	of	of	of	Sectional		Strength	
	Cast	Test	Specimen	Specimen	Area			
			(days)	(g)	(cm²)	(kgf)	(kgf/cm²)	
1	07/07/17	08/07/17	1	273	25.55	7,230	282.96	*1 kgf/cm² = 0.0981 MPa.
2	07/07/17	08/07/17	1	270	25.50	6,830		Average compressive
3	07/07/17	08/07/17	1	266	25.10	6,700		strength is 26.73 MPa at 1 day(s) aged.
					3			
						Average	272.57	

Note: This report certifies the adequacy and representative character of the test sample(s) only.

TESTED BY:

CHECKED & APPROVED BY:

DR. ANAWAT CHOTESUWAN

SENIOR LABORATORY SUPERVISOR

August 8, 2017

**TECHNICIAN** 

Doc. No. S0319E-17



## Asian Institute of Technology

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STRUCTURAL ENGINEERING LABORATORY

STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

COMPRESSIVE STRENGTH TEST (ASTM C109)

TEST SPECIMEN: Three (3) cubes having a nominal size of 50x50x50 mm made of "Weber.tec non-shrink grout" were prepared in SE laboratory. The water to "Weber.tec non-shrink grout\*" ratio was 16%

by weight.

CLIENT:

SAINT-GOBAIN WEBER CO., LTD.

DATE OF TEST:

July 14, 2017

TEST METHOD:

After mixed thoroughly, the mixed specimen was cast in the 2" standard test cubes. The cubes are cured for 24 hours in the molds, then stripped and cured in room temperature until they reached the required test age.

TEST RESULTS:

Specimen	Date	Date	Age	Weight	Cross	Maximum	Compressive	Remarks
No.	of	of	of	of	Sectional		Strength	
	Cast	Test	Specimer	Specimen	Area			
			(days)	(g)	(cm²)	(kgf)	(kgf/cm²)	
1	07/07/17	14/07/17	7	272	25.25	13,730	543.75	*1 kgf/cm² = 0.0981 MPa.
2	07/07/17	14/07/17	7	271	25.30	14,380		Average compressive
3	07/07/17	14/07/17	7	274	25.15	13,440		strength is 53.82 MPa at 7 day(s) aged.
						Average	548.83	3

Note: This report certifies the adequacy and representative character of the test sample(s) only.

TESTED BY:

CHECKED & APPROVED BY:

DR. ANAWAT CHOTESUWAN SENIOR LABORATORY SUPERVISOR

August 8, 2017



Doc. No. S0319F-17

# Asian Institute of Technology

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# STRUCTURAL ENGINEERING LABORATORY

STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

COMPRESSIVE STRENGTH TEST (ASTM C109)

TEST SPECIMEN: Three (3) cubes having a nominal size of 50x50x50 mm made of "Weber.tec non-shrink grout"

were prepared in SE laboratory. The water to "Weber.tec non-shrink grout\*" ratio was 16%

by weight.

CLIENT:

SAINT-GOBAIN WEBER CO., LTD.

DATE OF TEST:

August 4, 2017

TEST METHOD:

After mixed thoroughly, the mixed specimen was cast in the 2" standard test cubes. The cubes are cured for 24 hours in the molds, then stripped and cured in room temperature until they reached the required test age.

**TEST RESULTS:** 

Specimen No.		Date	Age	Weight	Cross	Maximum	Compressive	Remarks
110.	of	of	of	of	Sectional	Load	Strength	
	Cast	Test		Specimen	Area			
			(days)	(g)	(cm²)	(kgf)	(kgf/cm²)	
1	07/07/17	04/08/17	28	274	25.35	17,910	706.48	*1 kgf/cm² = 0.0981 MPa.
2	07/07/17	04/08/17	28	275	25.28	18,440		Average compressive
3	07/07/17	04/08/17	28	274	25.25	18,520		strength is 70.92 MPa at 28 day(s) aged.
	8							
						Average	723.16	

Note: This report certifies the adequacy and representative character of the test sample(s) only.

TESTED BY:

CHECKED & APPROVED BY:

DR. ANAWAT CHOTESUWAN

SENIOR LABORATORY SUPERVISOR

August 15, 2017

**TECHNICIAN** 

Doc. No. S0319K-17

# AIT

# Asian Institute of Technology

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## STRUCTURAL ENGINEERING LABORATORY

STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

FLEXURAL STRENGTH TEST (ASTM C348)

TEST SPECIMEN:

Three (3) specimens of standard prisms shape made of "Weber.tec non-shrink grout+" were prepared in SE laboratory. The water to "Weber.tec non-shrink grout+" ratio was 16% by weight. The tests were carried out at Saint-Gobain-Weber factory

under a supervision of SE laboratory.

CLIENT:

SAINT - GOBAIN WEBER CO., LTD.

DATE OF TEST:

July 8, 2017

DATE OF CAST: July 7, 2017

**TEST METHOD:** 

After thoroughly mixed, the specimen was cast in the standard molds having a size of  $40 \times 40 \times 160$  mm. After curing in molds for 24 hours, they were removed from molds and cured in room temperature until they reached the required test age.

TEST RESULTS :

The flexural strength of specimens at the age of 1 day are shown as follows.

Specimen	Width	Thickness	Length	Maximum	Flexural	Remarks
	of sample	of sample	of sample	Load	Strength	7.5
No.	В	D	L	Р	Sf	
	(mm)	(mm)	(mm)	(kN)	(N/mm²)	
1	40.0	40.1	160.0	2.64	7.39	The flexural strength, Sf
2	40.1	40.0	160.0	2.88	8.08	= 3 P I / (2 b d d). where I (span length) is 120 mm.
3	40.0	40.0	160.0	2.94	8.27	
				Average	7.91	

Note: This report certifies the adequacy and representative character of the test sample(s) only.

WITNESSED BY:

CHECKED & APPROVED BY:

DR. ANAWAT CHOTESUWAN SENIOR LABORATORY SUPERVISOR

August 15, 2017



Doc. No. S0319J-17



## Asian Institute of Technology

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#### STRUCTURAL ENGINEERING LABORATORY

STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

FLEXURAL STRENGTH TEST (ASTM C348)

TEST SPECIMEN:

Three (3) specimens of standard prisms shape made of "Weber.tec non-shrink grout+" were prepared in SE laboratory. The water to "Weber.tec non-shrink grout+" ratio was 12% by weight. The tests were carried out at Saint-Gobain-Weber factory

under a supervision of SE laboratory.

CLIENT:

SAINT - GOBAIN WEBER CO., LTD.

DATE OF TEST:

August 4, 2017

DATE OF CAST: July 7, 2017

**TEST METHOD:** 

After thoroughly mixed, the specimen was cast in the standard molds having a size of 40 x 40 x 160 mm. After curing in molds for 24 hours, they were removed from molds

and cured in room temperature until they reached the required test age.

TEST RESULTS:

The flexural strength of specimens at the age of 28 days are shown as follows.

Specimen	Width	Thickness	Length	Maximum	Flexural	Remarks
	of sample	of sample	of sample	Load	Strength	
No.	В	D	L	Р	Sf	
	(mm)	(mm)	(mm)	(kN)	(N/mm²)	
1	40.3	40.6	160.0	5.24	14.20	The flexural strength, Sf = 3 P I / (2 b d d).
2	39.7	40.6	160.0	5.26	14.47	where I (span length) is 120 mm.
3	40.7	40.4	160.0	5.20	14.09	
				Average	14.25	

Note: This report certifies the adequacy and representative character of the test sample(s) only.

WITNESSED BY:

MR. RUNGROJ JANGJIT

**TECHNICIAN** 

CHECKED & APPROVED BY:

DR. ANAWAT CHOTESUWAN
SENIOR LABORATORY SUPERVISOR
August 15, 2017

Doc, No. S0319I-17



#### Asian Institute of Technology

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#### STRUCTURAL ENGINEERING LABORATORY

STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

FLEXURAL STRENGTH TEST (ASTM C348)

TEST SPECIMEN:

Three (3) specimens of standard prisms shape made of "Weber.tec non-shrink grout+" were prepared in SE laboratory. The water to "Weber.tec non-shrink grout+" ratio was 12% by weight. The tests were carried out at Saint-Gobain-Weber factory

under a supervision of SE laboratory.

CLIENT:

SAINT - GOBAIN WEBER CO., LTD.

DATE OF TEST:

July 14, 2017

DATE OF CAST: July 7, 2017

**TEST METHOD:** 

After thoroughly mixed, the specimen was cast in the standard molds having a size of  $40 \times 40 \times 160$  mm. After curing in molds for 24 hours, they were removed from molds

and cured in room temperature until they reached the required test age.

TEST RESULTS:

The flexural strength of specimens at the age of 7 days are shown as follows.

Specimen	Width	Thickness		Maximum Load	Flexural Strength	Remarks
No.	of sample B	of sample D	of sample L	P	Sf	
	(mm)	(mm)	(mm)	(kN)	(N/mm <sup>2</sup> )	
1	40.2	40.1	160.0	4.65	12.95	The flexural strength, Sf = 3 P I / (2 b d d).
2	40.3	40.0	160.0	4.81	13.43	where I (span length) is 120 mm.
3	40.5	40.7	160.0	4.60	12.34	-
				Average	12.91	

Note: This report certifies the adequacy and representative character of the test sample(s) only.

WITNESSED BY:

MR. RUNGROJ JANGJIT

**TECHNICIAN** 

CHECKED & APPROVED BY:

DR. ANAWAT CHOTESUWAN
SENIOR LABORATORY SUPERVISOR

Doc. No. S0319H-17



## Asian Institute of Technology

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STRUCTURAL ENGINEERING LABORATORY

STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

FLEXURAL STRENGTH TEST (ASTM C348)

TEST SPECIMEN:

Three (3) specimens of standard prisms shape made of "Weber.tec non-shrink grout+" were prepared in SE laboratory. The water to "Weber.tec non-shrink grout+" ratio was 12% by weight. The tests were carried out at Saint-Gobain-Weber factory under a supervision of SE laboratory.

CLIENT:

SAINT - GOBAIN WEBER CO., LTD.

DATE OF TEST:

July 8, 2017

DATE OF CAST: July 7, 2017

**TEST METHOD:** 

After thoroughly mixed, the specimen was cast in the standard molds having a size of 40 x 40 x 160 mm. After curing in molds for 24 hours, they were removed from molds

and cured in room temperature until they reached the required test age.

TEST RESULTS:

The flexural strength of specimens at the age of 1 day are shown as follows.

Specimen	Width	Thickness	Length	Maximum	Flexural	Remarks
	of sample	of sample	of sample	Load	Strength	
No.	В	D	L	Р	Sf	
	(mm)	(mm)	(mm)	(kN)	(N/mm²)	
1	40.1	40.0	160.0	3.90	10.94	The flexural strength, Sf
2	40.0	40.0	160.0	3.77	10.60	= 3 P I / (2 b d d). where I (span length) is 120 mm.
3	40.1	40.1	160.0	3.90	10.89	
es es				Average	10.81	

Note: This report certifies the adequacy and representative character of the test sample(s) only.

WITNESSED BY:

CHECKED & APPROVED BY:

DR. ANAWAT CHOTESUWAN SENIOR LABORATORY SUPERVISOR

August 15, 2017

Doc, No. S0319L-17



#### Asian Institute of Technology

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#### STRUCTURAL ENGINEERING LABORATORY

STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

FLEXURAL STRENGTH TEST (ASTM C348)

**TEST SPECIMEN:** 

Three (3) specimens of standard prisms shape made of "Weber.tec non-shrink grout+" were prepared in SE laboratory. The water to "Weber.tec non-shrink grout+" ratio was 16% by weight. The tests were carried out at Saint-Gobain-Weber factory under a supervision of SE laboratory.

CLIENT:

SAINT - GOBAIN WEBER CO., LTD.

DATE OF TEST:

July 14, 2017

DATE OF CAST: July 7, 2017

TEST METHOD:

After thoroughly mixed, the specimen was cast in the standard molds having a size of 40 x 40 x 160 mm. After curing in molds for 24 hours, they were removed from molds

and cured in room temperature until they reached the required test age.

**TEST RESULTS:** 

The flexural strength of specimens at the age of 7 days are shown as follows.

Specimen	Width	Thickness	Length	Maximum	Flexural	Remarks
	of sample	of sample	of sample	Load	Strength	
No.	В	D	L	P	Sf	
	(mm)	(mm)	(mm)	(kN)	(N/mm²)	
1	40.6	41.4	160.0	3.63	9.39	The flexural strength, Sf = 3 P I / (2 b d d).
2	40.5	41.2	160.0	4.20	11.00	where I (span length) is 120 mm.
3	40.0	40.1	160.0	3.41	9.54	_
				Average	9.98	

Note:

This report certifies the adequacy and representative character of the test sample(s) only.

WITNESSED BY:

CHECKED & APPROVED BY:

MR. RUNGROJ JANGJIT

**TECHNICIAN** 

DR. ANAWAT CHOTESUWAN SENIOR LABORATORY SUPERVISOR



Doc. No. S0319M-17



#### Asian Institute of Technology

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#### STRUCTURAL ENGINEERING LABORATORY

STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

FLEXURAL STRENGTH TEST (ASTM C348)

TEST SPECIMEN:

Three (3) specimens of standard prisms shape made of "Weber.tec non-shrink grout+" were prepared in SE laboratory. The water to "Weber.tec non-shrink grout+" ratio was 16% by weight. The tests were carried out at Saint-Gobain-Weber factory

under a supervision of SE laboratory.

CLIENT:

SAINT - GOBAIN WEBER CO., LTD.

DATE OF TEST:

August 4, 2017

DATE OF CAST: July 7, 2017

TEST METHOD:

After thoroughly mixed, the specimen was cast in the standard molds having a size of 40 x 40 x 160 mm. After curing in molds for 24 hours, they were removed from molds

and cured in room temperature until they reached the required test age.

TEST RESULTS:

The flexural strength of specimens at the age of 28 days are shown as follows.

Specimen	Width	Thickness	Length	Maximum	Flexural	Remarks
	of sample	of sample	of sample	Load	Strength	
No.	В	D	L	Р	Sf	
	(mm)	(mm)	(mm)	(kN)	(N/mm²)	
1	40.0	40.6	160.0	3.63	9.91	The flexural strength, Sf = 3 P I / (2 b d d).
2	40.6	40.9	160.0	3.74	9.91	where I (span length) is 120 mm.
3	40.5	40.6	160.0	3.60	9.71	
				Average	9.84	

Note: This report certifies the adequacy and representative character of the test sample(s) only.

WITNESSED BY:

**TECHNICIAN** 

CHECKED & APPROVED BY:

DR. ANAWAT CHOTESUWAN

SENIOR LABORATORY SUPERVISOR

August 15, 2017

.

Doc. No. S0319G-17

## Asian Institute of Technology

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STRUCTURAL ENGINEERING LABORATORY

STRUCTURAL ENGINEERING FIELD OF STUDY

SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST:

SETTING TIME BY MODIFIED VICAT NEEDLE (ASTM C-807)

**TEST SPECIMEN:** 

Three (3) cubes having a nominal size of 50x50x50 mm made of "Weber.tec non-shrink

grout\*" were prepared in SE laboratory. The water to "Weber.tec non-shrink grout\*"

ratio was 16% by weight.

CLIENT:

SAINT-GOBAIN WEBER CO., LTD.

DATE OF TEST:

July 7, 2017

TEST METHOD:

After mixed thoroughly, the paste was tested for penetration resistance using

standard 2 mm vicat needle until there is no crack observed on the surface.

#### **TEST RESULTS:**

Time	Elapsed	Reading	Remark
9:00	0:00		Start Mixing
9:30	0:30	40.00	
10:45	1:45	40.00	
11:00	2:00	40.00	
11:05	2:05	36.00	40 N/ 40
11:10	2:10	22.00	
11:15	2:15	16.00	
11:20	2:20	9.50	
11:25	2:25	4.00	
11:30	2:30	0.50	
11:35	2:35	0.00	cracking
11:40	2:40	0.00	cracking
11:45	2:45	0.00	cracking
11:50	2:50	0.00	cracking
11:55	2:55	0.00	cracking
12:00	3:00		no crack

The initial setting time is 2 hour 19 minute

The final setting time is 3 hour 0 minute

Note: This report certifies the adequacy and representative character of the test sample(s) only.

TESTED BY:

**TECHNICIAN** 

MR. RUNGROJ JANGJIT

DR. ANAWAT CHOTESUWAN

SENIOR LABORATORY SUPERVISOR

CHAL ENGIN

