

ASIAN INSTITUTE OF TECHNOLOGY
GEOTECHNICAL AND TRANSPORTATION ENGINEERING DIVISION

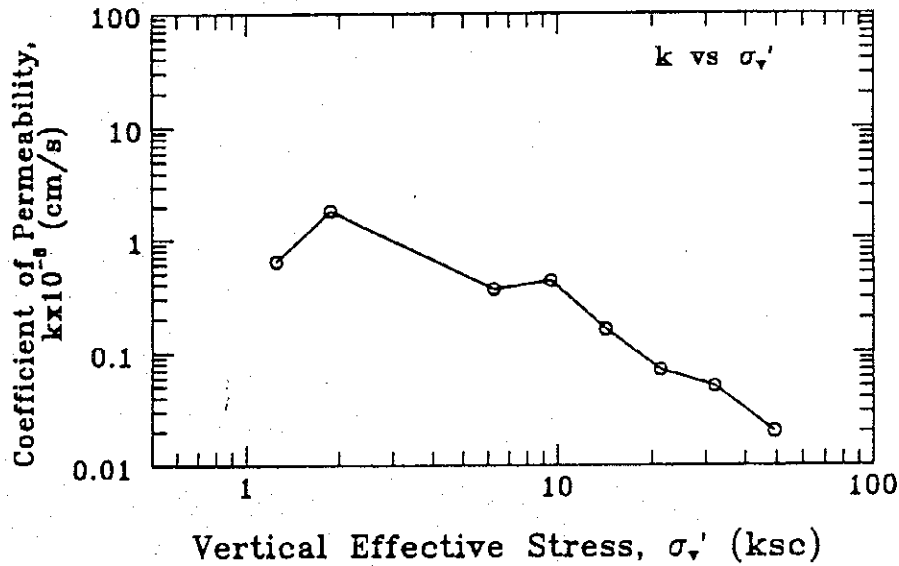
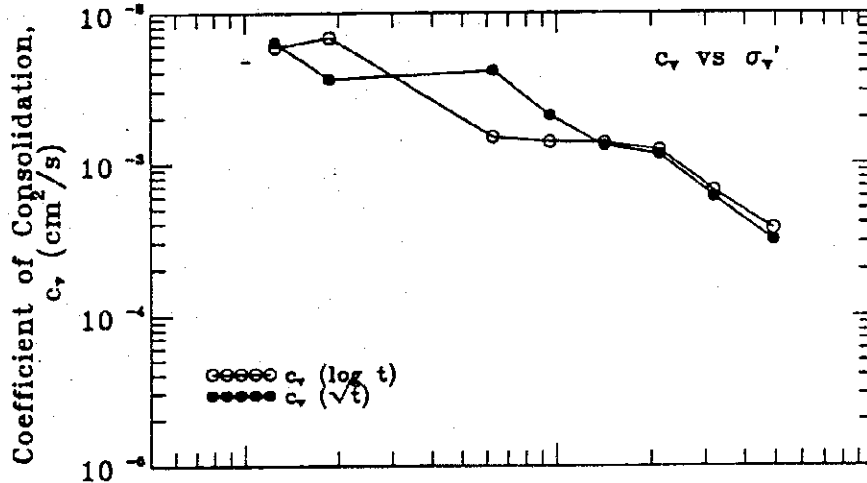
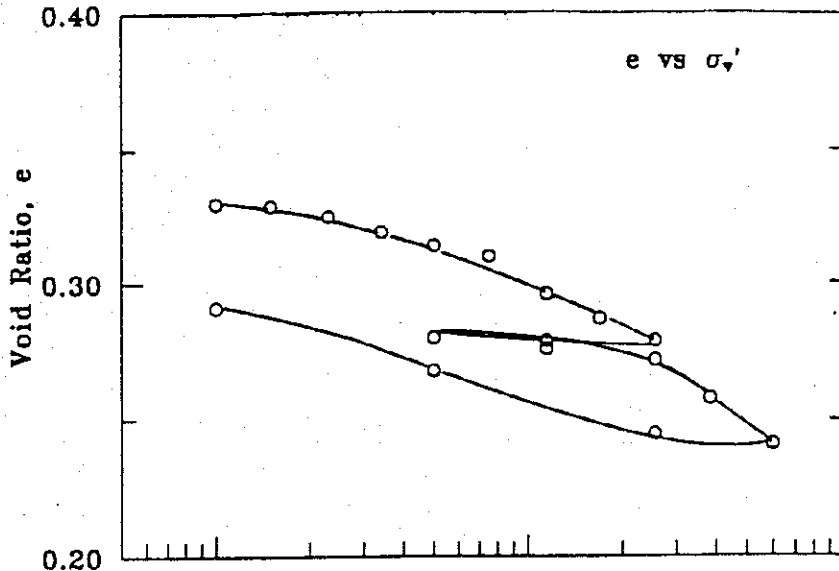
CONSOLIDATION

Project: Subsidence in Bangkok Vicinity Location: SAMUT SAKHON
 Borehole No.: C Depth (m) 290-290.7 Sample No.: Test No.: OH-40
 Soil Description: Tested By: SIH Date: 5-93
 Height of Solids (H_s): 1.421 cm Height of Sample (H_i): 1.900 cm

Incrim. No.	Vert. Stress (kg/cm ²)	Height of Sample (cm)			Vertical Strain (%)		Void Ratio		
		H ₅₀	H ₁₀₀	H _f	e ₁₀₀	e _f	e ₅₀	e ₁₀₀	e _f
1	0.1			1.894		0.3			0.333
2	1.0			1.890		0.5			0.330
3	1.5	1.890	1.889	1.888	0.6	0.6	0.330	0.329	0.329
4	2.3	1.884	1.883	1.883	0.9	0.9	0.326	0.325	0.325
5	3.4			1.875		1.3			0.319
6	5.0			1.867		1.7			0.314
7	7.5	1.864	1.861	1.860	2.1	2.1	0.312	0.310	0.309
8	11.5	1.848	1.842	1.841	3.1	3.1	0.300	0.296	0.296
9	17.0	1.835	1.829	1.827	3.7	3.8	0.291	0.287	0.286
10	25.6	1.819	1.818	1.808	4.3	4.8	0.280	0.279	0.272
11	11.5			1.813		4.6			0.276
12	5.0		1.819	1.821	4.3	4.2		0.280	0.281
13	11.5		1.817	1.816	4.4	4.4		0.279	0.278
14	25.6	1.811	1.807	1.805	4.9	5.0	0.274	0.272	0.270
15	38.5	1.791	1.788	1.786	5.9	6.0	0.260	0.258	0.257
16	60.0	1.773	1.764	1.761	7.2	7.3	0.248	0.241	0.239
17	25.6		1.769	1.770	6.9	6.8		0.245	0.246
18	5.0		1.802	1.804	5.2	5.1		0.268	0.270
19	1.0		1.834	1.834	3.5	3.5		0.291	0.291

Incrim. No.	Vert. Stress (kg/cm ²)	Time (minutes)		Coefficient of Consolidation (cm ² /s)			K _s x 10 cm/s	CR (%)
		t ₉₀	t ₅₀	$\frac{H}{t}$	log t	Average		
1	0.1							
2	1.0							0.2
3	1.5	2.0	0.5	0.00631	0.00586	0.00609	0.64	0.6
4	2.3	3.5	0.4	0.00358	0.00678	0.00518	1.83	1.8
5	3.4							2.3
6	5.0							2.5
7	7.5	3.0	1.9	0.00409	0.00150	0.00280	0.36	2.1
8	11.5	5.8	2.0	0.00209	0.00140	0.00175	0.43	5.4
9	17.0	9.0	2.0	0.00132	0.00138	0.00135	0.16	4.0
10	25.6	10.2	2.2	0.00115	0.00123	0.00119	0.07	3.3
11	11.5							0.8
12	5.0							1.2
13	11.5							0.3
14	25.6	16.0	3.0	0.00072	0.00090	0.00081	0.03	1.5
15	38.5	19.0	4.0	0.00060	0.00066	0.00063	0.05	5.6
16	60.0	36.0	7.0	0.00031	0.00037	0.00034	0.02	6.6
17	25.6							1.3
18	5.0							2.5
19	1.0							2.3

HIGH STRESS OEDOMETER NO. OH-40
 DEPTH: 290-290.7 m SITE: C





E. DATABASE SCREEN DESIGNS


```

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
THE KINGDOM OF THAILAND
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DEPARTMENT OF MINERAL RESOURCES
MINISTRY OF INDUSTRY
AND
PUBLIC WORKS DEPARTMENT
MINISTRY OF INTERIOR
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
THE STUDY ON
MANAGEMENT OF GROUNDWATER AND
LAND SUBSIDENCE IN THE BANGKOK
METROPOLITAN AREA AND ITS VICINITY
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
JAPAN INTERNATIONAL COOPERATION AGENCY
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

```

Press any key to continue...

```

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
GROUNDWATER DATABASE SYSTEM
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
KOKUSAI KOGYO CO., LTD.
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
NOVEMBER 1992
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

```

Date: 06/28/93

```

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DATABASE ==>  W  ...well inventory
              M  ...meteorology
              H  ...hydrology
              G  ...groundwater monitoring
              S  ...land subsidence monitoring
              L  ...literature records
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

```

C:\JICA>

*** WELL INVENTORY DATA ***

Location of Well :

Code	CHANGWAT
01	BANGKOK
02	NONHABURI
03	PATHUM THANI
04	SAMUT PRAKAN
05	SAMUT SAKHON
06	PHRA NAKHON SI AYUTTHAYA
07	NAKHON PATHOM
08	CHACHOENGSAO

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK

Code	AMPHOE
01	CHATUCHAK
02	CHOM THONG
03	DUSIT
04	DON MUANG
05	TALING CHAN
06	THON BURI
07	BANGKOK YAI
08	BUNG KUM
09	BANGKOK NOI
10	PHRA KHANONG
11	BANG KAPI

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK, CHATUCHAK

W Code	TAMBON	W

W 01	LAT YAO	W
W		W
W		W
W		W
W		W
W		W
W		W
W		W
W		W
W		W
W		W
W		W
W		W

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK, CHATUCHAK, LAT YAO

WCode	WELL NAME	W

W 010101-1001	KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)	W
W 010101-1002	GARMENT AND THREAD TEXTILE	W
W 010101-1003	GARMENT AND THREAD TEXTILE	W
W 010101-1004	GARMENT AND THREAD TEXTILE	W
W 010101-1165	MONGKOL REAL ESTATE CO., LTD.	W
W 010101-1166	S. SANTISUK CO., LTD.	W
W 010101-1014	KASETSART UNIVERSITY (3)	W
W 010101-1015	KASETSART UNIVERSITY (1)	W
W 010101-1019	RESIDENCEHOUSE	W
W 010101-1023	ARMY SKILLED WORKS SCHOOL (OFFICE)	W
W 010101-1031	RESIDENCE	W

*** WELL INVENTORY DATA ***

Well Code: 010101-1001
Well Name: KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
Location : BANGKOK, CHATUCHAK, LAT YAO

WELL INFORMATION

Choose...

H Basic Information H
H Design H
H Casing Schedule H
H Screen Section H
H Annular Seal Section H
H Sand Collector Pipe H
H Log Record H
H Development and Well Pumping Test H
H Water Quality H
#####

*** WELL INVENTORY DATA ***

LOCATION: BANGKOK, CHATUCHAK, LAT YAO

H WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE H
H WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY) H
H AQUIFER NAME : H
H ##### H
H Observation Wells Only => AREA CODE: STATION NO.: H
H WELL NO.: New: 109-1417 Old: H
H WELL ADDRESS : SENA NIKHOM 2, PHRAHONYOTHIN, LAT YAO, CHATUCHAK, BANGKOK H
H H
H OWNER: Former : H
H Present: KONGSAKWATANA PAPER CONTAINER CO., LTD H
H Address: 225 SOI.SENANIKHOM 2, PHRAHONYOTHIN RD., T.LAT YAO, H
H A.BANG KHEN, BANGKOK H
H GROUND ELEVATION: 2.00 meters + MSL H
H MAP SHEET NO. : 5136IV H
H COORDINATES H
H Latitude: ' " Longitude: ' " H
H UTM East: UTM North: H
H Grid Zone Designation: 47P H
H Base Map, X : Base Map, Y : H

H Edit... Print... Next... Quit... H

*** WELL INVENTORY DATA ***

LOCATION: BANGKOK, CHATUCHAK, LAT YAO

```

WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
AQUIFER NAME :
DRILLING
Date -- From: / / To: / / (mm/dd/yy)
Driller :
Permit No.: Date of Issuance: / / (mm/dd/yy)
GROUNDWATER USE: INDUSTRIAL:TEXTILE/PAPER/PULP
Permit No.: 1-50929-039
Issuance : 05/29/86 Expiration: 05/28/96 Extension: / / (mm/dd/yy)
Volume Permitted: 60.00 m3/day Meter size: mm
Volume Used : m3/day
OPERATION
Hrs/Day: Days/Wk: Wks/Yr:
SOURCE OF DATA: DMR
Edit... Print... Previous... Quit...

```

*** WELL INVENTORY DATA ***

LOCATION: BANGKOK, CHATUCHAK, LAT YAO

```

WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
AQUIFER NAME :
WELL DESIGN
Drilling Depth : meters
Well Depth : meters
Diameter of Casing: Top: mm Bottom: mm
Diameter of Riser/Suction Pipe: 50 mm
Type of Pump : SUBMERSIBLE
Brand of Pump :
Pump HP Rating :
Rated Pump Capacity: m3/hr
Total Dynamic Head : meters
Pump Setting : 44.00 meters
Brand of Motor :
Motor HP Rating :
Edit... Print... Quit...

```

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK, CHATUCHAK, LAT YAO

W WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
 W WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
 W AQUIFER NAME:

WELL CASING SCHEDULE

Type of Casing :
 Total Length of Casing : meters

No.	Int. Diameter in mm.	DEPTH, meters	
		From	To

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK, CHATUCHAK, LAT YAO

W WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
 W WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
 W AQUIFER NAME:

WELL SCREEN SECTION

Total Length of Screens : meters

No.	Int. Diameter TYPE= millimeters	GAUZE OPENING, millimeters		DEPTH, meters	
		NO.	NO.	From	To

- *TYPE: 1 - Slotted Perforation
 2 - Continuous-Slot (Johnson) Screen
 3 - Wedge Wire Wound Screen
 4 - Louvered and Bridge Slot Screen

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK, CHATUCHAK, LAT YAO
 WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
 WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
 AQUIFER NAME:

ANNULAR SEAL SECTIONS

Size of Gravel : millimeters
 Gravel Pack Interval Depth
 Below Ground Surface, From : meters
 To : meters

Int.	Type of Material	DEPTH, meters	
No.		From	To
1	R	0	0
2	R	0	0

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK, CHATUCHAK, LAT YAO
 WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
 WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
 AQUIFER NAME:
 SAND COLLECTOR PIPE
 Total Length of Pipe: meters
 Pipe Diameter : millimeters
 Pipe Interval Depth
 Below Ground Surface -- From: meters
 To: meters

;; Edit... Print... Quit... ;;

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK, CHATUCHAK, LAT YAO

WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
AQUIFER NAME:

WELL LOG RECORD

ELECTRIC LOGGING

Resistivity log (Y/N) :
Spontaneous Potential (SP) log (Y/N) :

RADIATION LOGGING

Gamma-Ray log (Y/N) :

Str. DEPTH, meters
No. From To
M M M
M M M

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK, CHATUCHAK, LAT YAO

WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
AQUIFER NAME:

WELL LOG RECORD

ELECTRIC LOGGING

Resistivity log (Y/N) :
Spontaneous Potential (SP) log (Y/N) :

RADIATION LOGGING

Gamma-Ray log (Y/N) :

Description...
TYPE

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK, CHATUCHAK, LAT YAO
WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
AQUIFER NAME:

WELL LOG RECORD

ELECTRIC LOGGING

Resistivity log (Y/N) :
Spontaneous Potential (SP) log (Y/N):

RADIATION LOGGING

Gamma-Ray log (Y/N) :

Description...
GRAIN

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK, CHATUCHAK, LAT YAO
WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
AQUIFER NAME:

WELL LOG RECORD

ELECTRIC LOGGING

Resistivity log (Y/N) :
Spontaneous Potential (SP) log (Y/N):

RADIATION LOGGING

Gamma-Ray log (Y/N) :

Description...
COLOR

*** WELL INVENTORY DATA ***

Location of Well : BANGKOK, CHATUCHAK, LAT YAO

WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE

WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)

AQUIFER NAME:

WELL DEVELOPMENT

Method :

Date -- From: / / To: / / (mm/dd/yy)

Duration : hours

Well Discharge: m3/hr

PUMPING TEST

Date : / / Type of Pump: SUBMERSIBLE

Pump Capacity : m3/hr Pump Setting : m

Static Water Level: m Drawdown : m

Yield : m3/hr Specific Capacity : m3/hr/m

Flow Measurement :

Duration : hours Type of Test :

Transmissivity : m2/day Storage Coefficient:

Edit... Print... Quit... :

*** WELL INVENTORY DATA ***

LOCATION: BANGKOK, CHATUCHAK, LAT YAO

WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE

WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)

AQUIFER NAME:

WATER QUALITY

Sampling Method :

Date of Sampling: / / (mm/dd/yy)

Date of Analysis: / / (mm/dd/yy)

PHYSICAL QUALITY

pH

Specific Conductivity micromhos/cm

Turbidity units

Color units

Odor

Temperature degree Centigrade

Alkalinity mg/l as CaCo3

Acidity mg/l as CaCo3

Residual Chlorine mg/l

Edit... Print... Next... Quit... :

*** WELL INVENTORY DATA ***

LOCATION: BANGKOK, CHATUCHAK, LAT YAO
 WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
 WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
 AQUIFER NAME:
 CHEMICAL QUALITY (mg/l)
 Calcium, Ca Magnesium, Mg
 Sodium, Na Potassium, K
 Dissolved Iron, Fe Total Iron, Fe
 Manganese, Mn Copper, Cu
 Zinc, Zn Chloride, Cl
 Sulphate, SO4 Carbonate, CO3
 Bicarbonate, HCO3 Carbon Dioxide, CO2
 Nitrite, NO2 Nitrate, NO3
 Flouride, F Total Solids
 Total Hardness as CaCO3 Noncarbonate Hardness
 Edit... Print... Previous... Next... Quit... :

*** WELL INVENTORY DATA ***

LOCATION: BANGKOK, CHATUCHAK, LAT YAO
 WELL CODE : 010101-1001 TYPE: PRIVATE STATUS: ACTIVE
 WELL NAME : KONGSAKWATTANA PAPER CONTAINER CO., LTD. (FACTORY)
 AQUIFER NAME:
 TOXIC ELEMENTS (mg/l)
 Arsenic, As Cyanide, CN
 Lead, Pb Mercury, Hg
 Cadmium, Cd Selenium, Se
 Chromium, Cr
 TRACE ELEMENTS (mg/l)
 Barium, Ba Silver, Ag
 Phenols Bromide, Br
 Iodide, I
 Edit... Print... Previous... Quit... :


```

#####
# Station Code :          Type :          Status :          #
# Station Name :          #
# Location :              #
#####

```

```

TEMPERATURE  ==> Mean Minimum Maximum
in %C                                               Monthly Annual

```

```

#####
# YEAR JAN FEB MAR APR MAY #
#####
# # # # # # # # # # #
# # # # # # # # # # #
# # # # # # # # # # #
# # # # # # # # # # #
# # # # # # # # # # #
#####

```

```

#####
# Station Code :          Type :          Status :          #
# Station Name :          #
# Location :              #
#####

```

```

TEMPERATURE  ==> Mean Minimum Maximum
in %C                                               Monthly Annual

```

```

#####
# YEAR TEMPERATURE #
#####
# # # # # # # # # # #
# # # # # # # # # # #
# # # # # # # # # # #
# # # # # # # # # # #
#####

```

```

# Station Code ;          Type ;          Status ;          #
# Station Name ;          #
# Location ;              #

```

EVAPORATION ==> Monthly Annual
in millimeters

```

# YEAR JAN FEB MAR APR MAY #
# # # # # # #
# # # # # # #
# # # # # # #
# # # # # # #
# # # # # # #

```

```

# Station Code ;          Type ;          Status ;          #
# Station Name ;          #
# Location ;              #

```

EVAPORATION ==> Monthly Annual
in millimeters

```

# YEAR EVAPORATION #
# # # #
# # # #
# # # #
# # # #

```

Station Code : Type : Status : #
 # Station Name : #
 # Location : #

HUMIDITY ==>>>> Monthly Annual
 in percent

YEAR	JAN	FEB	MAR	APR	MAY
#	#	#	#	#	#
#	#	#	#	#	#
#	#	#	#	#	#
#	#	#	#	#	#
#	#	#	#	#	#

Station Code : Type : Status : #
 # Station Name : #
 # Location : #

HUMIDITY ==>>>> Monthly Annual
 in percent

YEAR	HUMIDITY
#	#
#	#
#	#
#	#
#	#

Station Code : Type : Status : #
 # Station Name : #
 # Location : #

WIND VELOCITY =====> Monthly Annual
 in m/sec

#	YEAR	JAN	FEB	MAR	APR	MAY	#
#		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	#

Station Code : Type : Status : #
 # Station Name : #
 # Location : #

WIND VELOCITY =====> Monthly Annual
 in m/sec

#	YEAR	WIND VELOCITY	#
#		0	#
#		0	#
#		0	#
#		0	#
#		0	#


```

# Station Code :          Type :          Status : #
# Station Name :          #
# Location :              #

```

SOLAR RADIATION ==>>> Monthly Annual

```

# YEAR JAN FEB MAR APR MAY #
# # # # # # # #
# # # # # # # #
# # # # # # # #
# # # # # # # #
# # # # # # # #

```

```

# Station Code :          Type :          Status : #
# Station Name :          #
# Location :              #

```

SOLAR RADIATION ==>>> Monthly Annual

```

# YEAR YDATA #
# # # # #
# # # # #
# # # # #
# # # # #

```


Hydrological Gaging Station Code :
 River Basin :
 River :
 Location :
 Station :
 Status :

GAGE HEIGHT ====> Monthly Annual
 in meters

YEAR	JAN	FEB	MAR	APR	MAY

Hydrological Gaging Station Code :
 River Basin :
 River :
 Location :
 Station :
 Status :

GAGE HEIGHT ====> Monthly Annual
 in meters

YEAR	GAGE HEIGHT

*** GROUNDWATER MONITORING ***

Location of the Station:

Code	CHANGWAT
01	BANGKOK
02	NONTHABURI
03	PATHUM THANI
04	SAMUT PRAKAN
05	SAMUT SAKHON
06	PHRA NAKHON SI AYUTTHAYA
07	NAKHON PATHOM
08	CHACHOENGSAO

*** GROUNDWATER MONITORING ***

Location of the Station: BANGKOK

Code	AMPHOE
01	CHATUCHAK
02	CHOM THONG
03	DUSIT
04	DON MUANG
05	TALING CHAN
06	THON BURI
07	BANGKOK YAI
08	BUNG KUM
09	BANGKOK NOI
10	PHRA KHANONG
11	BANG KAPI

*** GROUNDWATER MONITORING ***

Location of the Station; BANGKOK, CHATUCHAK

W	Code	TAMBON		W
W	01	LAT YAO		W
W				W
W				W
W				W
W				W
W				W
W				W
W				W
W				W
W				W
W				W
W				W
W				W
W				W

*** GROUNDWATER MONITORING ***

Location of the Station; BANGKOK, CHATUCHAK, LAT YAO

W	WCode	WELL NO.	X	Y	W
W					W
W					W
W					W
W					W
W					W
W					W
W					W
W					W
W					W
W					W
W					W
W					W
W					W

*** GROUNDWATER MONITORING ***

```

WELL Code: Well No.
X Y
Location of the Station: BANGKOK, CHATUCHAK, LAT YAO

```

```

Choose...
Monitoring Station Information
Groundwater Level: Simultaneous
Continuous
Water Quality

```

*** GROUNDWATER MONITORING ***

```

WELL Code: WELL No.
MAP SHEET NO.
COORDINATES
X Y
Latitude Longitude
UTM East UTM North
Grid Zone Designation
AGENCY Responsible Status
Station No. Area Code
Benchmark No. Benchmark Code
Benchmark Elevation
Address
Changwat : BANGKOK
Amphoe : CHATUCHAK
Tambon : LAT YAO
TYPE OF OBSERVATION:
PERIOD OF RECORDS : From: To:
REMARKS
Edit... Print... Quit...

```

*** GROUNDWATER MONITORING ***

Well Code: Well No. 2
 X 2 Y 2
 Location of the Station: BANGKOK, CHATUCHAK, LAT YAO
 Benchmark Code 2 Benchmark No. 2
 Benchmark Elevation:

*** GROUNDWATER LEVEL SURVEY REPORT ***

Well Code	Top of Casing	Groundwater	Elevation	H2O Level Below Surface	Date of Measurement
2	2	2	2	2	2
2	2	2	2	2	2
2	2	2	2	2	2

*** GROUNDWATER MONITORING ***

Well Code: Well No. 2
 X 2 Y 2
 Location of the Station: BANGKOK, CHATUCHAK, LAT YAO

GROUNDWATER LEVEL ==> Monthly Annual
 + MSL

YEAR	JAN	FEB	MAR	APR	MAY
2	2	2	2	2	2
2	2	2	2	2	2
2	2	2	2	2	2
2	2	2	2	2	2

*** GROUNDWATER MONITORING ***

Well Code: Well No. ๘
 X ๘ Y ๘
 Location of the Station: BANGKOK, CHATUCHAK, LAT YAO ๘

GROUNDWATER LEVEL ===== Monthly Annual
 m + MSL

YEAR	GROUNDWATER LEVEL
๘	๘
๘	๘
๘	๘
๘	๘

*** GROUNDWATER MONITORING ***

Well Code: Well No. ๘
 X ๘ Y ๘
 Location of the Station: BANGKOK, CHATUCHAK, LAT YAO ๘

*** PHYSICAL AND CHEMICAL QUALITY OF WATER ***

Parameter	Concentration	Date of Sampling
๘	๘	๘
๘	๘	๘
๘	๘	๘
๘	๘	๘
๘	๘	๘

*** BENCHMARK INFORMATION ***

Benchmark Code	AGENCY Responsible	Station No.	Area Code	Benchmark No.
๘	๘	๘	๘	๘
๘	๘	๘	๘	๘
๘	๘	๘	๘	๘
๘	๘	๘	๘	๘
๘	๘	๘	๘	๘
๘	๘	๘	๘	๘
๘	๘	๘	๘	๘
๘	๘	๘	๘	๘
๘	๘	๘	๘	๘
๘	๘	๘	๘	๘
๘	๘	๘	๘	๘

*** BENCHMARK INFORMATION ***

```

BENCHMARK Code      Type
Depth of Benchmark: meters
Location of Benchmark:
Changwat
Amphoe
Tambon
Details
CRITICAL ZONE
MAP SHEET NO.
COORDINATES
Latitude      Longitude
UTM East      UTM North
Grid Zone Designation
Base Map, X      Base Map, Y
PERIOD OF RECORDS From: To:
REMARKS
ELEVATION      SOIL LAYER COMPRESSION
LAND SUBSIDENCE      PORE WATER PRESSURE
Edit... Print... Quit...
    
```

*** BENCHMARK INFORMATION ***

```

#BENCHMARK Code      Type
#Depth of Benchmark: meters
#Location of Benchmark:
# Changwat
# Amphoe
# Tambon
# Details
#CRITICAL ZONE
  
```

*** ELEVATION DATA ***

```

# Year      Elevation, m + MSL
#
#
#
  
```

*** BENCHMARK INFORMATION ***

```

#BENCHMARK Code      Type
#Depth of Benchmark: meters
#Location of Benchmark:
# Changwat
# Amphoe
# Tambon
# Details
#CRITICAL ZONE
  
```

*** LAND SUBSIDENCE ***

```

# Year      Land Subsidence
#
#
#
  
```

*** BENCHMARK INFORMATION ***

```

#BENCHMARK Code      ;              Type ;
#Depth of Benchmark;              meters
#Location of Benchmark:
# Changwat      ;
# Amphoe       ;
# Tambon       ;
# Details      ;
#CRITICAL ZONE ;
#SOIL LAYER COMPRESSION ==>              Monthly      Annual
# in millimeters
# YEAR  JAN      FEB      MAR      APR      MAY
#
#
#
#

```

*** BENCHMARK INFORMATION ***

```

#BENCHMARK Code      ;              Type ;
#Depth of Benchmark;              meters
#Location of Benchmark:
# Changwat      ;
# Amphoe       ;
# Tambon       ;
# Details      ;
#CRITICAL ZONE ;
#SOIL LAYER COMPRESSION ==>              Monthly      Annual
# in millimeters
# YEAR  SOIL LAYER COMPRESSION
#
#
#
#

```

*** BENCHMARK INFORMATION ***

#BENCHMARK Code : Type : #
 #Depth of Benchmark: meters #
 #Location of Benchmark: #
 # Changwat : #
 # Amphoe : #
 # Tambon : #
 # Details : #
 #CRITICAL ZONE : #
 PORE WATER PRESSURE ==> Monthly Annual
 in t/m2
 # YEAR JAN FEB MAR APR MAY #
 # # # # # # # #
 # # # # # # # #
 # # # # # # # #
 # # # # # # # #

*** BENCHMARK INFORMATION ***

#BENCHMARK Code : Type : #
 #Depth of Benchmark: meters #
 #Location of Benchmark: #
 # Changwat : #
 # Amphoe : #
 # Tambon : #
 # Details : #
 #CRITICAL ZONE : #
 PORE WATER PRESSURE ==> Monthly Annual
 in t/m2
 # YEAR PORE WATER PRESSURE #
 # # # # # # # #
 # # # # # # # #
 # # # # # # # #

*** LITERATURE: List of Subjects ***

Code	Subject
101	Hydrogeology
102	Geology
103	Groundwater Development and Management
104	Artificial Groundwater Recharge
105	Groundwater Modelling and Simulations
106	Geochemistry
107	Well Inventory Survey
108	Salt Water Intrusion and Modelling
109	Groundwater Laws
110	Groundwater Utilization
111	Groundwater Management Organizations
112	Optimal Groundwater Pumpage Planning
113	Test Well Drilling, Core Boring and Pumping Test

*** LITERATURE RECORDS ***

Code	Literature Title
0004	
1002	

*** LITERATURE RECORDS ***

```

Literature Code      : 0004
Title
Author
Subject Matter      : 108 Salt Water Intrusion and Modelling
                   : 101 Hydrogeology
                   : 105 Groundwater Modelling and Simulations
                   : 106 Geochemistry
                   : 111 Groundwater Management Organizations

```

ABSTRACT :

Edit... Print... Quit...

*** LITERATURE RECORDS ***

```

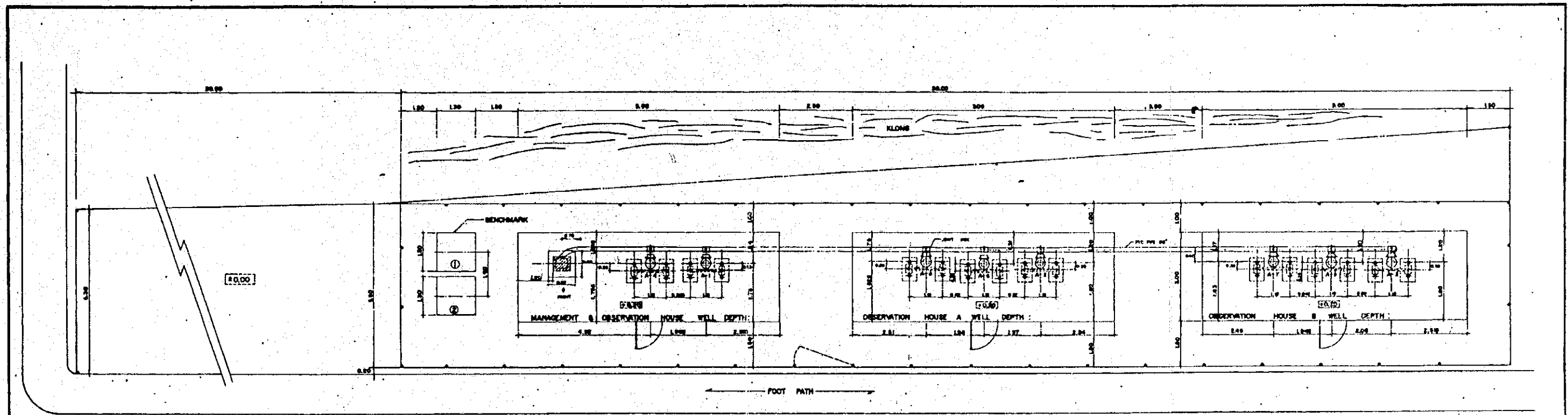
Literature Code      : 0004
Title
Author
Subject Matter      : 108 Salt Water Intrusion and Modelling
                   : 101 Hydrogeology
                   : 105 Groundwater Modelling and Simulations
                   : 106 Geochemistry
                   :
ABSTRACT :

```

Edit... Print... Quit...

F. DRAWINGS OF MONITORING STATIONS

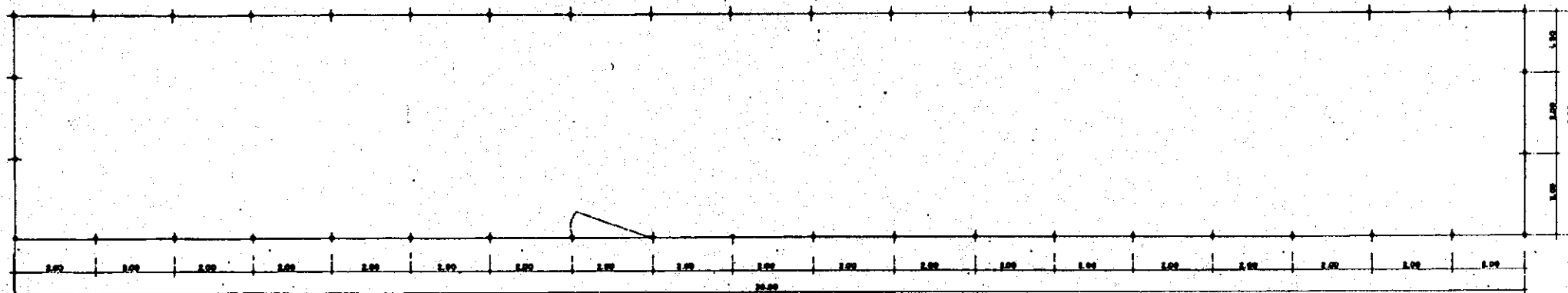
F.1 Site A



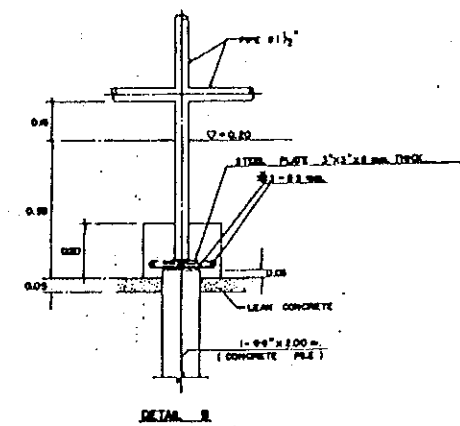
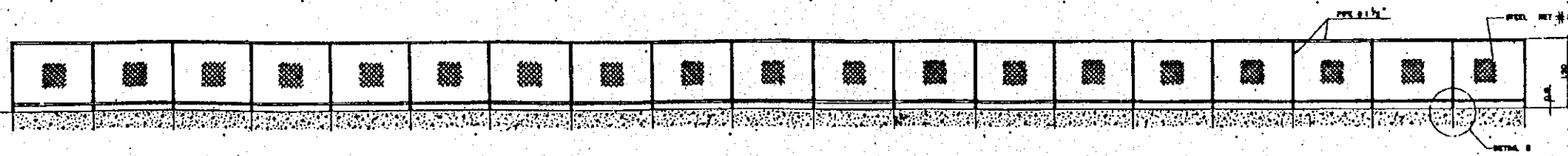
LAYOUT PLAN OF THE OBSERVATION HOUSE SITE A (LAT KRABANG)

RD47
[0.00]

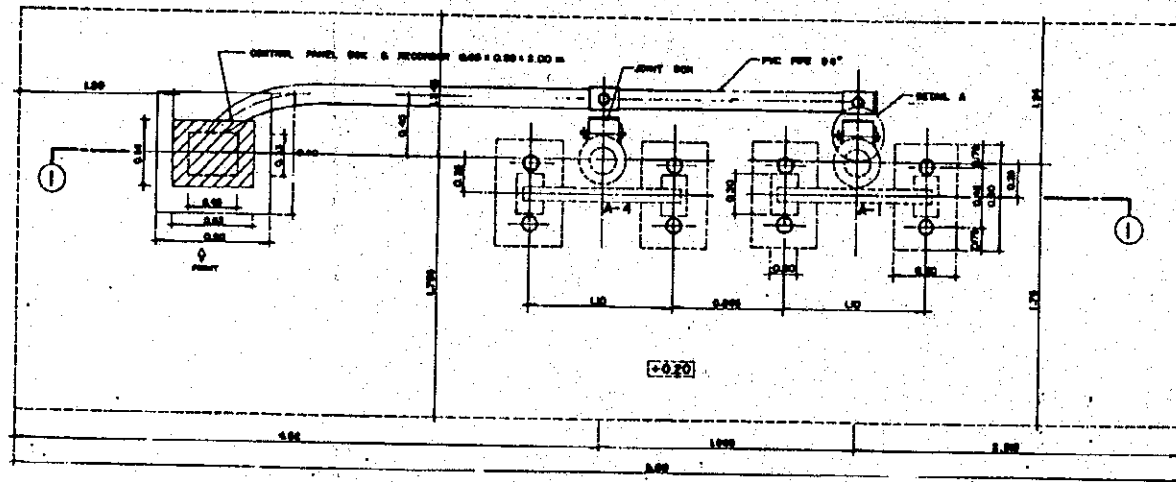
PROJECT: SITE A (LAT KRABANG)		
SHOW	LAYOUT PLAN	REVISION
SCALE	1:50	02.05.1955
SITE 04-0-55		
CONTRACTOR	SIAM TONE CO., LTD.	DRAWN
		1/5



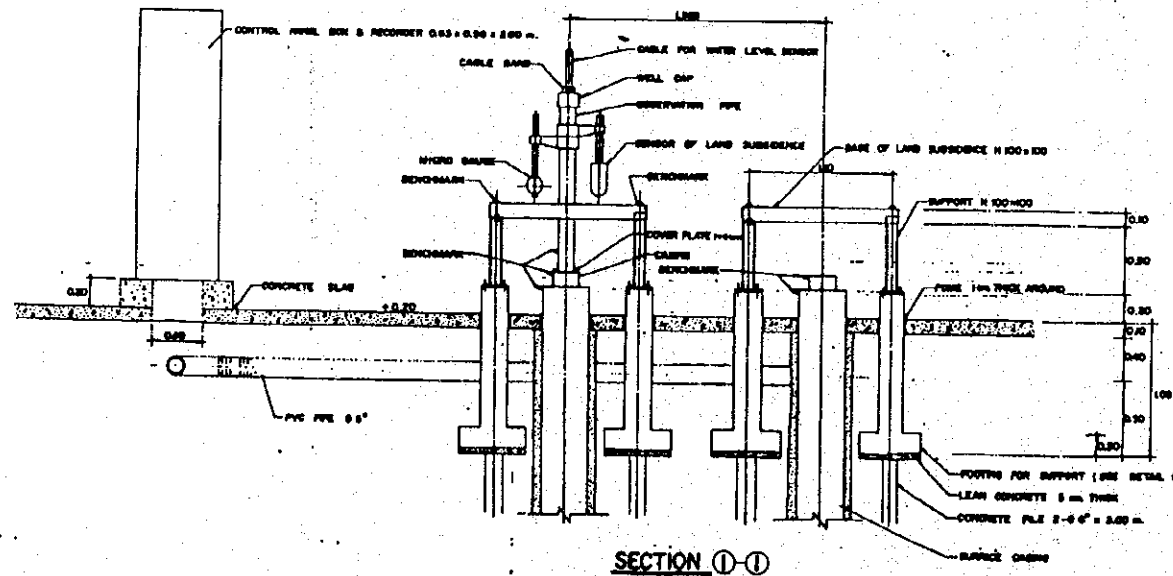
STEEL NET FENCE
SCALE 1:50



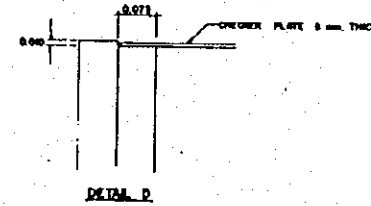
PROJECT: SITE A (LAT KRABANG)			
DESCRIPTION	STEEL NET FENCE	REVISION	1
SCALE	1:50	DATE	10-6-98
DATE	10-6-98	CONTRACTOR	MAN TONE CO., LTD
			2/8



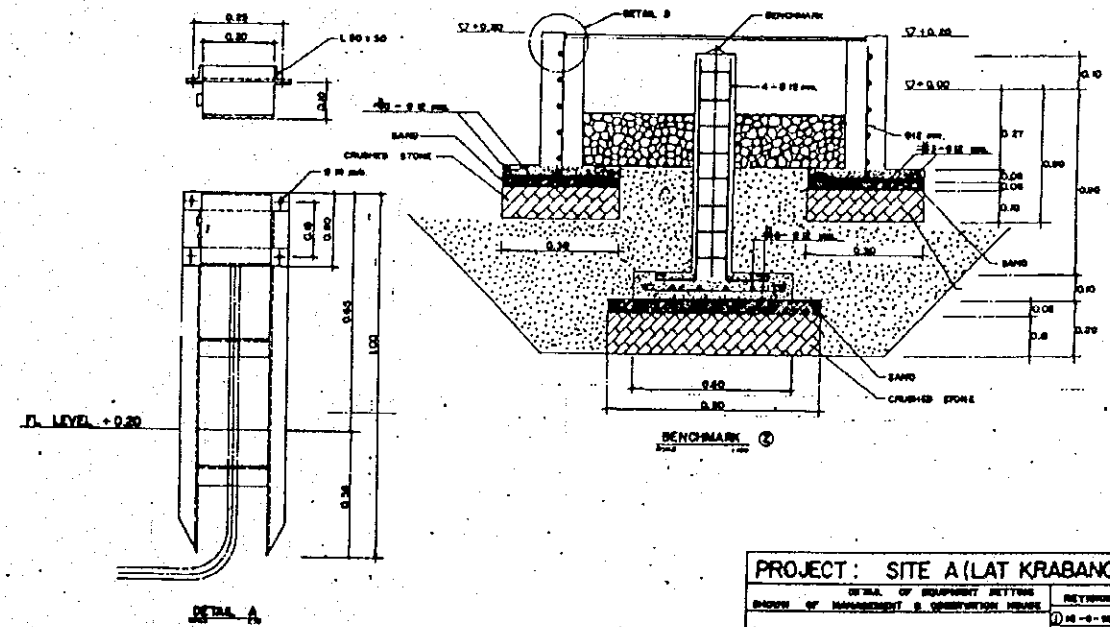
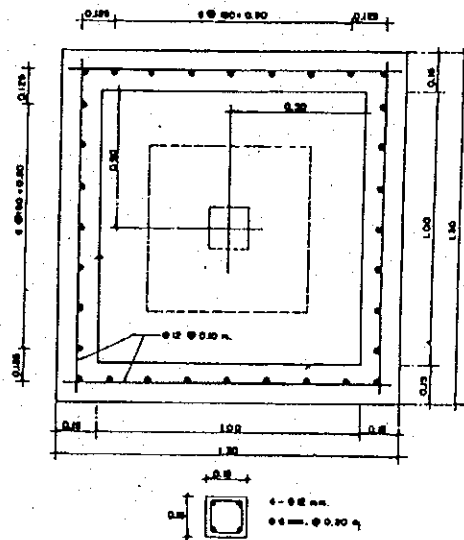
MANAGEMENT & OBSERVATION HOUSE



SECTION 1-1

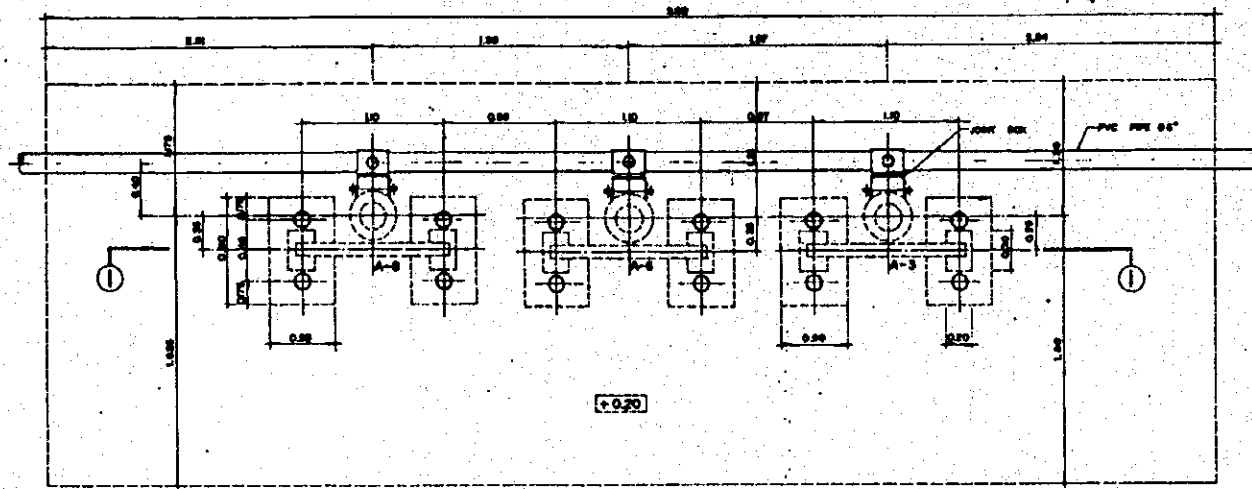


DETAIL D

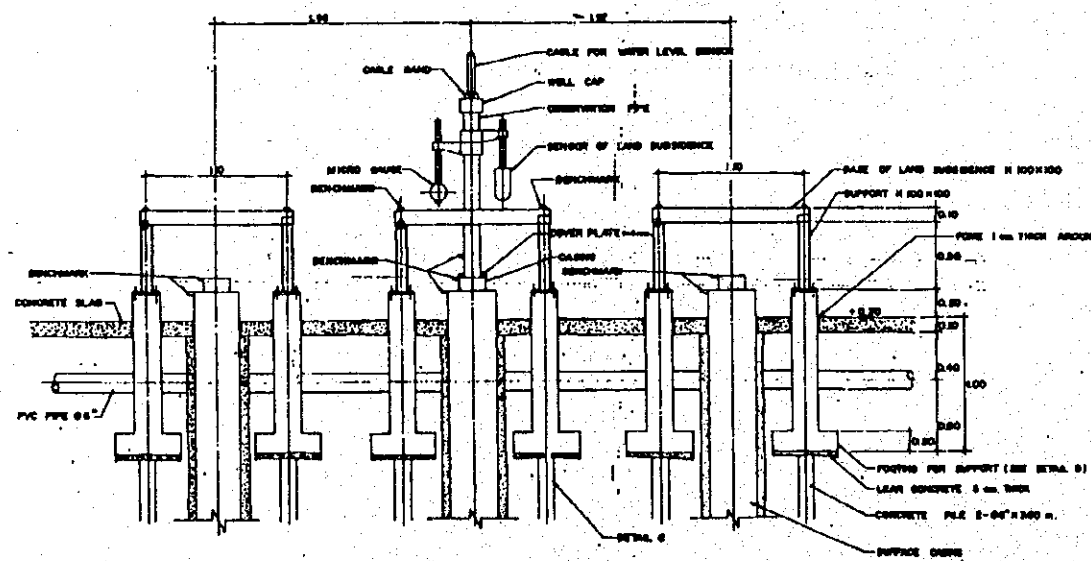


DETAIL A

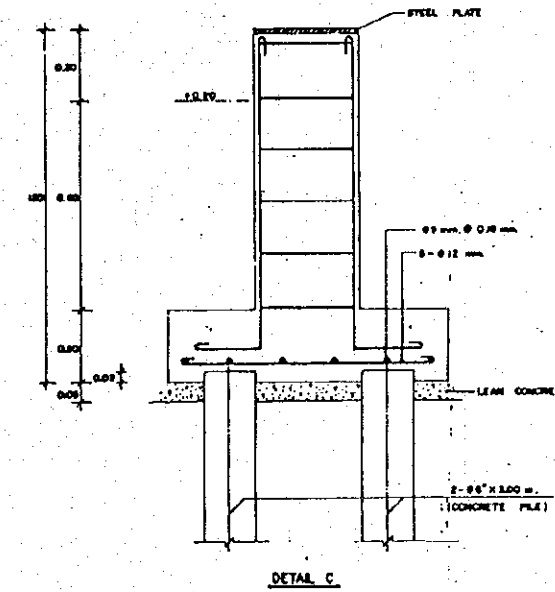
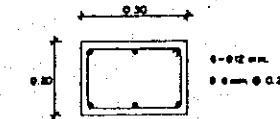
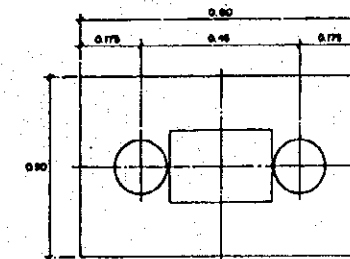
PROJECT: SITE A (LAT KRABANG)	
DETAIL OF EQUIPMENT SETTING	REVISION
HOUSE OF MANAGEMENT & OBSERVATION HOUSE	① 18-6-50
SCALE: 1:25	
DATE: 7-6-50	
CONTRACTOR:	DWG. NO.
SIAM TONE CO., LTD.	3/8
1/8" Scale 01 Series - Not Used, Single, Dimensions 2000 No. 22281	



OBSERVATION HOUSE A

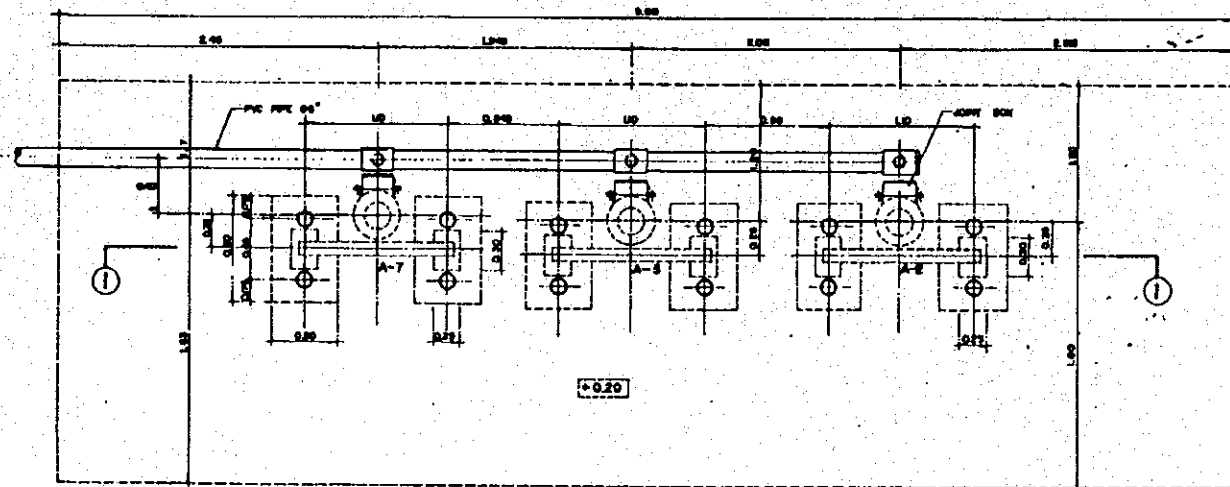


SECTION 1-1

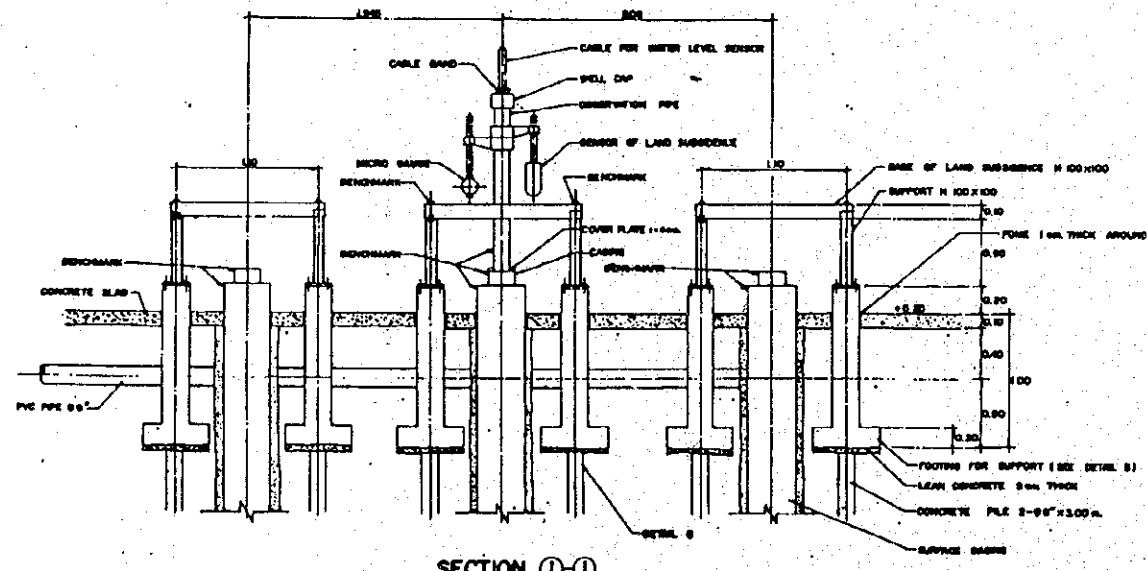
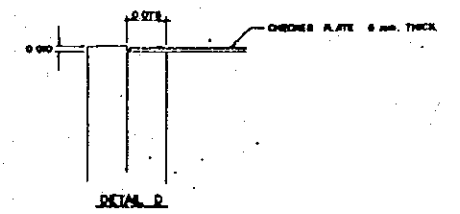
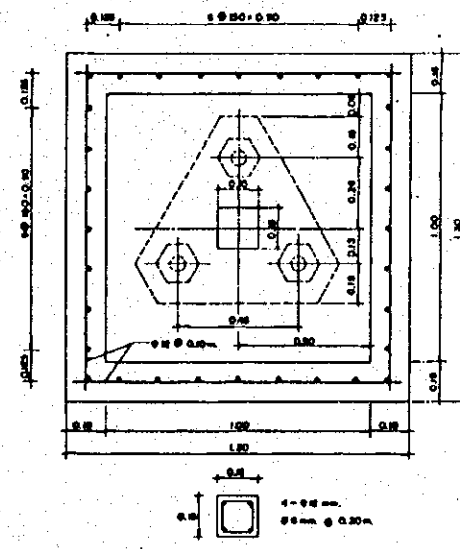


DETAIL C

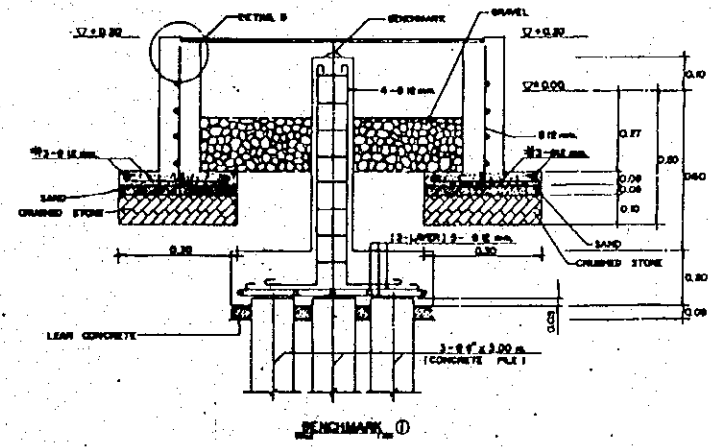
PROJECT: SITE A (LAT KRABANG)	
DRAWN: SETTIEN W. SUPRIATNO	CHECKED: [Signature]
SCALE: 1:20	DATE: 10-5-82
SITE: S-6-32	CONTRACTOR: SIAM TONE CO., LTD.
CONTRACTOR: SIAM TONE CO., LTD.	4/5



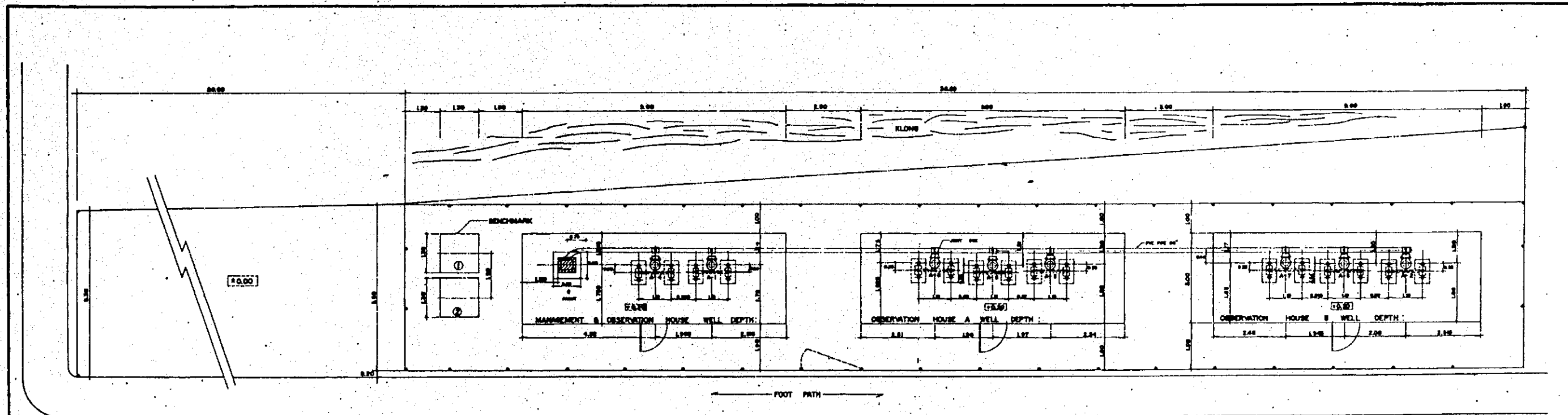
OBSERVATION HOUSE B



SECTION 1-1



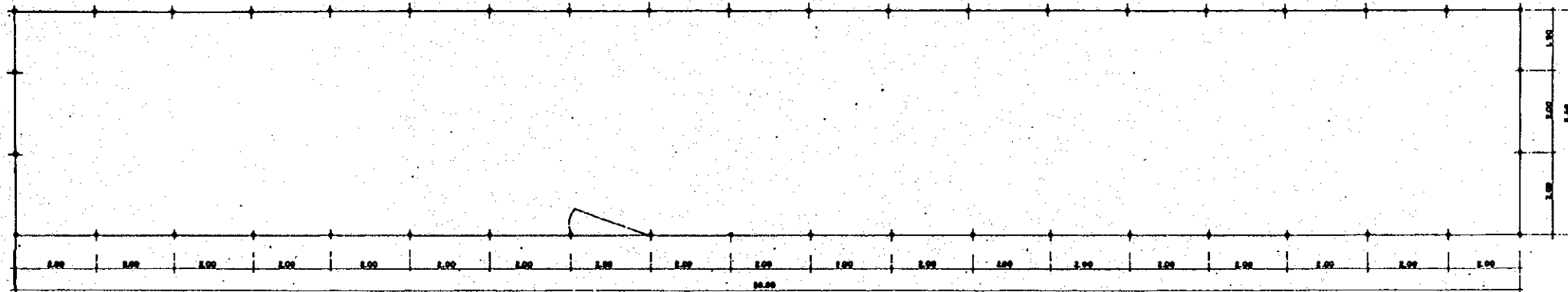
PROJECT: SITE A (LAT KRABANG)	
DETAIL OF EQUIPMENT	REVISION
FOUNDATION OF OBSERVATION HOUSE B	① 10-1-90
DATE: 2-8-90	
CONTRACTOR: SAM TONG CO., LTD	DWG. NO: 5/8



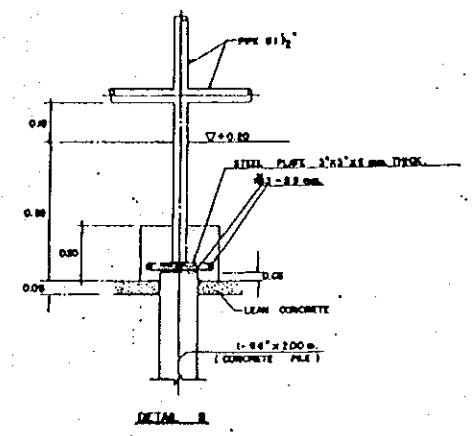
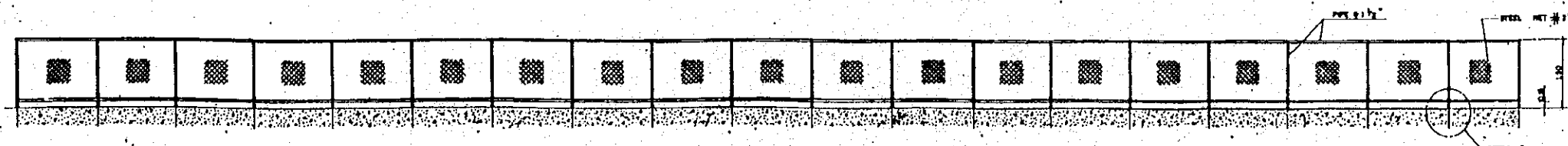
LAYOUT PLAN OF THE OBSERVATION HOUSE SITE A (LAT KRABANG)

ROAD
 4.00

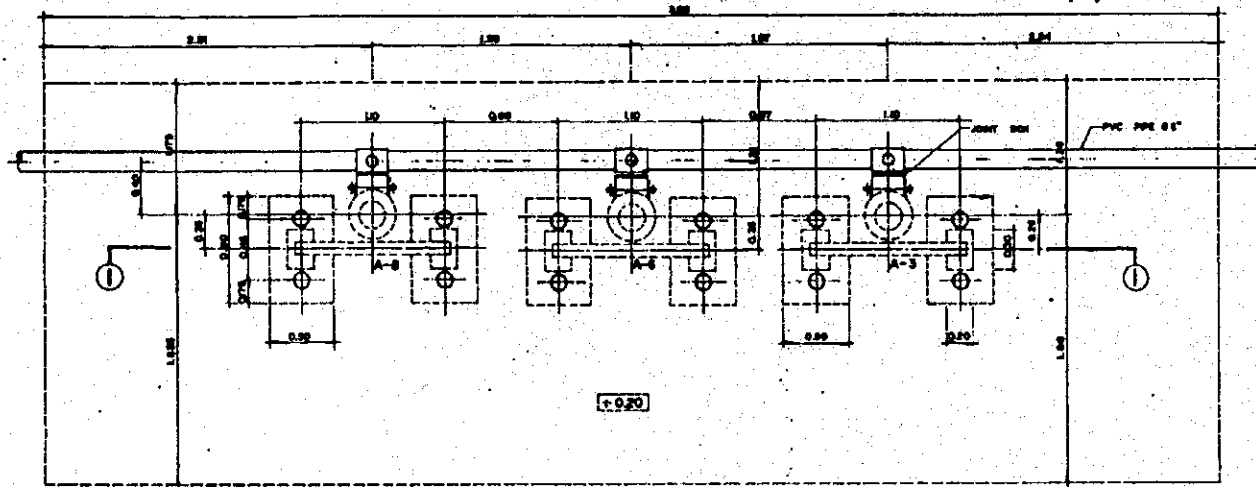
PROJECT: SITE A (LAT KRABANG)	
DRAWN: LAYOUT PLAN	REVISION: 01
SCALE: 1:50	DATE: 01-0-92
CONTRACTOR: SEAM TONE CO., LTD.	PAGE NO: 1/1



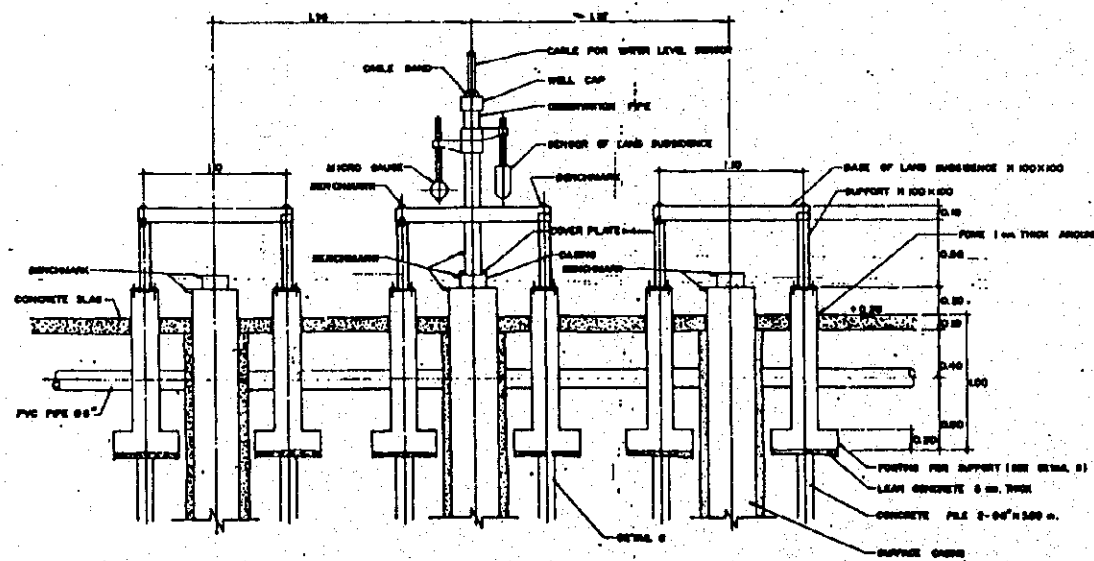
STEEL NET FENCE
SCALE 1:50



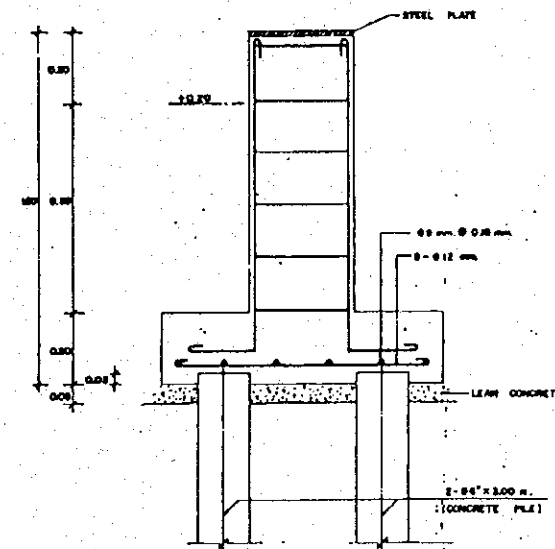
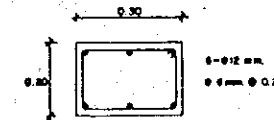
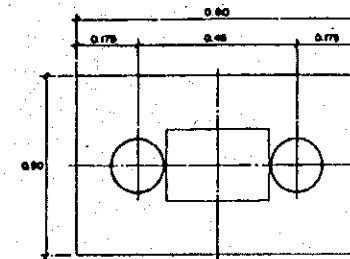
PROJECT : SITE A (LAT KRABANG)	
NO. 1	STEEL NET FENCE
DATE	18-8-98
CONTRACTOR	MAH TONG CO., LTD
REVISION	1/18-8-98
NO. 2	2/8



OBSERVATION HOUSE A

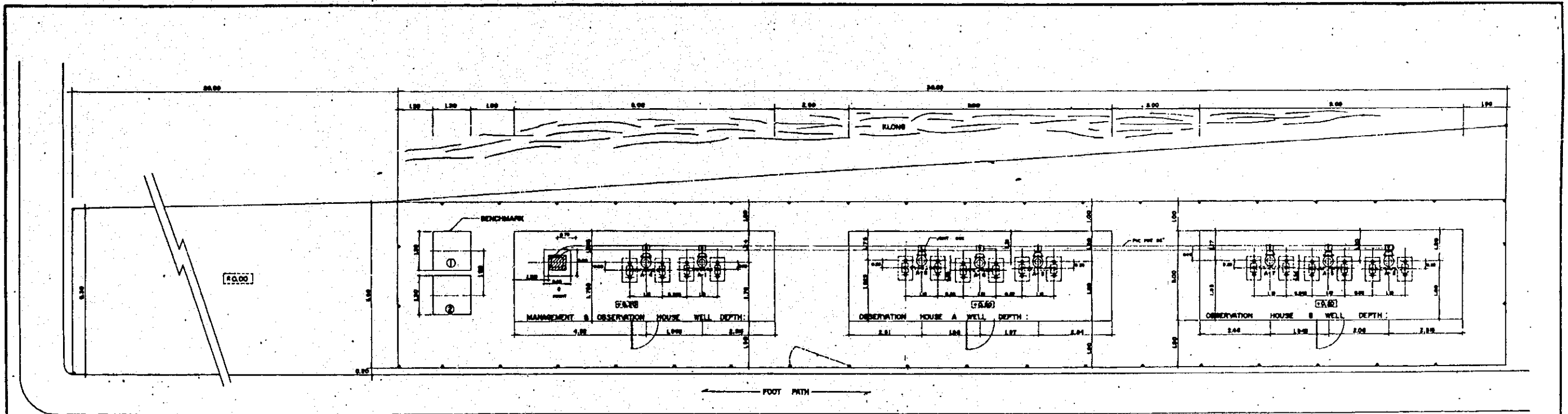


SECTION 1-1



DETAIL C

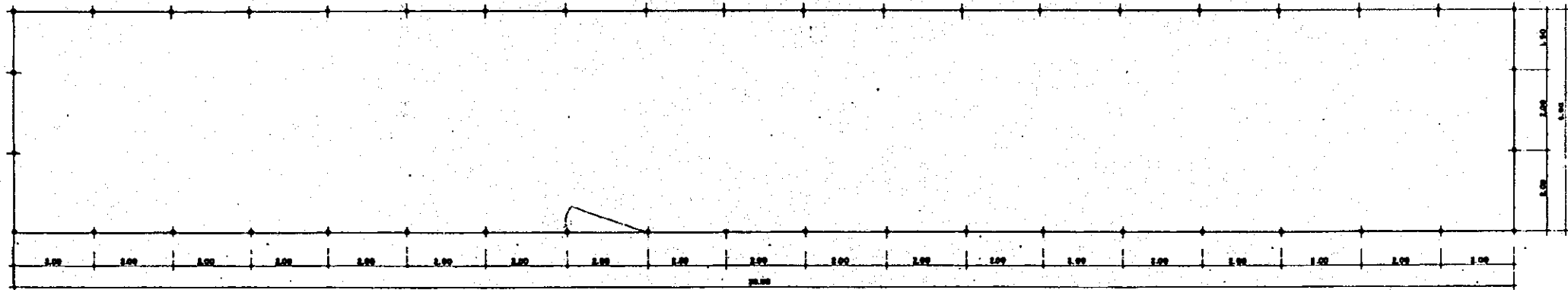
PROJECT: SITE A (LAT KRABANG)	
DESIGNER	DATE
REVISION	NO.
DATE	NO.
CONTRACTOR	NO.
SIAM TONE CO., LTD.	4/5



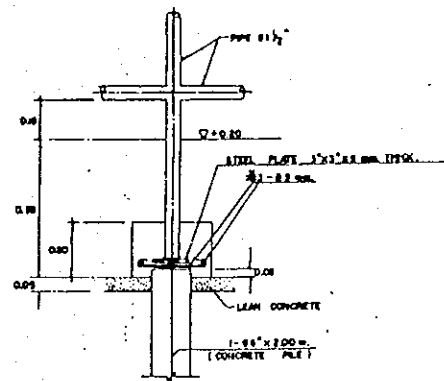
LAYOUT PLAN OF THE OBSERVATION HOUSE SITE A (LAT KRABANG)

ROAD
20.00

PROJECT: SITE A (LAT KRABANG)		
ISSUE	LAYOUT PLAN	REVISION
SCALE	1:50	① 10-6-59
DATE	01-9-59	
CONTRACTOR	SIAM TONE CO., LTD.	1/5
<small>1/5 must be 01 Design, Not Red, Design, Dimensions must be in meters</small>		

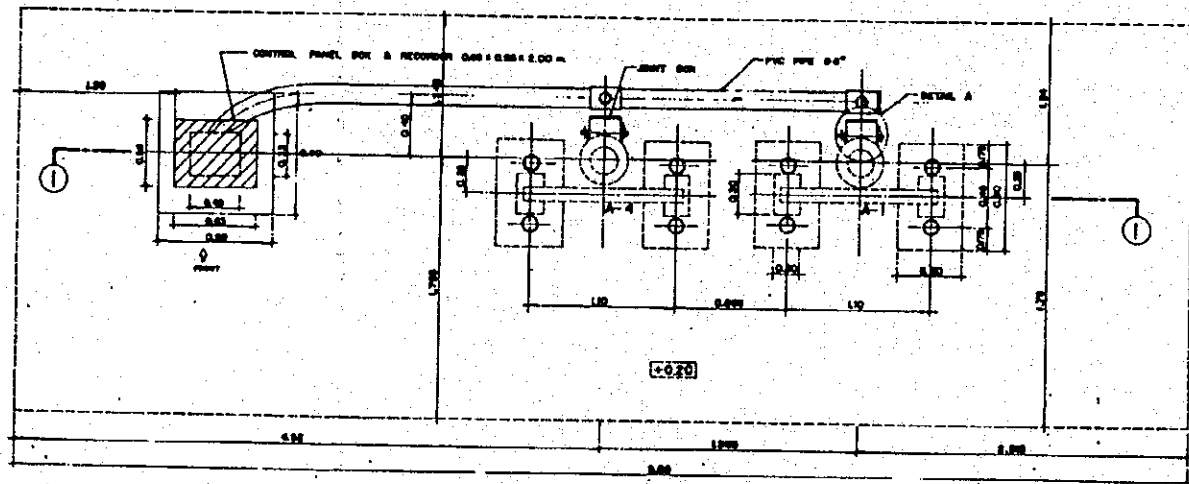


STEEL NET FENCE
SCALE 1:50

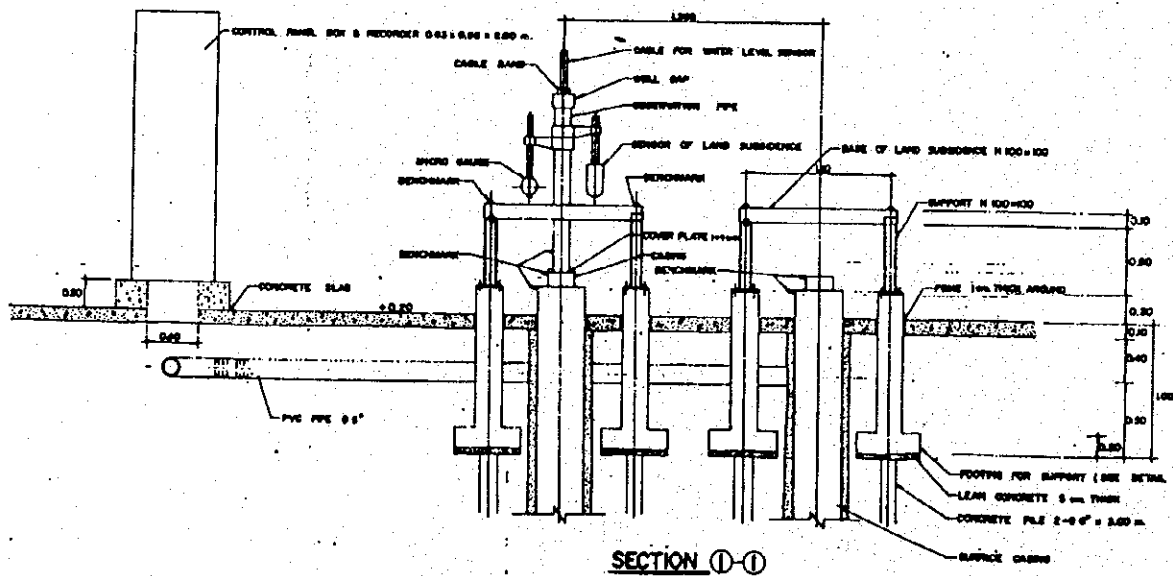


DETAIL B

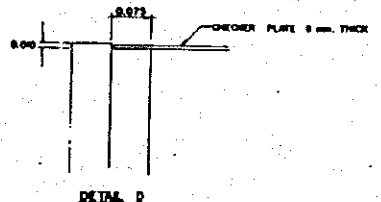
PROJECT: SITE A (LAT KRABANG)		
SYMBOL	STEEL NET FENCE	REVISION
SCALE	1:50	① 10-6-56
DATE	10-6-55	
CONTRACTOR	SIAM TONE CO., LTD	PPR. NO.
		2/3



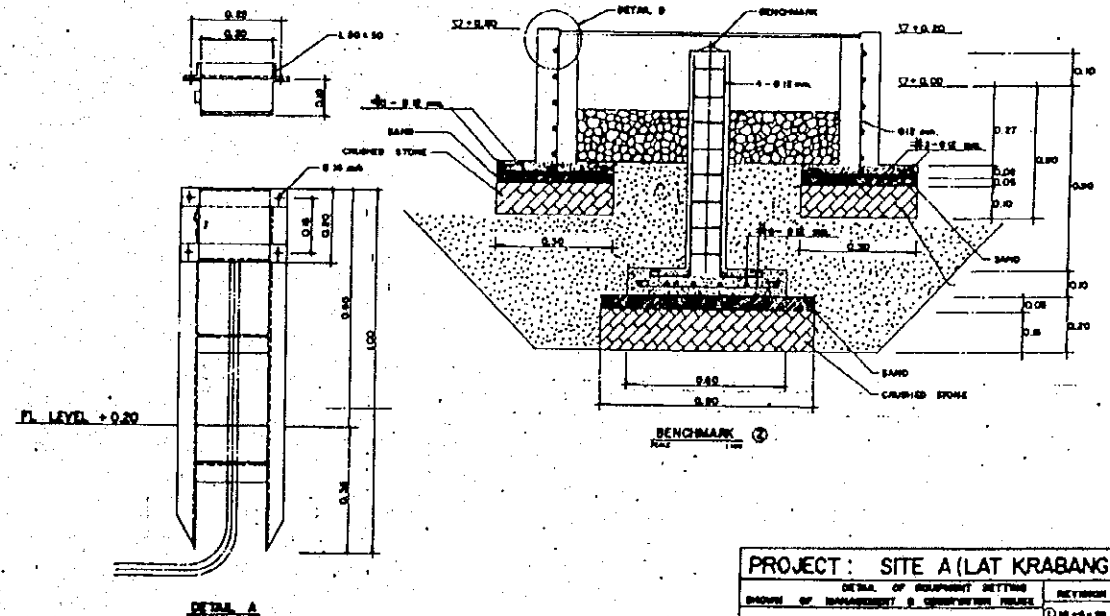
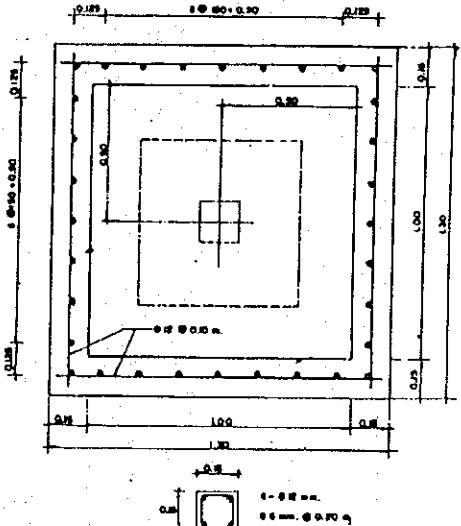
MANAGEMENT & OBSERVATION HOUSE



SECTION 1-1

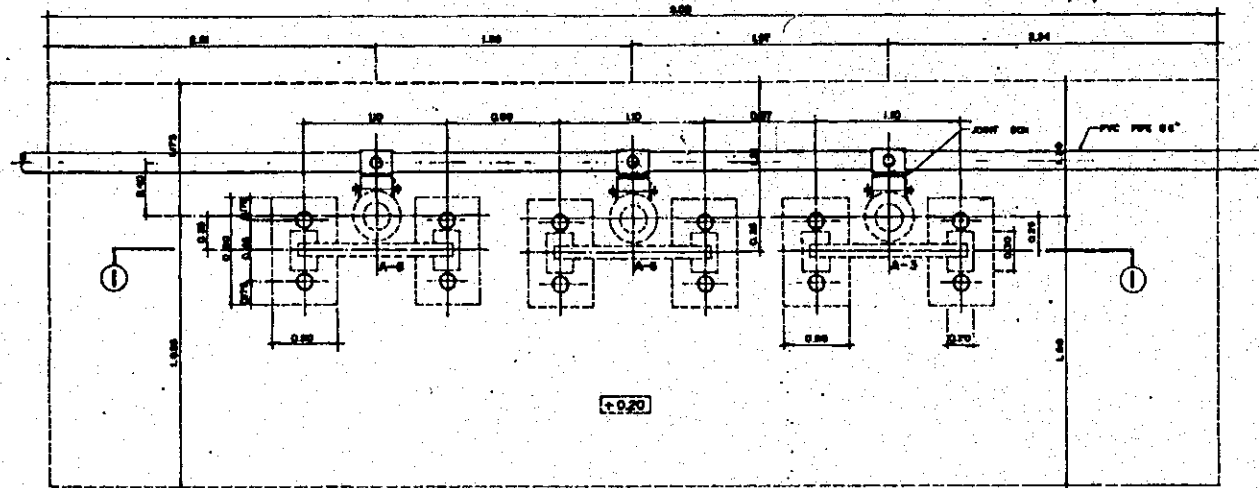


DETAIL D

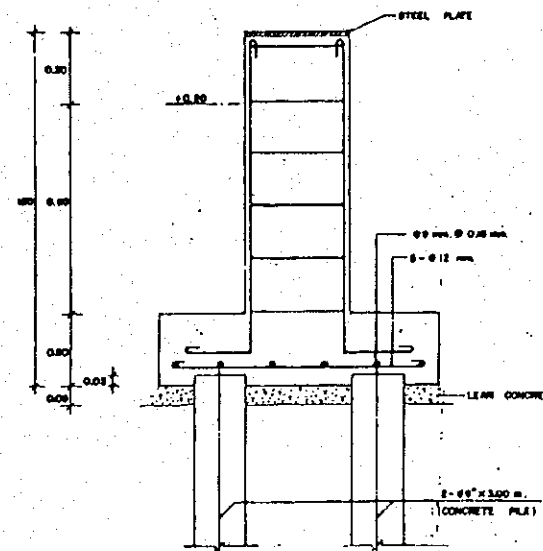
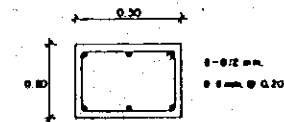
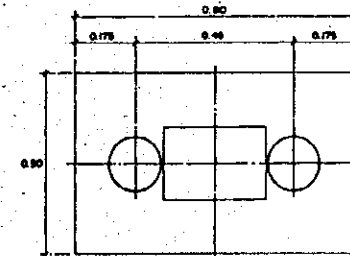


DETAIL A

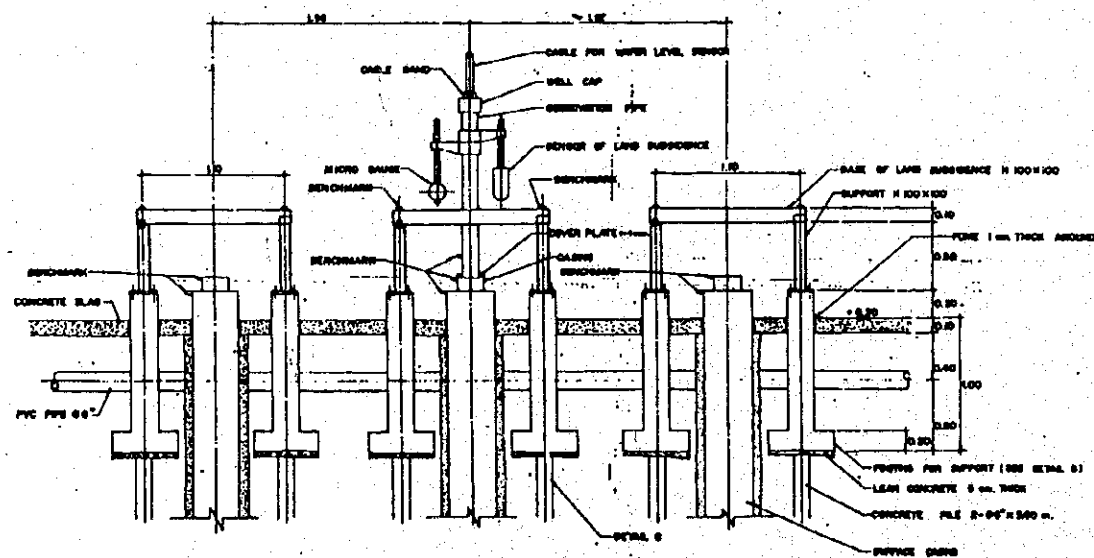
PROJECT: SITE A (LAT KRABANG)	
DEPARTMENT OF SURVEYING & MAPPING	REVISION
SECTION OF MANAGEMENT & OBSERVATION HOUSE	① OF ①
SCALE 1:50	
DATE 7-8-98	
CONTRACTOR	NO. OF SHEETS
SIAM TONE CO., LTD.	3/8



OBSERVATION HOUSE A

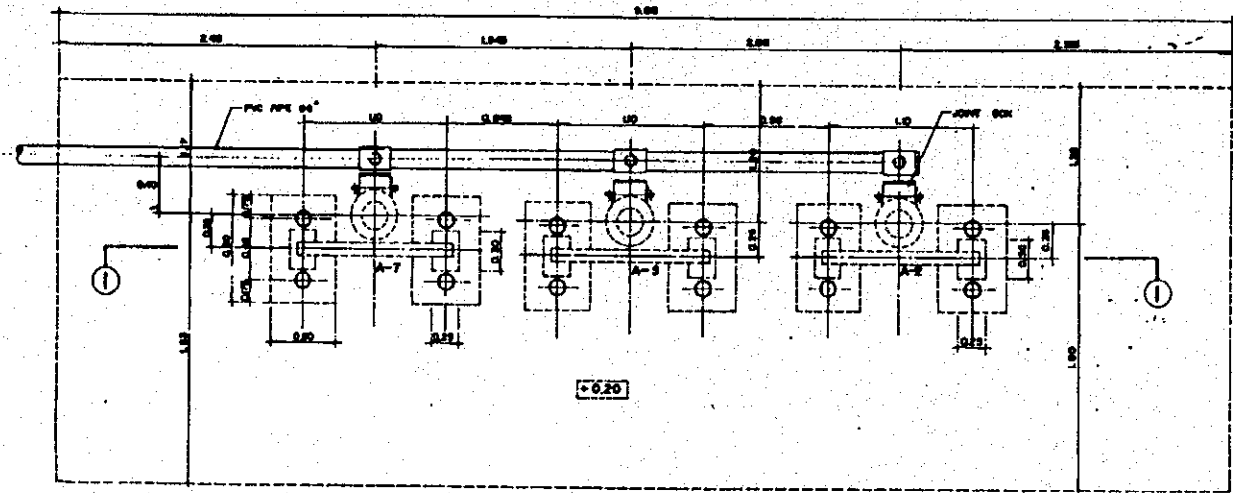


DETAIL C

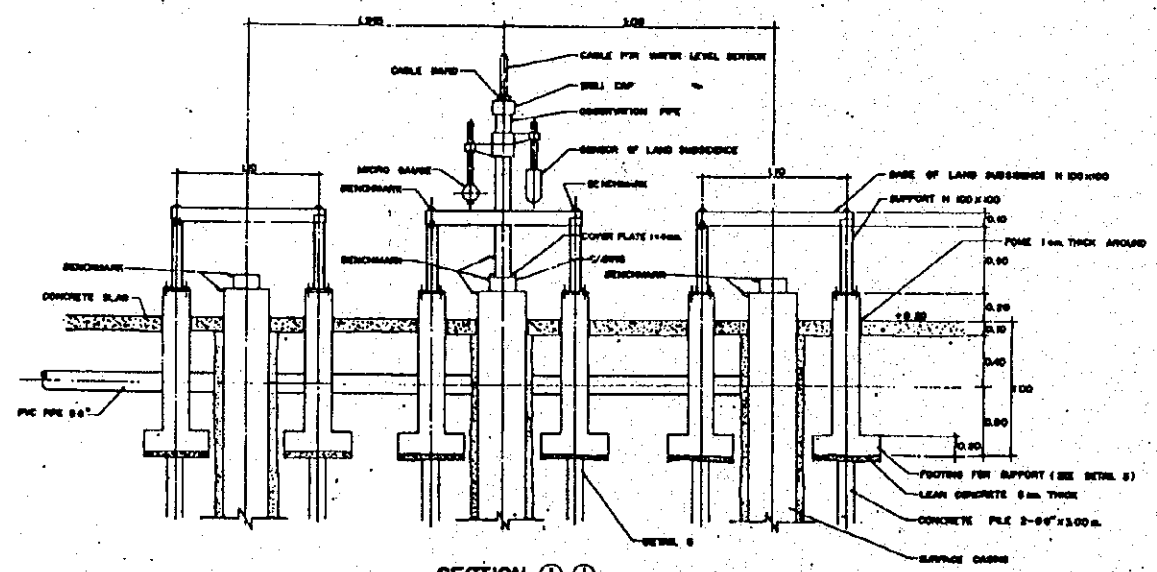
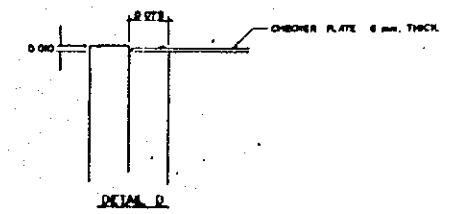
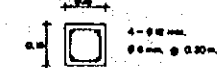
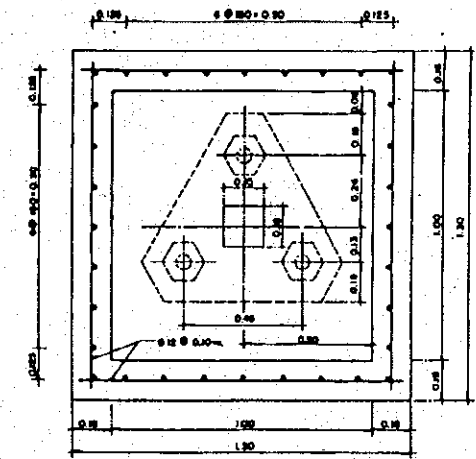


SECTION ①-①

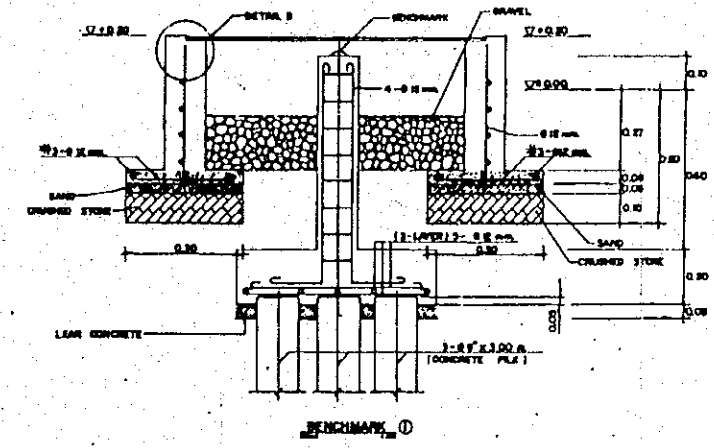
PROJECT: SITE A (LAT KRABANG)	
DETAIL OF EQUIPMENT	REVISION
SHOW SETTING OF OBSERVATION POINT A	①-①-0-01
SCALE: 1:50	
SITE: S-1-50	
CONTRACTOR	DATE: 10/4/78
SIAM TONE CO., LTD.	4/78



OBSERVATION HOUSE B



SECTION ①-①



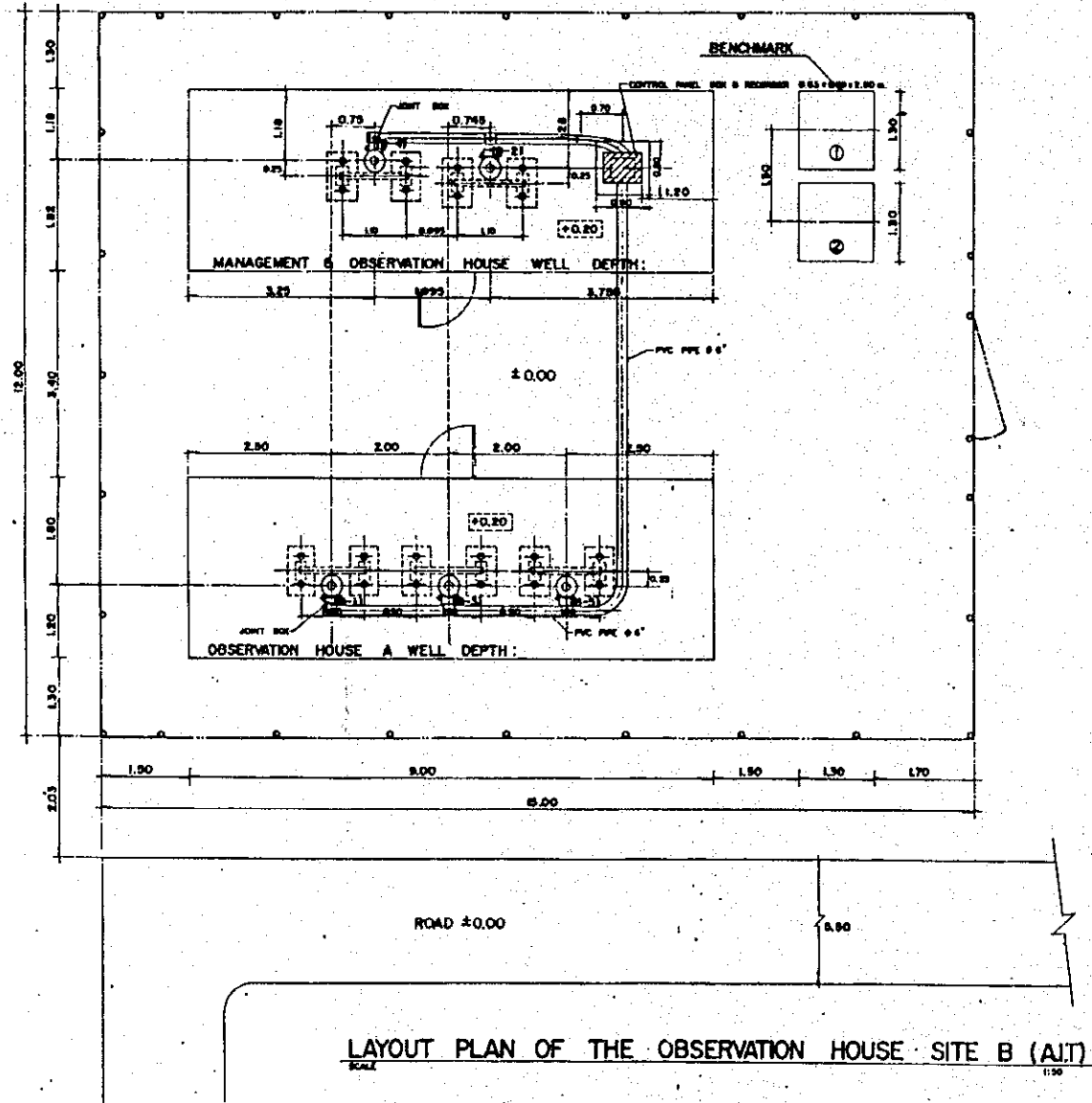
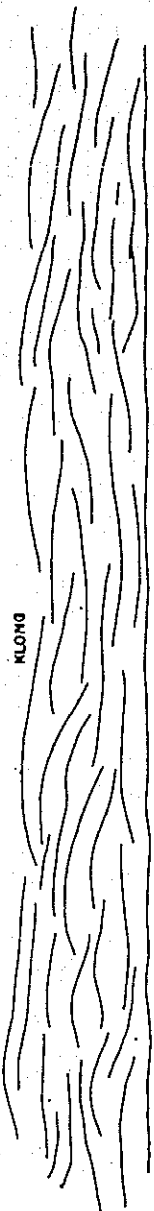
BENCHMARK ①

PROJECT: SITE A (LAT KRABANG)	
DETAIL OF EQUIPMENT	REVISION
ROUGH SETTING OF BENCHMARK HOUSE B	① B-6-80
SCALE: F.S.M.	
DATE: 8-5-80	
DESIGNED BY:	
SIAM YONG CO., LTD.	
5/8	

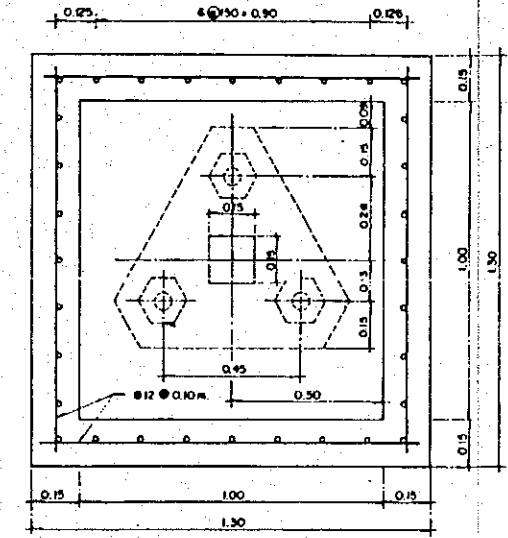


F. DRAWINGS OF MONITORING STATIONS

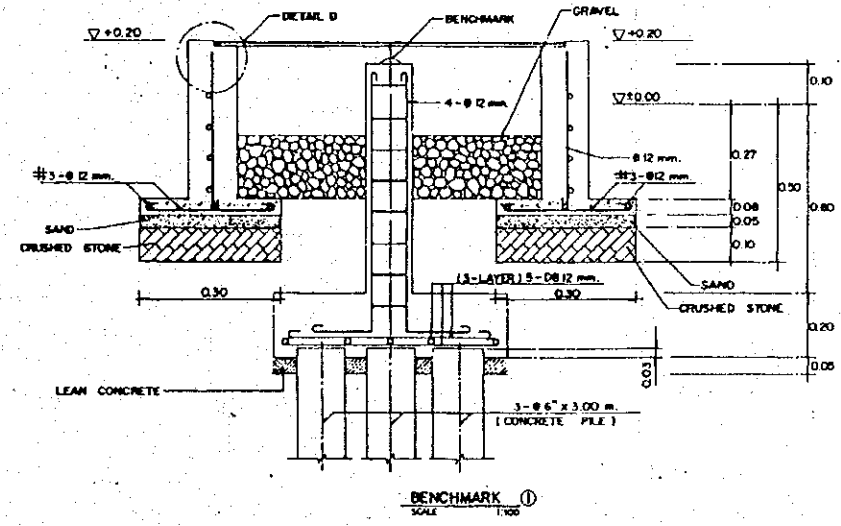
F.2 Site B



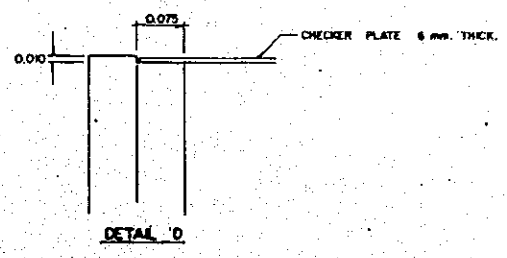
LAYOUT PLAN OF THE OBSERVATION HOUSE SITE B (A.I.T)
SCALE 1:50



4-#12 mm.
#6 mm @ 0.20 m.

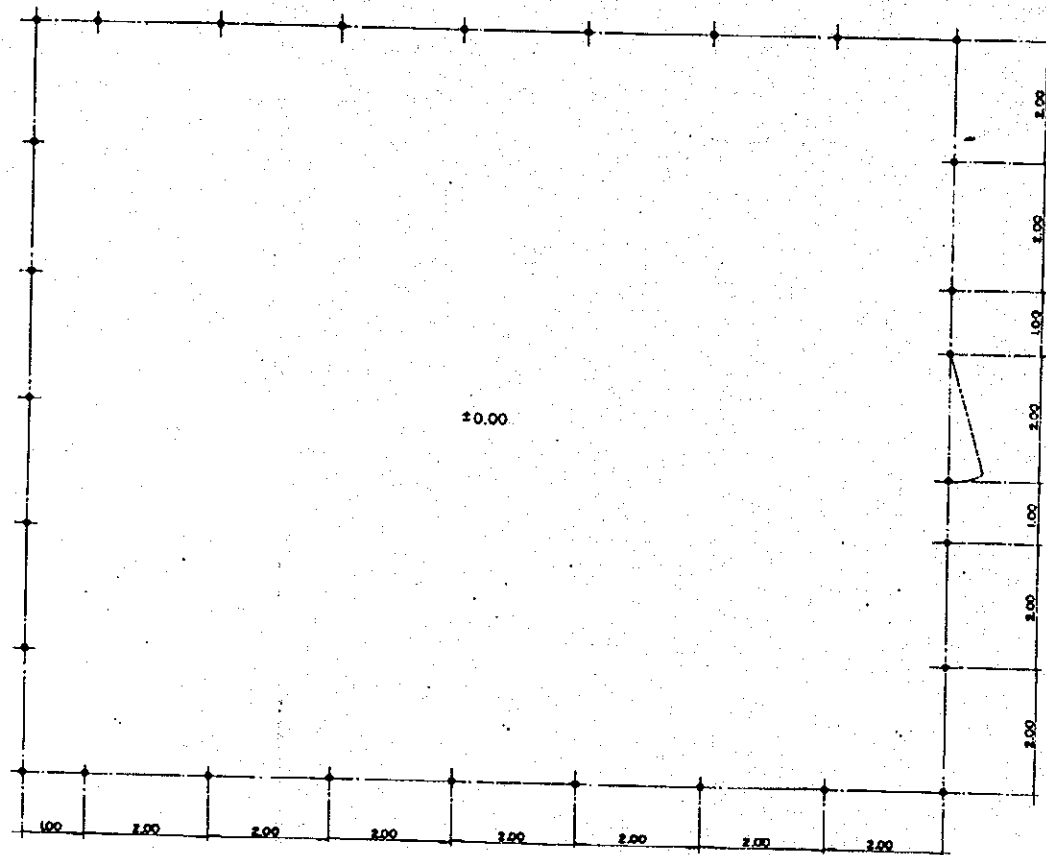


BENCHMARK ①
SCALE 1:100

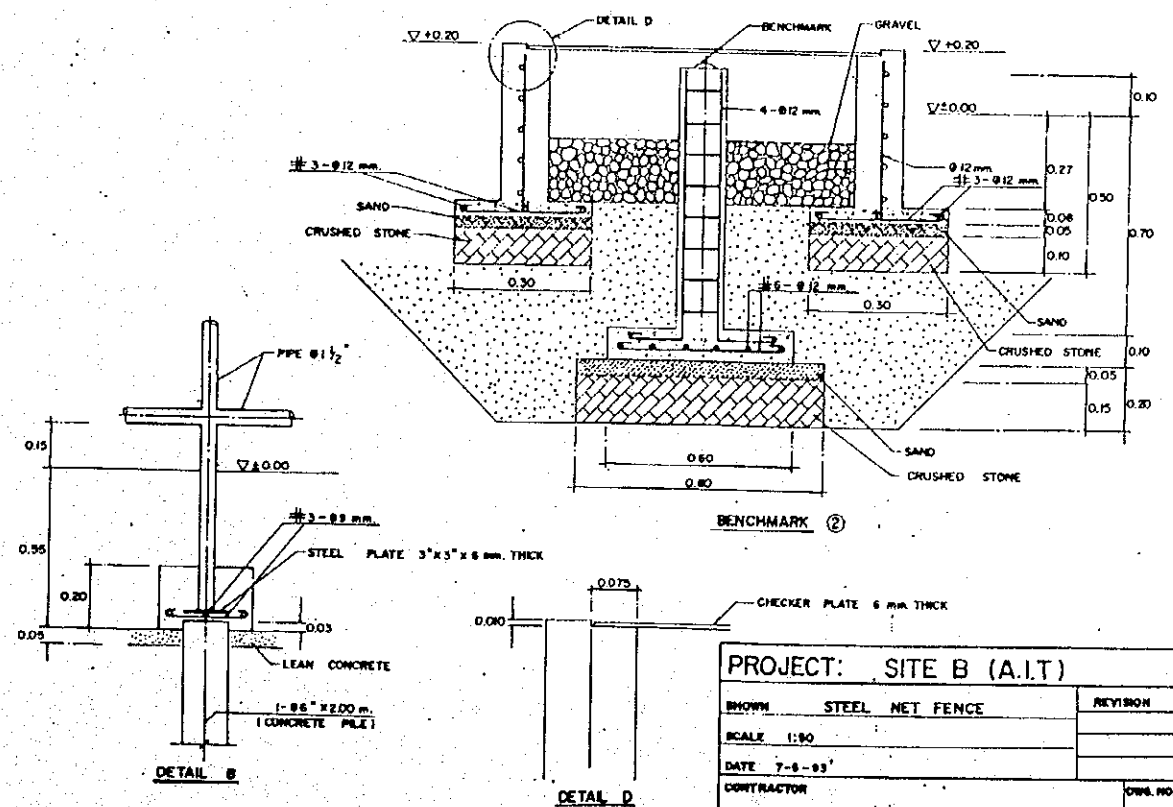
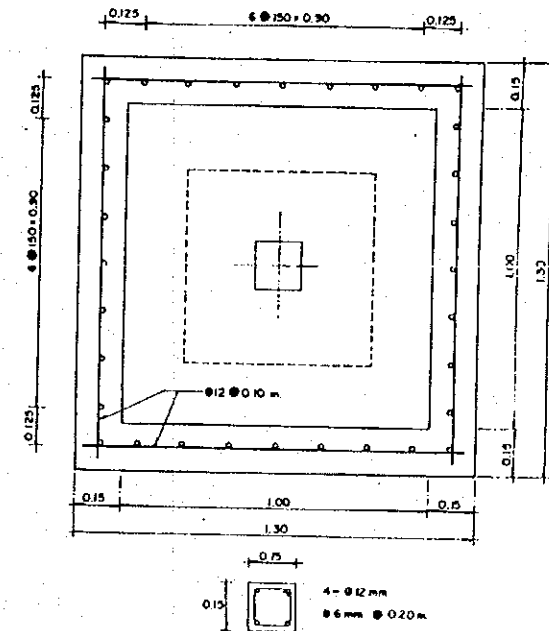
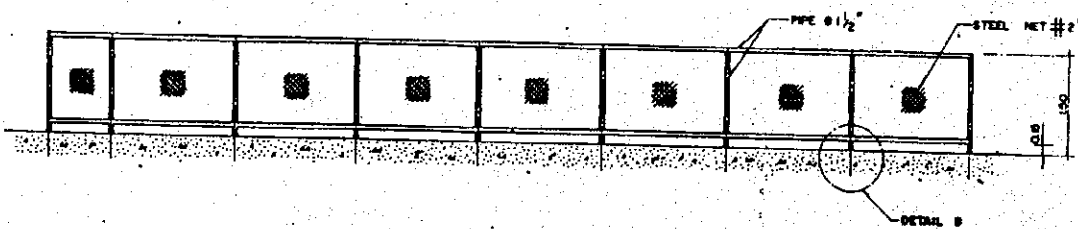


DETAIL 'D'

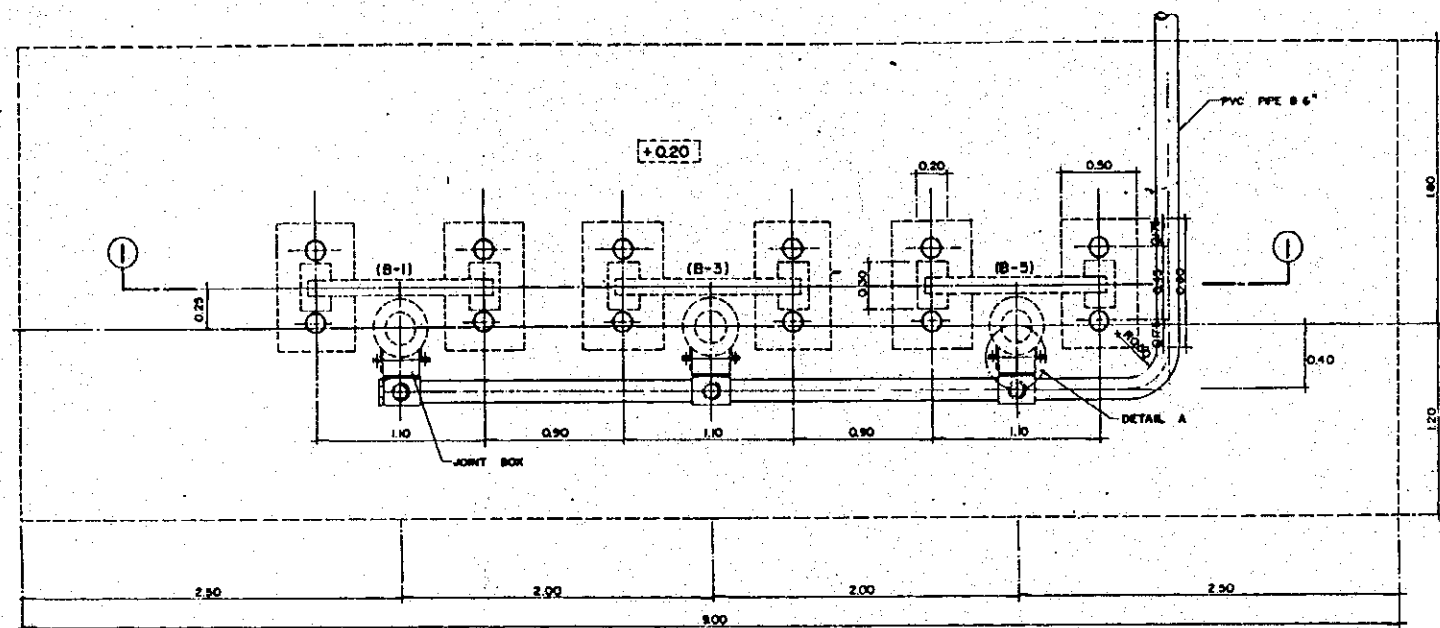
PROJECT: SITE B (A.I.T)		
SHOWN	LAYOUT PLAN	REVISION
SCALE	1:50	① 4-5-95
DATE	7-9-95	② 10-5-95
CONTRACTOR	SIAM TONE CO., LTD.	③ 7-6-95
		DWG. NO.
		1/4



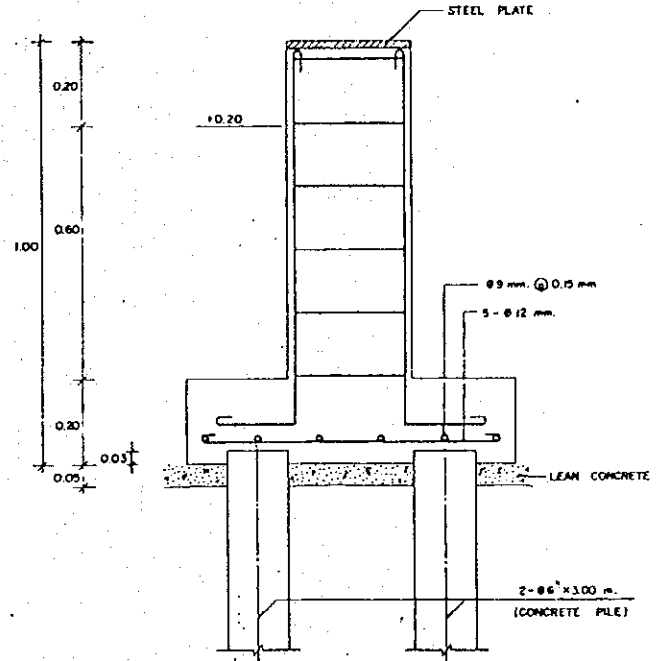
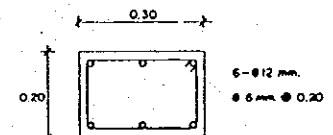
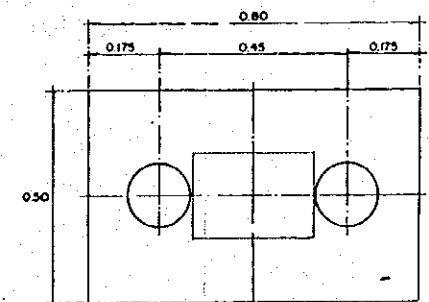
STEEL NET FENCE
SCALE 1:50



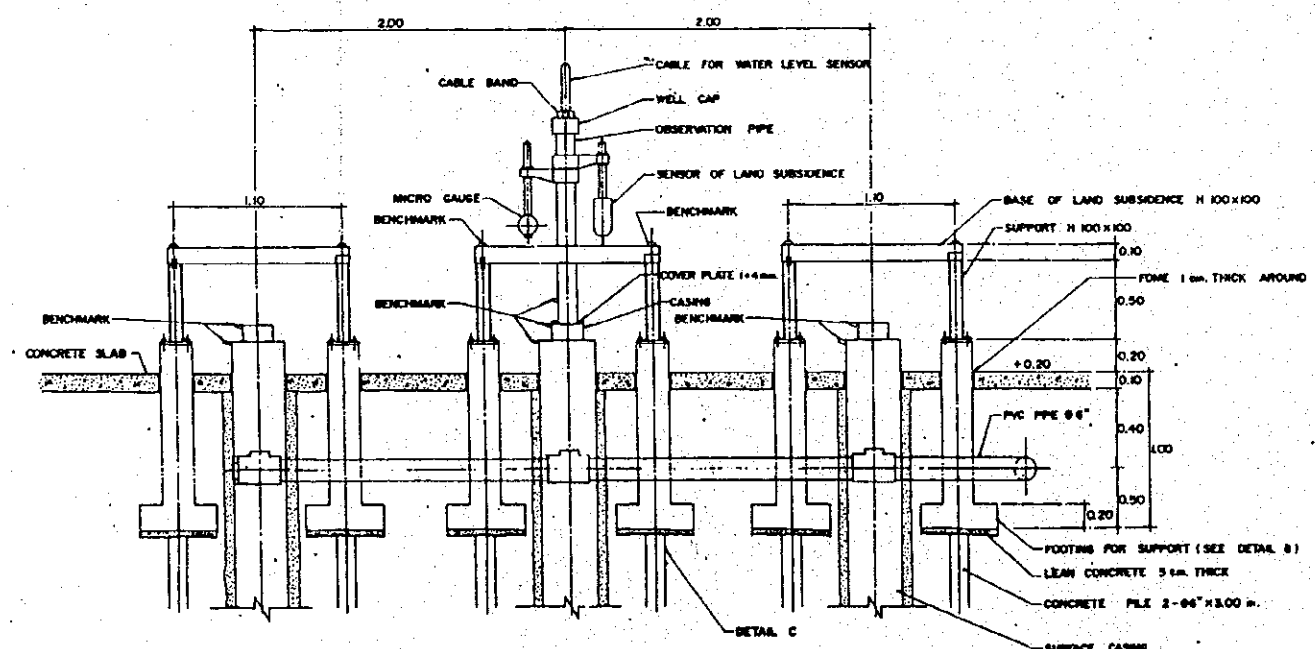
PROJECT: SITE B (A.I.T)		
BY/OWN	STEEL NET FENCE	REVISION
SCALE	1:50	
DATE	7-6-93	
CONTRACTOR	SIAM TONE CO., LTD.	DWG. NO.
		2/4



OBSERVATION HOUSE A
SCALE 1:20

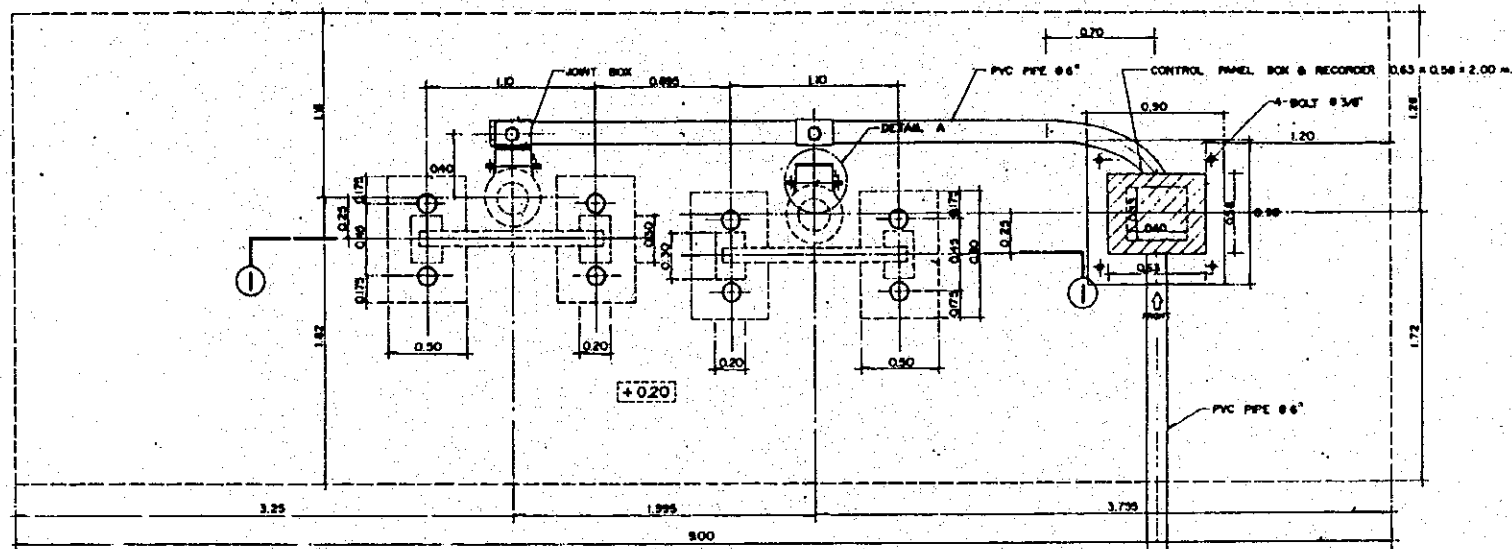


DETAIL C

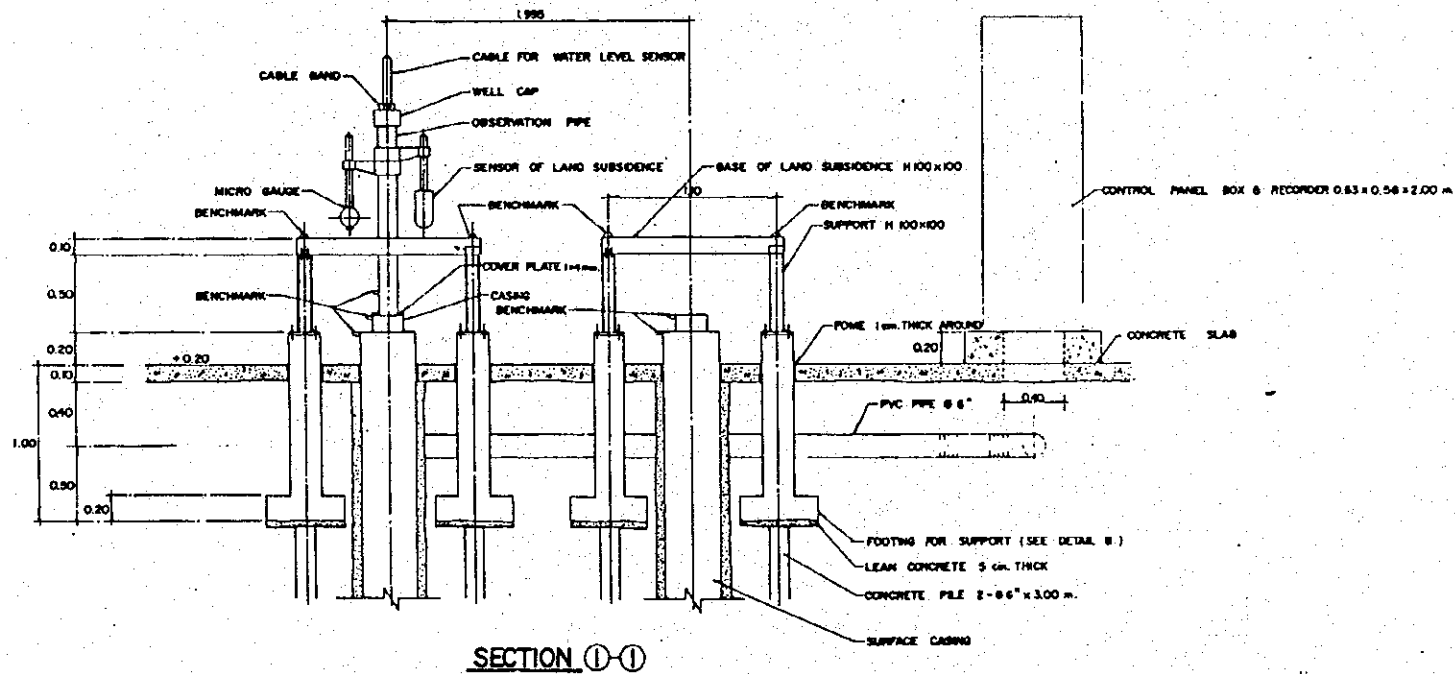
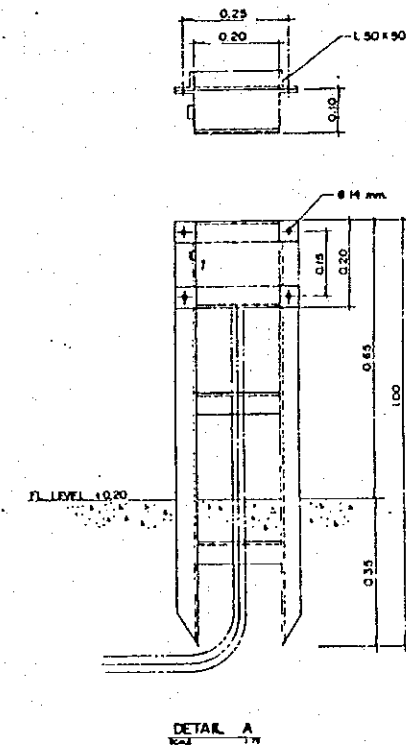


SECTION ①-①

PROJECT: SITE B (AIT)	
SHOWN	DETAIL OF EQUIPMENT SETTING OF OBSERVATION HOUSE A
SCALE	1:20
DATE	23-4-93
CONTRACTOR	SIAM TONE CO., LTD.
DWG. NO.	3/4
<small>3/25 Hwa-Kai (S) Reprint - Pvc Pipe, Single, Specification 0540 No. 24528-300 No. 125304</small>	



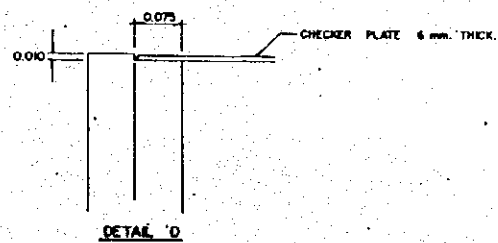
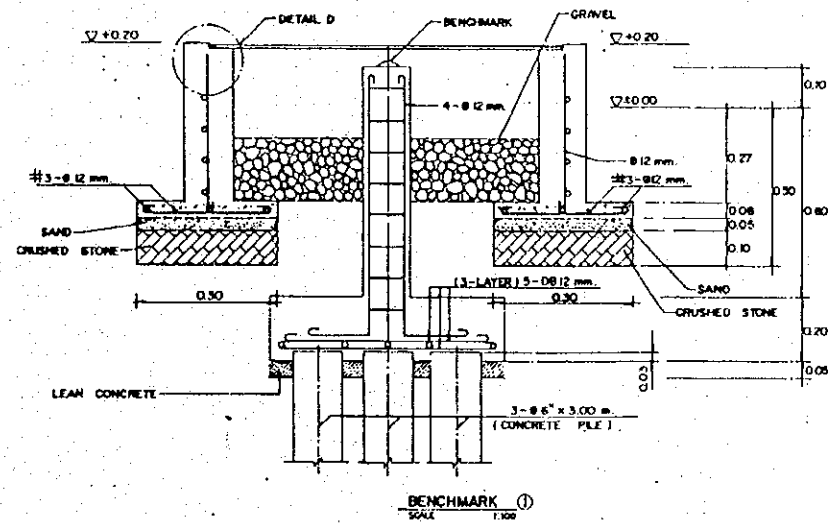
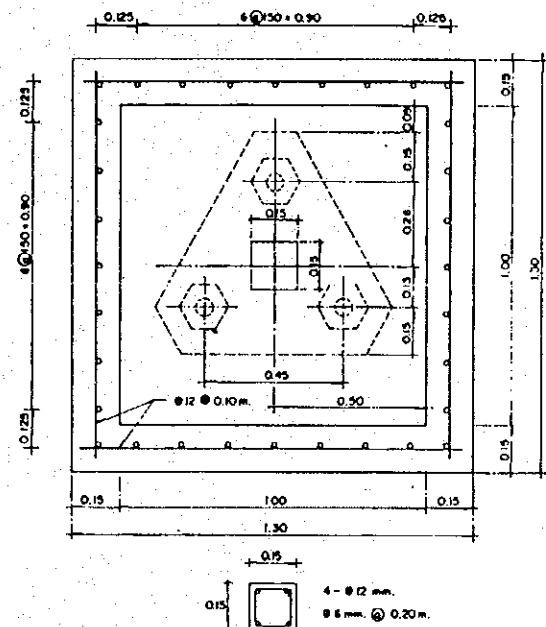
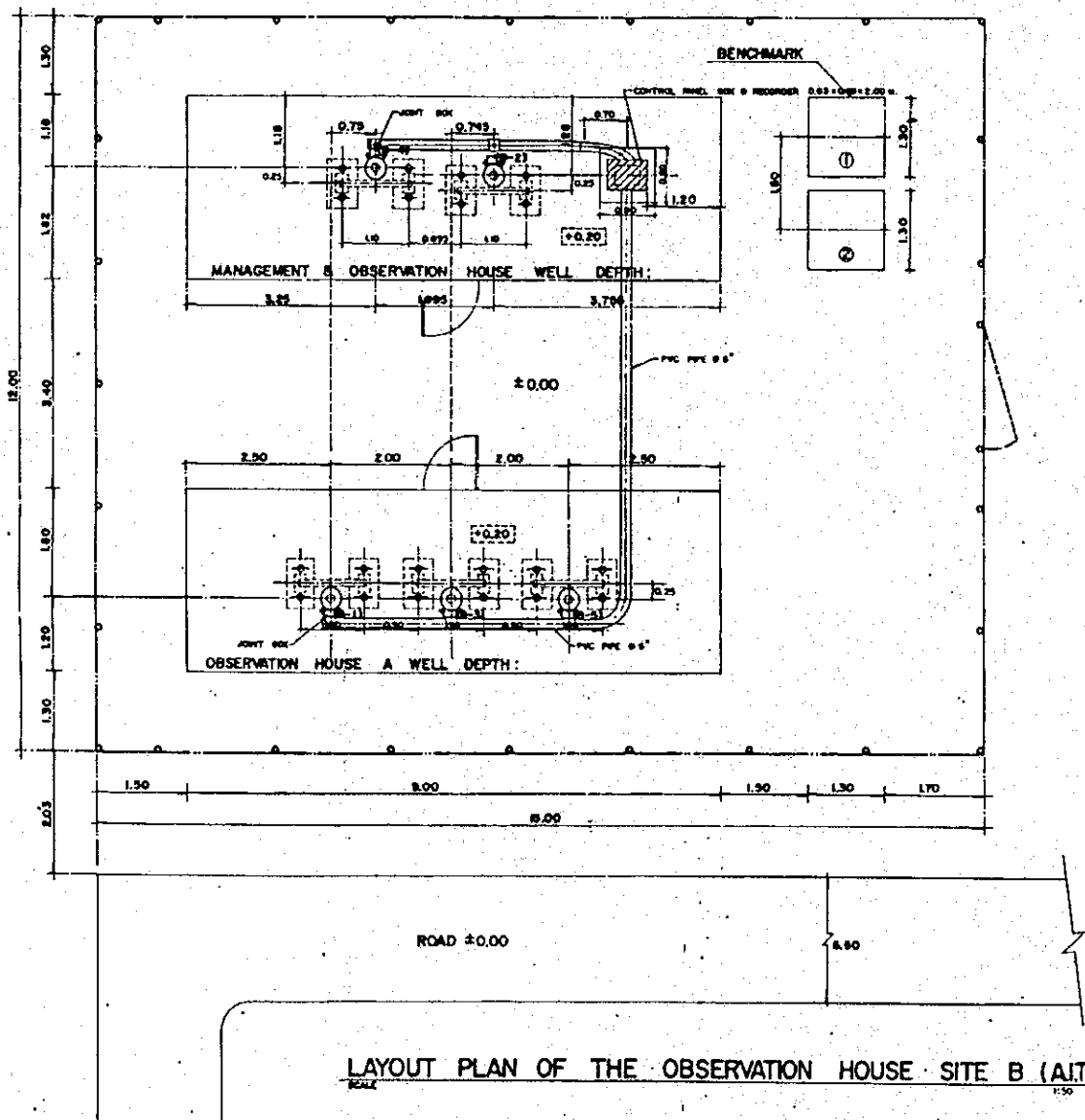
MANAGEMENT & OBSERVATION HOUSE
SCALE 1:50



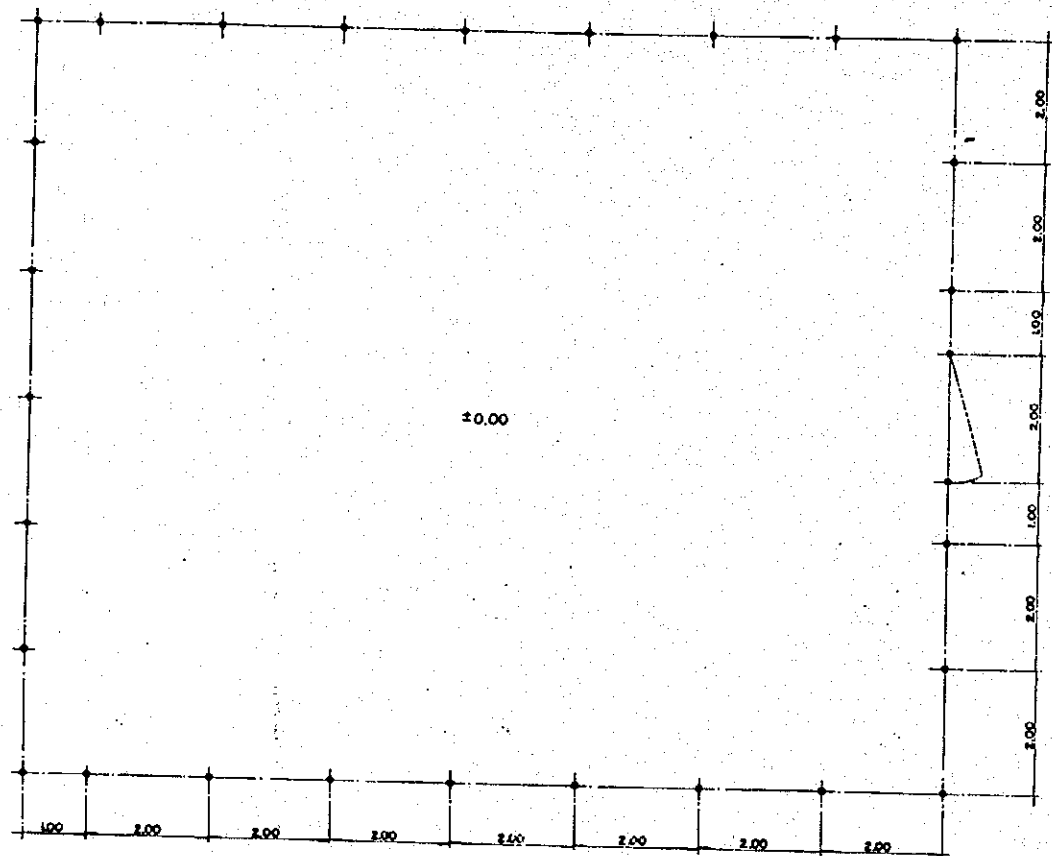
SECTION 1-1

PROJECT: SITE B (A.I.T.)	
DETAIL OF EQUIPMENT SETTING SHOWN OF MANAGEMENT & OBSERVATION HOUSE	REVISION
SCALE 1:20	① 6-5-93'
DATE 4-5-93'	② 8-5-93'
CONTRACTOR SIAM TONE CO., LTD.	③ 7-8-93'
	DWG. NO 4/4
S/PS No. 614a (S) Rama-7rd Road, Bangkok, Siam. Telephone: 30540 Fax: 321307	

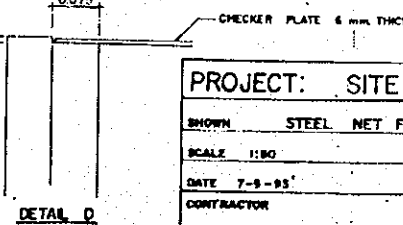
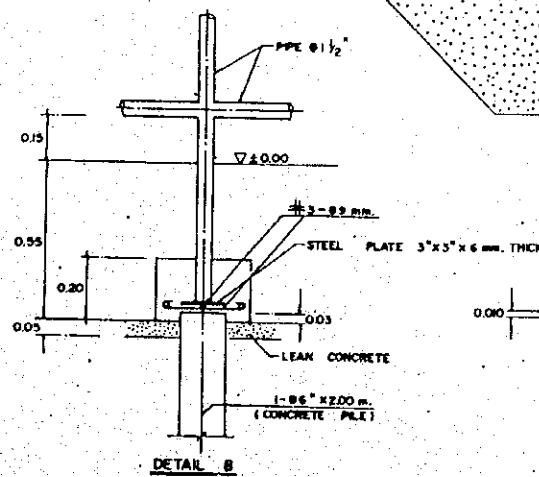
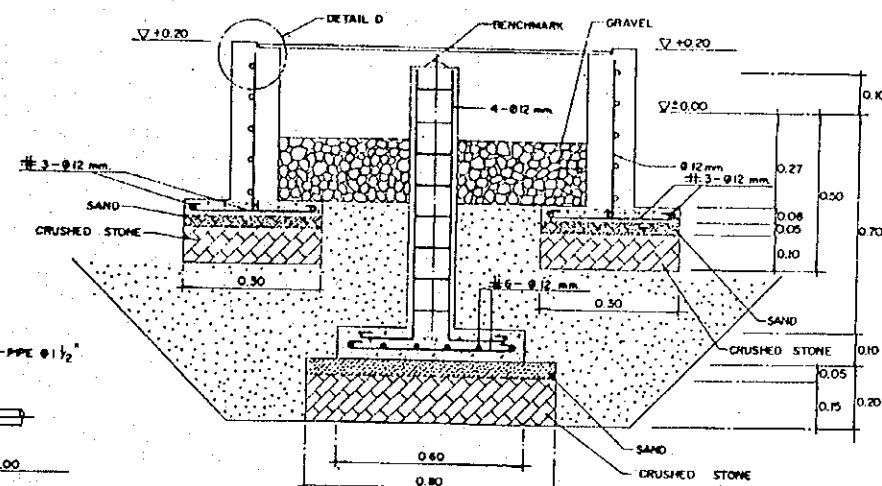
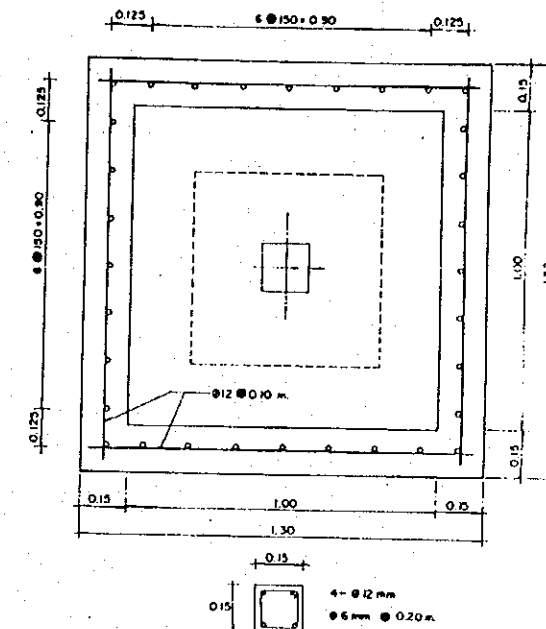
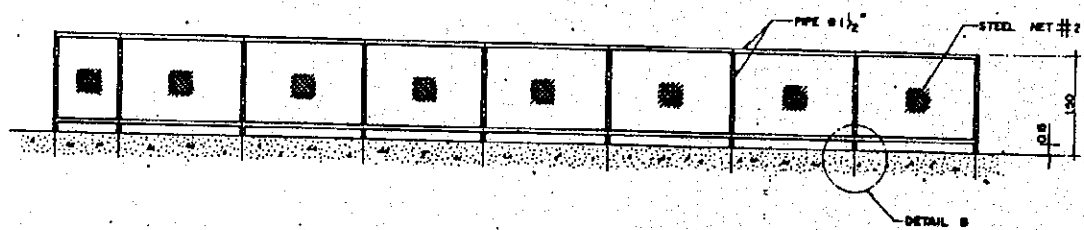
KLONG



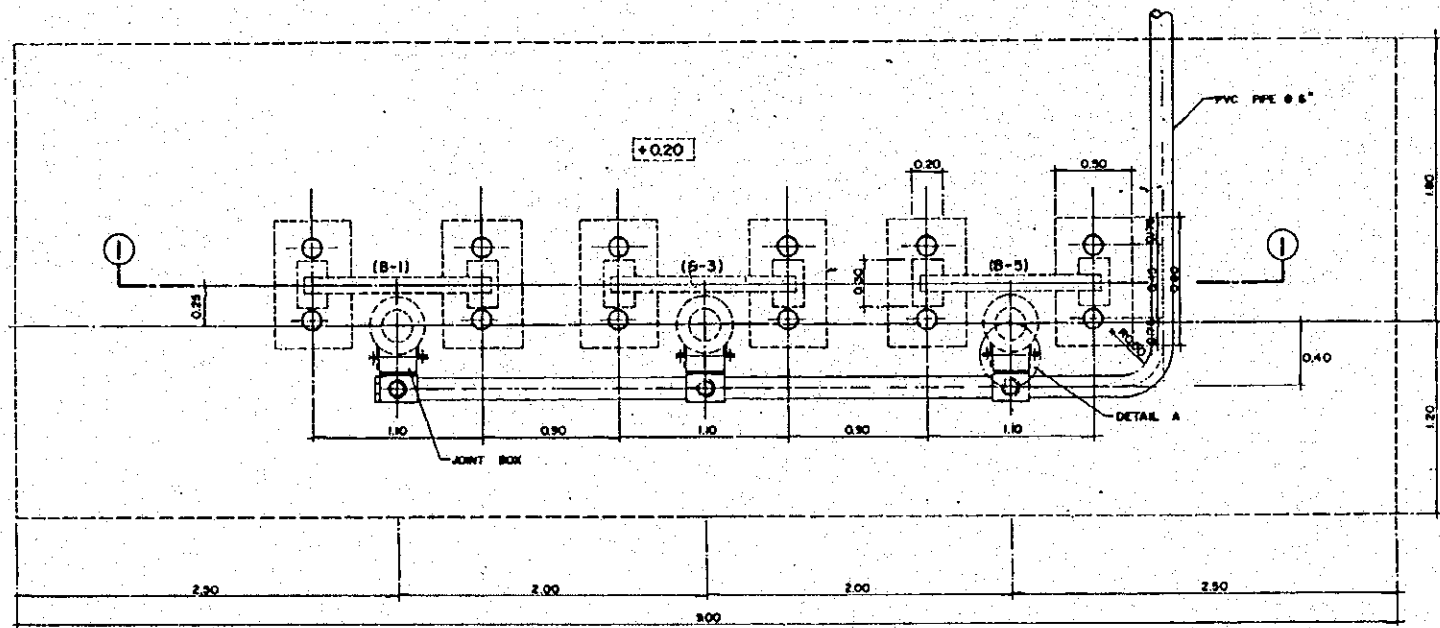
PROJECT: SITE B (A.I.T.)		
SHOWN: LAYOUT PLAN	REVISION:	
SCALE: 1:50	① 14-5-93	
DATE: 7-8-93	② 16-5-93	
CONTRACTOR:	③ 7-6-93	
SIAM TONE CO., LTD.		DWG. NO. 1/4
S/O. Siam Cement Co. (Thailand) Public Co., Ltd. Bangkok, Thailand. Tel. 232181-300 Fax. 273304		



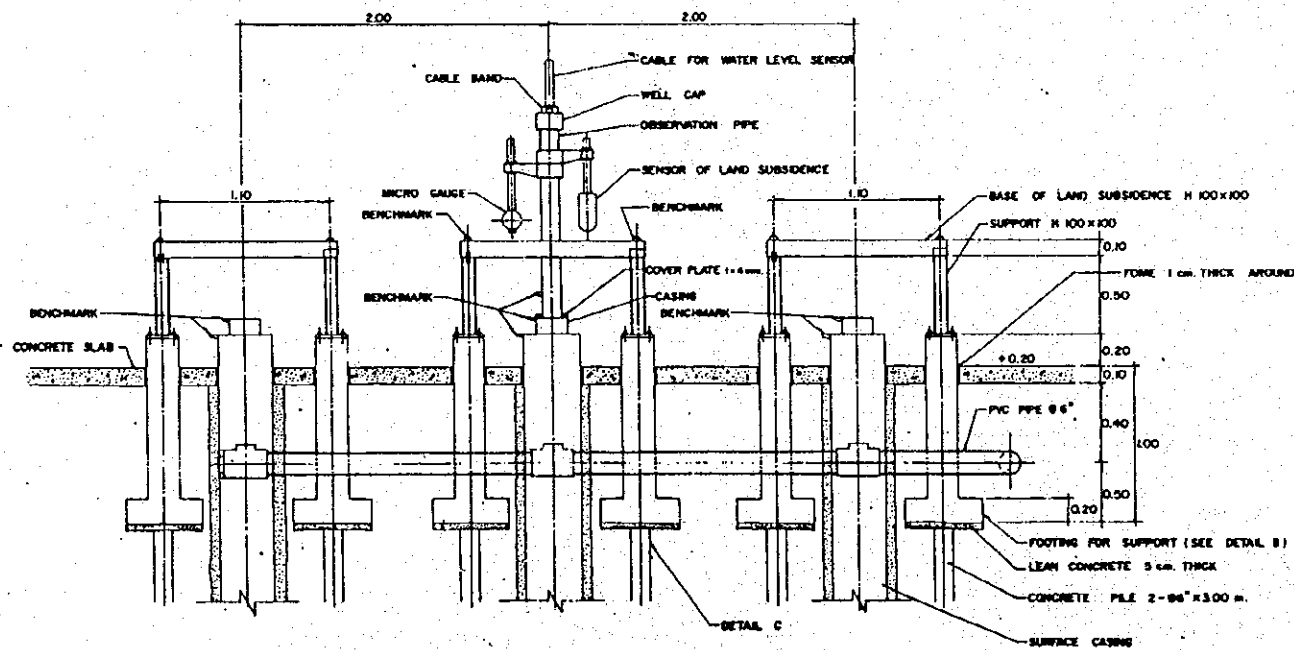
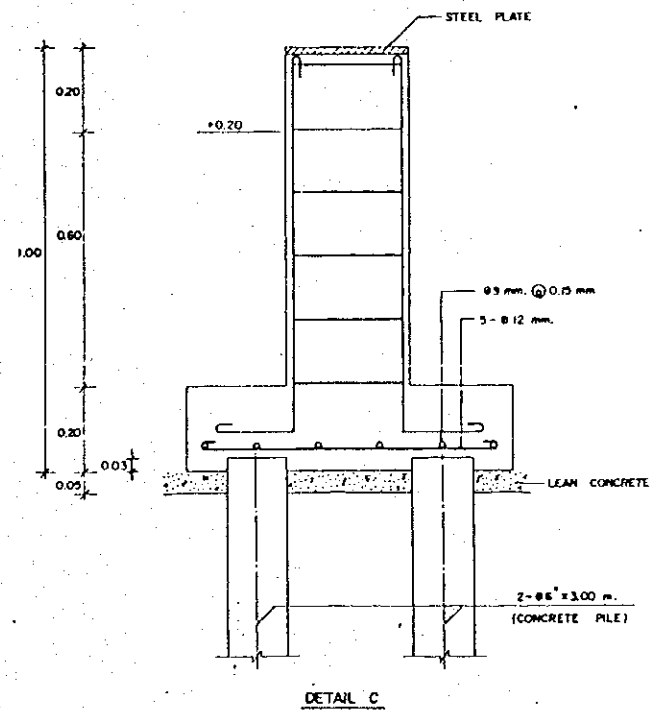
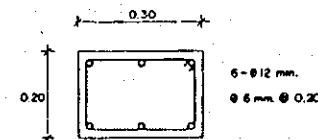
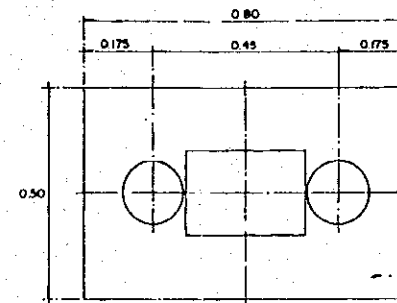
STEEL NET FENCE
SCALE 1:50



PROJECT: SITE B (A.I.T)		
SHOWN	STEEL NET FENCE	REVISION
SCALE	1:50	
DATE	7-8-85	
CONTRACTOR	SIAM TONE CO., LTD.	DWG. NO.
		2/4

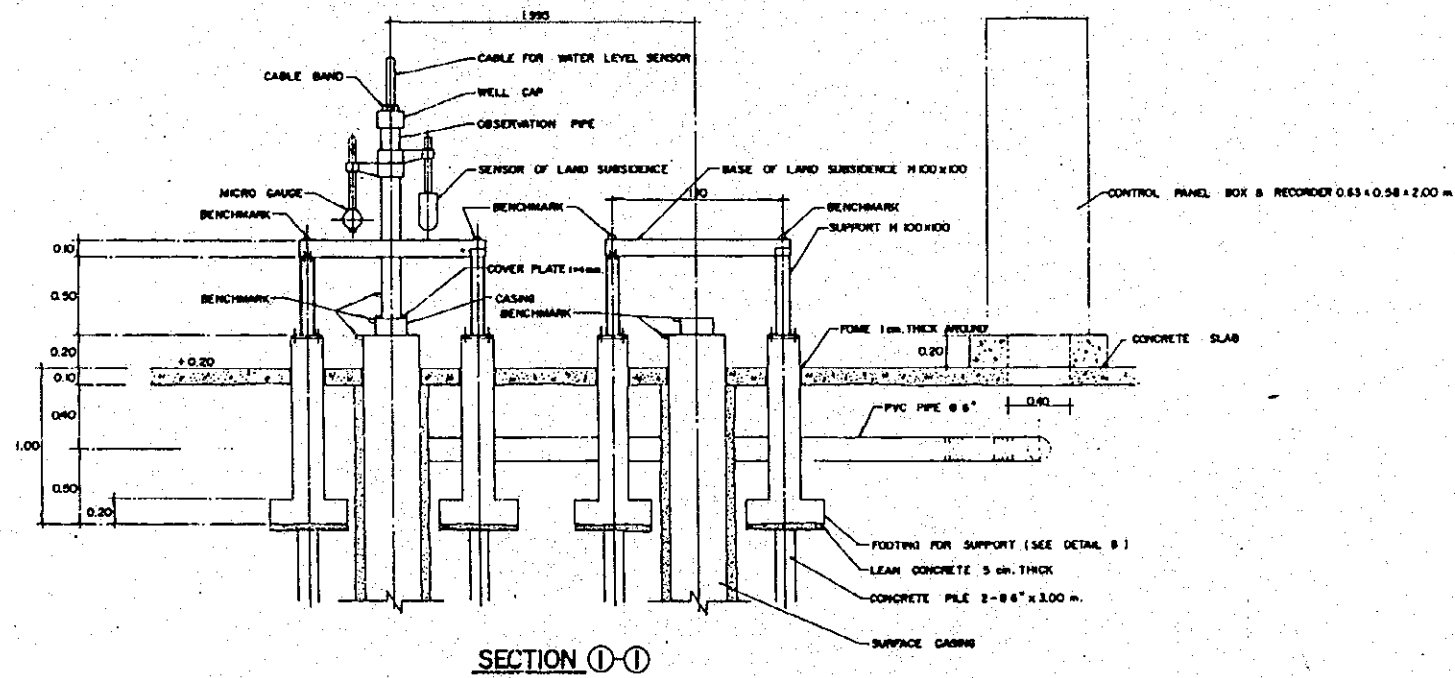
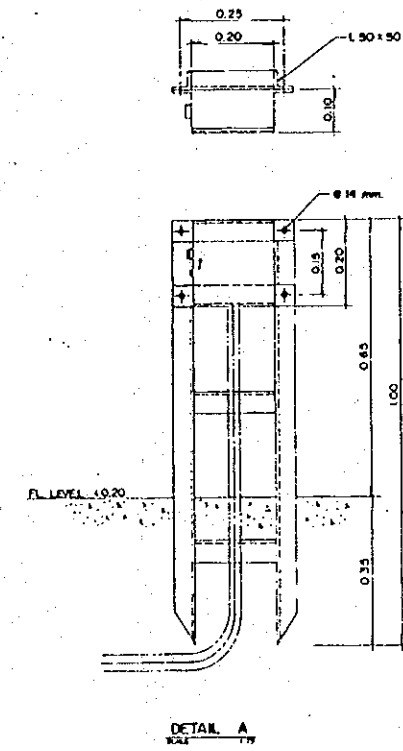
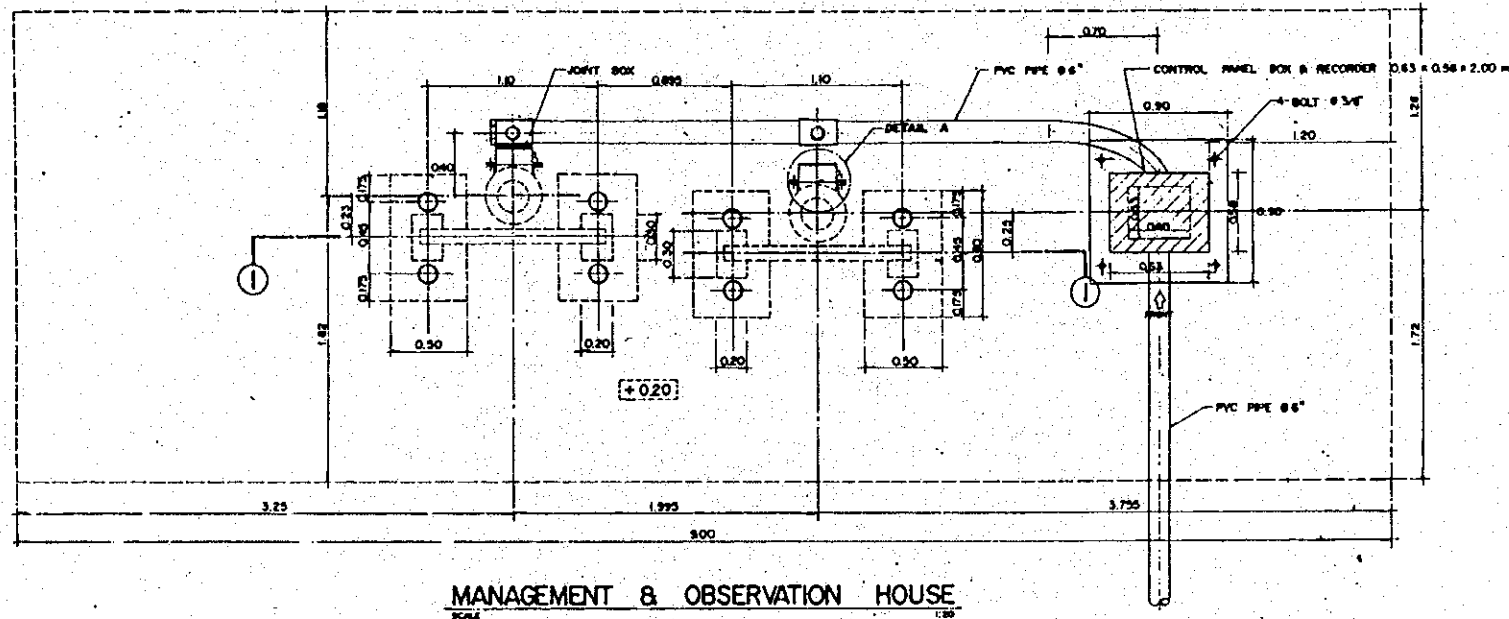


OBSERVATION HOUSE A
SCALE 1:20



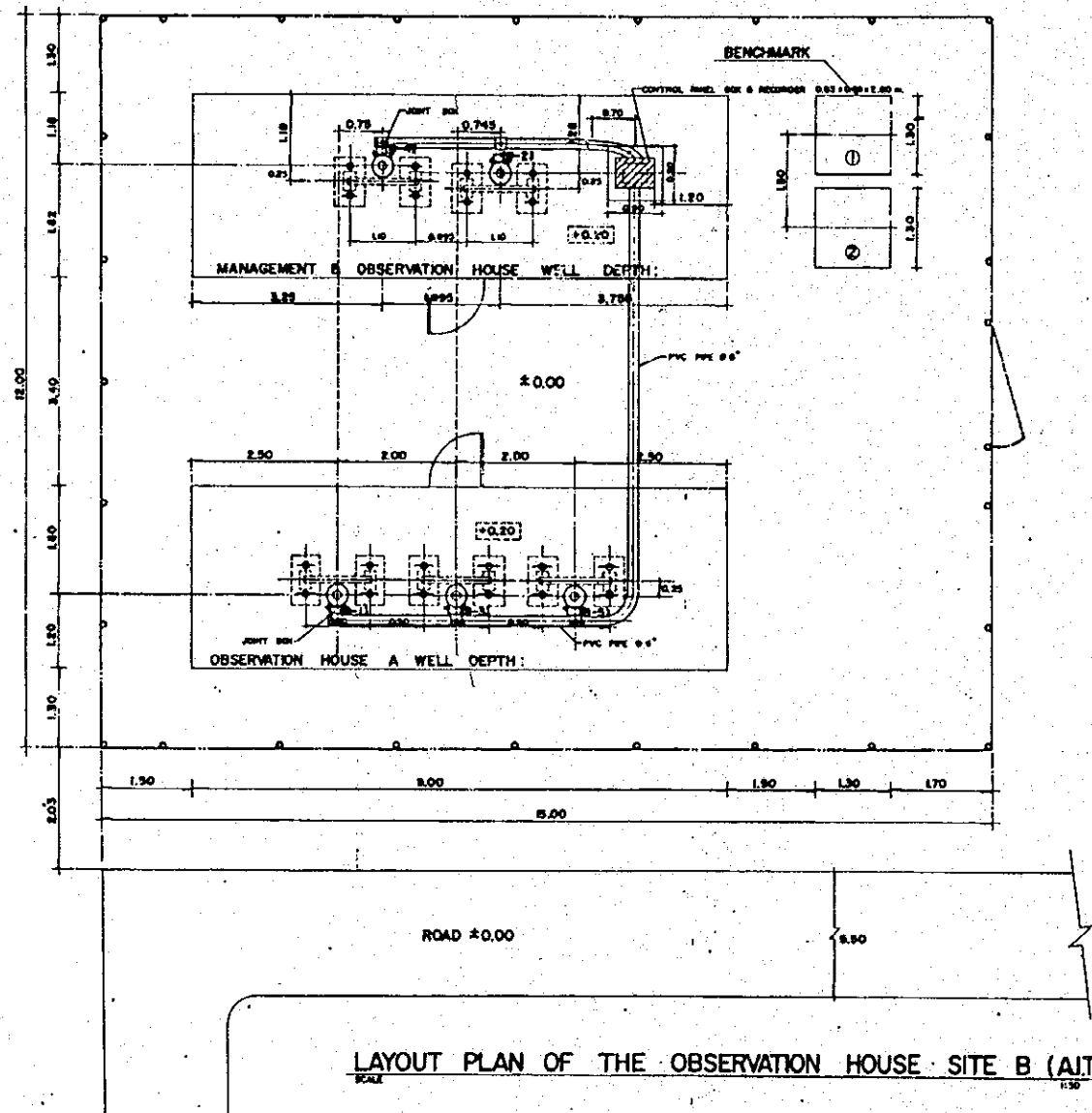
SECTION 1-1

PROJECT: SITE B (A.I.T.)		REVISION
SHOWN	DETAIL OF EQUIPMENT SETTING OF OBSERVATION HOUSE A	① 6-5-93
SCALE	1:20	② 10-2-93
DATE	23-4-93	③ 7-6-93
CONTRACTOR	SIAM TONE CO., LTD.	DWG. NO. 3/4
3/75 Moo 6 (Km 6) Bangpaet 3rd Road, Bangpaet, Sampran District 10740		No. 32528-300
		Apr. 1975/504

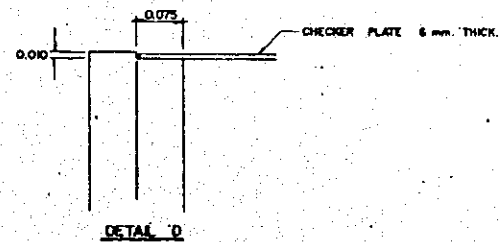
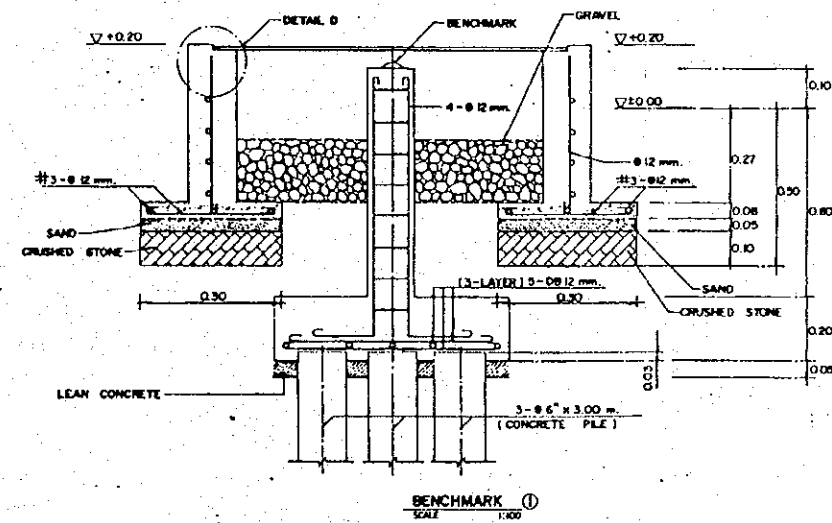
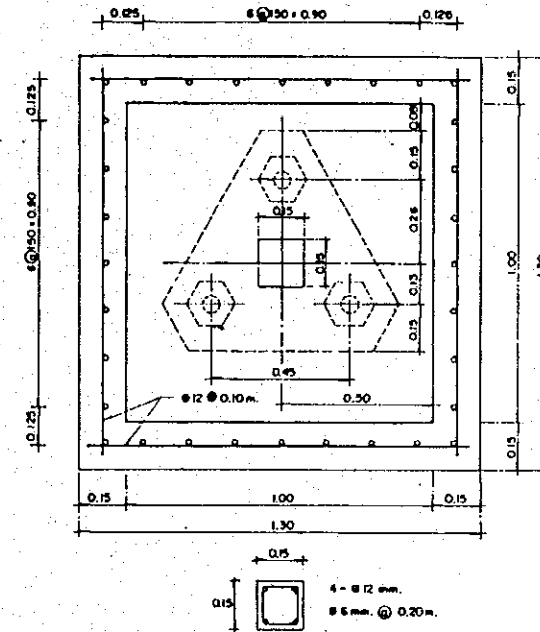


PROJECT: SITE B (A.I.T.)	
DETAIL OF EQUIPMENT SETTING SHOWN OF MANAGEMENT & OBSERVATION HOUSE	REVISION
SCALE 1:20	① 6-5-93
DATE 4-5-93	② 8-5-93
CONTRACTOR	③ 7-6-93
SIAM TONE CO., LTD.	DWG. NO. 4/4
<small>5/5 Moo 6 (Ka. 2) Bangpa-In Road, Bangkok, Siam. Telephone 0240 Fax 3125304</small>	

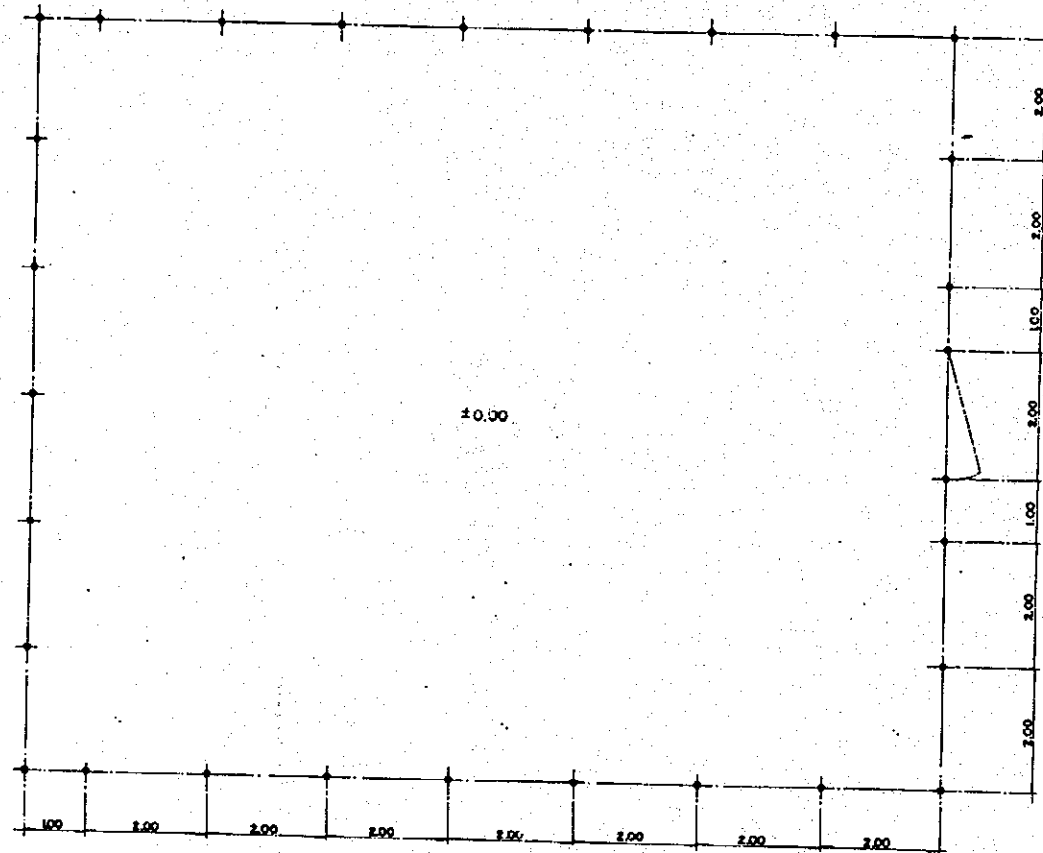
KLONG



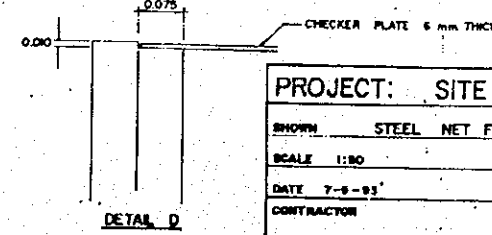
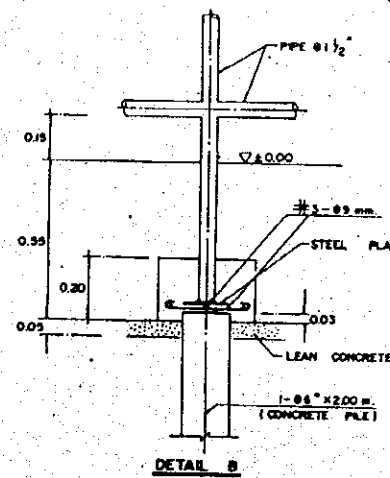
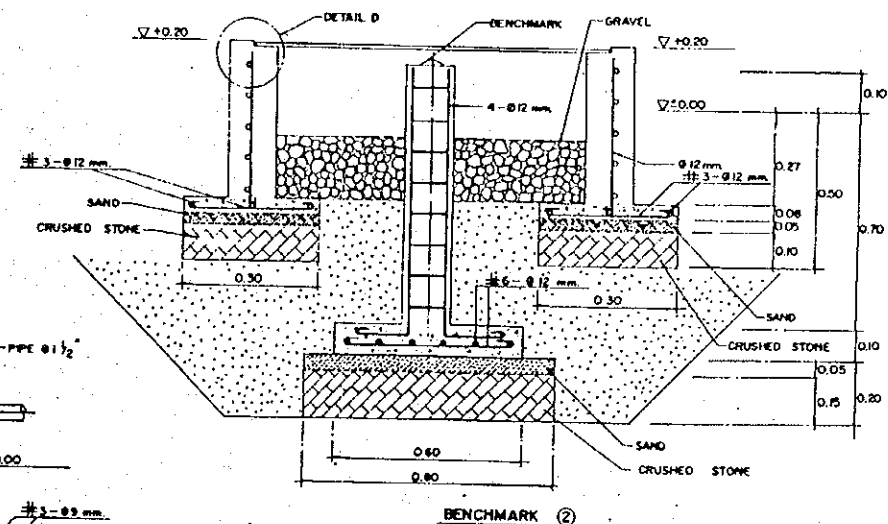
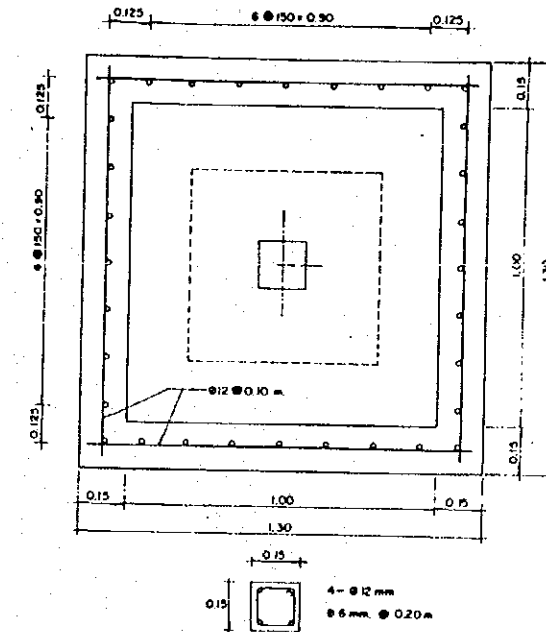
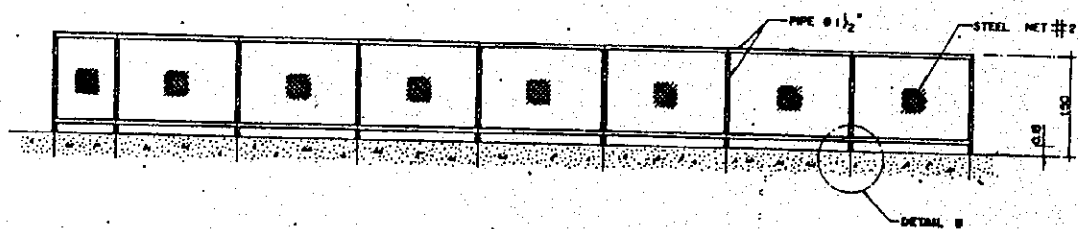
LAYOUT PLAN OF THE OBSERVATION HOUSE SITE B (AJT)
SCALE 1:50



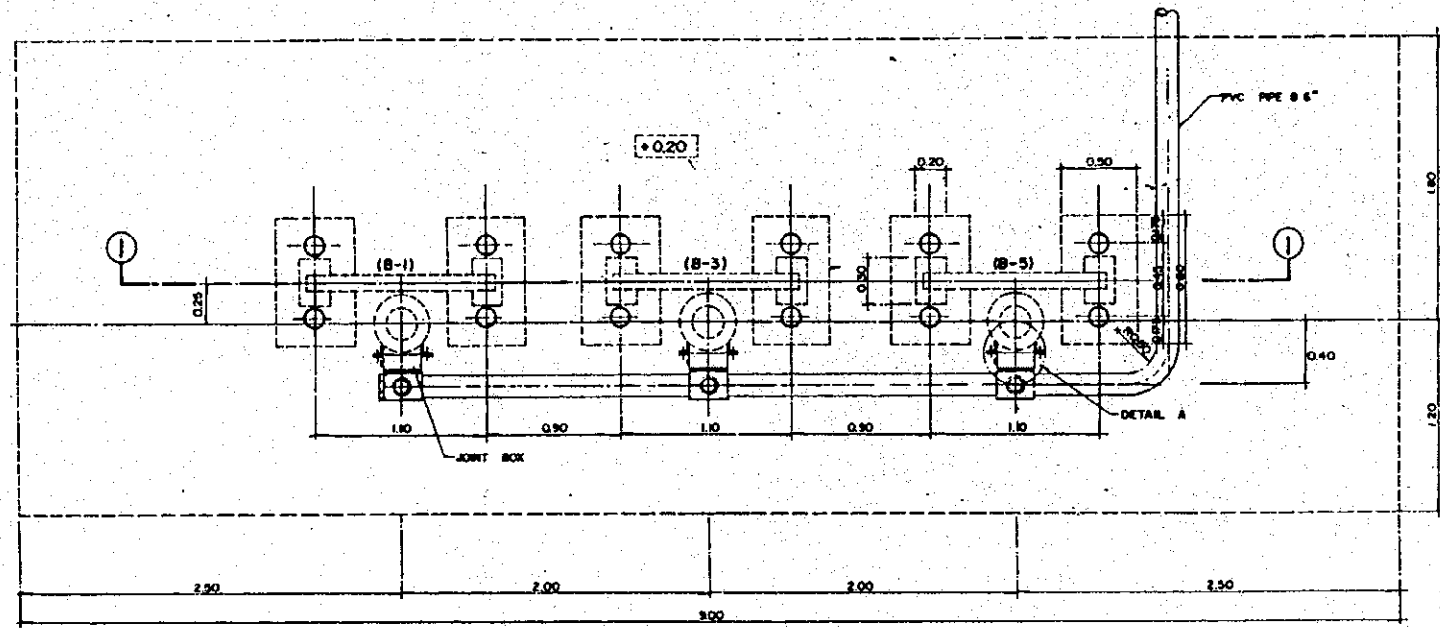
PROJECT: SITE B (AJT)		REVISION
SHOWN	LAYOUT PLAN	① 11-5-93
SCALE	1:50	② 18-5-93
DATE	7-8-93	③ 7-6-93
CONTRACTOR	SIAM TONE CO., LTD.	DWG. NO. 1/4



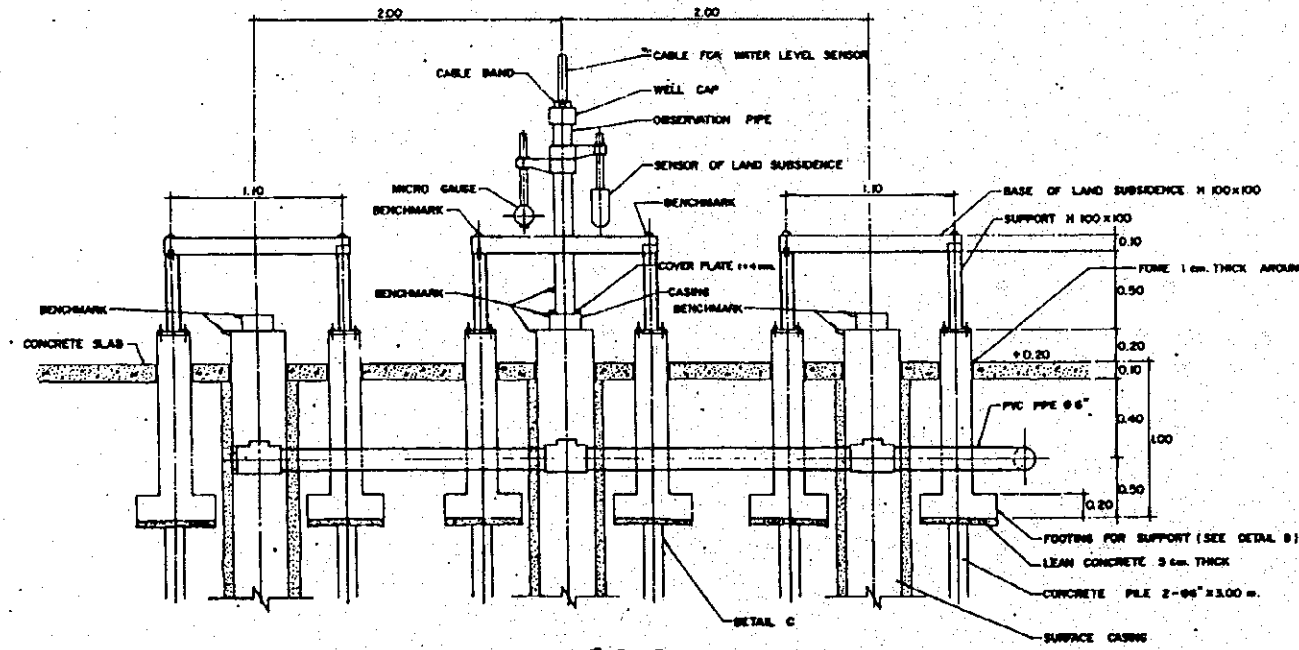
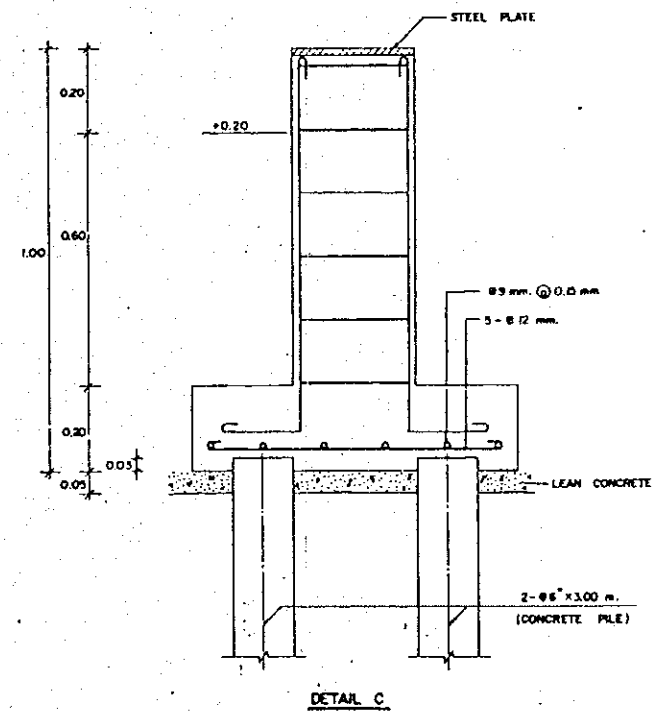
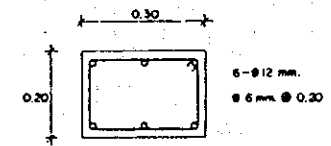
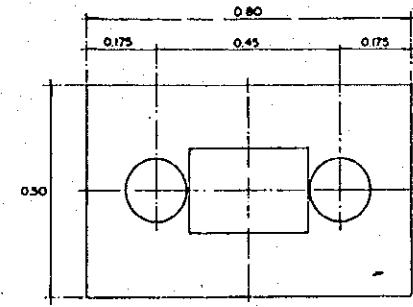
STEEL NET FENCE
SCALE 1:50



PROJECT: SITE B (A.I.T)		
SHOWN	STEEL NET FENCE	REVISION
SCALE	1:50	
DATE	7-8-83	
CONTRACTOR	SIAM TONE CO., LTD.	OWN. NO.
		2/4



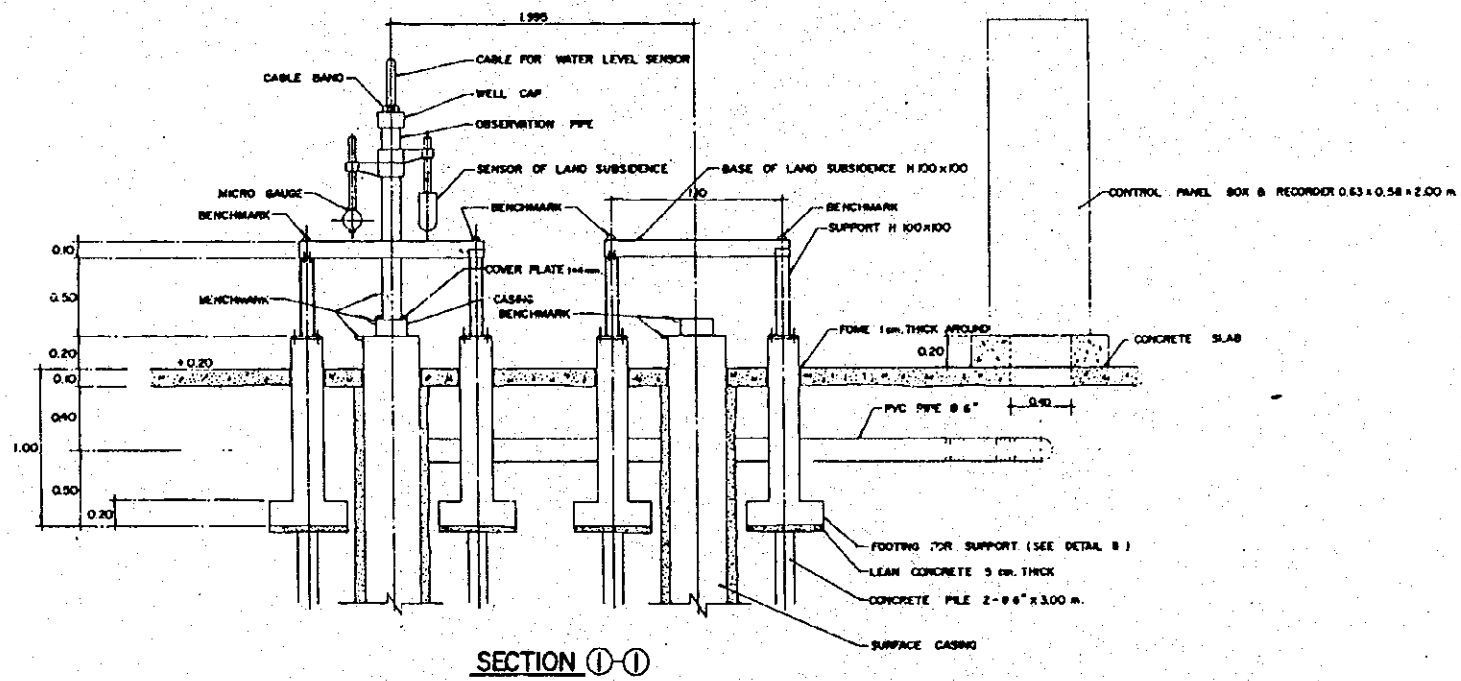
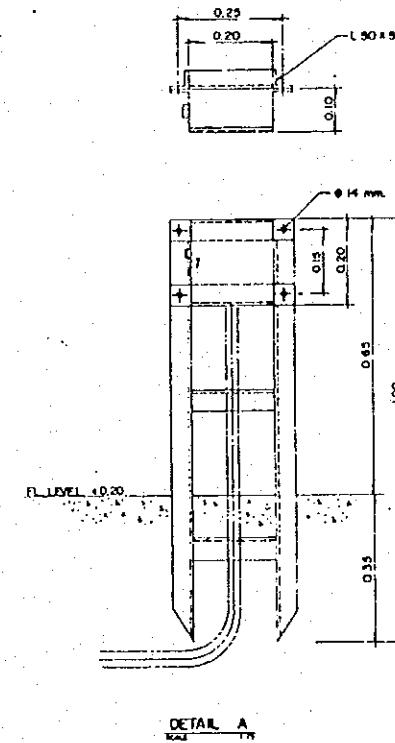
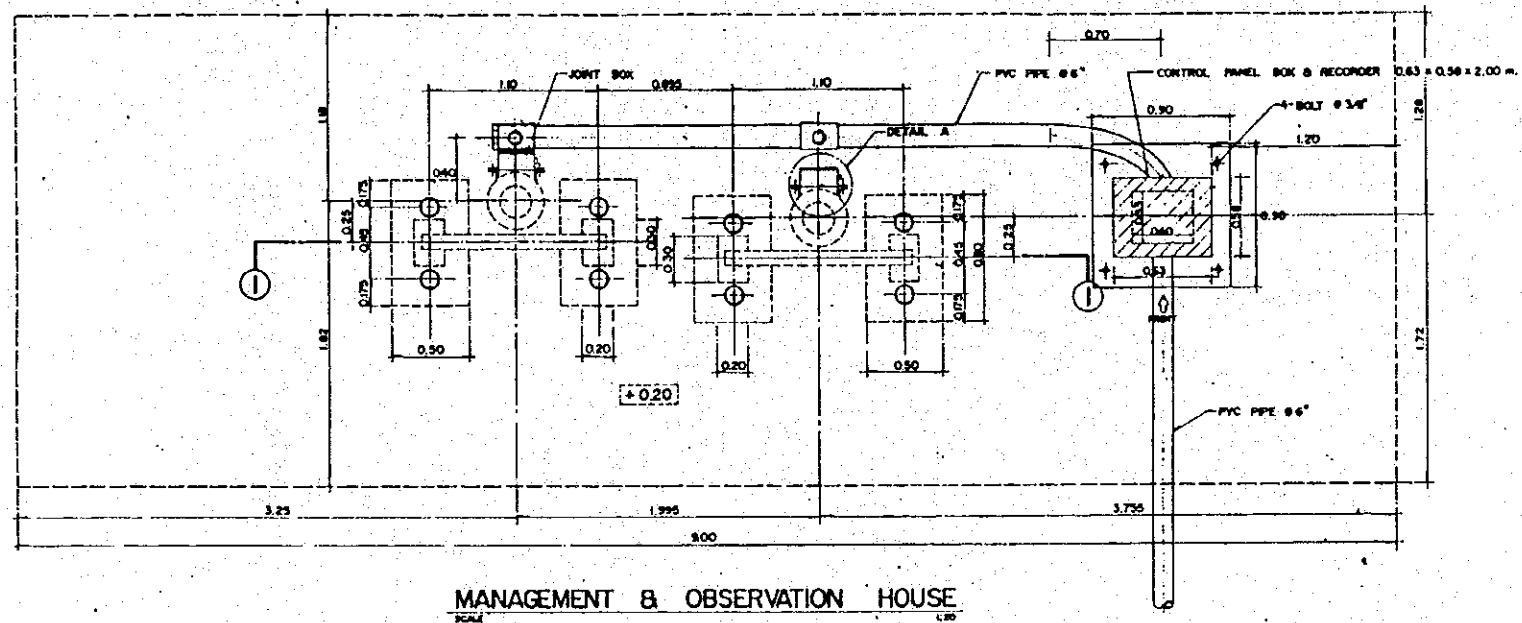
OBSERVATION HOUSE A
SCALE 1:30



SECTION ①-①

DETAIL C

PROJECT: SITE B (A/T)	
SHOWING: DETAIL OF EQUIPMENT SETTING OF OBSERVATION HOUSE A	REVISION
SCALE: 1:30	① 6-5-95
DATE: 23-4-93	② 11-5-95
CONTRACTOR: SIAM TONE CO., LTD.	③ 7-6-95
	DWG. NO. 3/4
<small>1/3 Hua Kien Si Design, Prof. Dept., Bangkok, Siamtomco. 10240 No. 112519-300 3/3 Hua Kien Si Design, Prof. Dept., Bangkok, Siamtomco. 10240 No. 112519-300</small>	



PROJECT: SITE B (A.I.T.)	
DETAIL OF EQUIPMENT SETTING	REVISION
SHOWN OF MANAGEMENT & OBSERVATION HOUSE	① 6-5-93
SCALE 1:20	② 6-5-93
DATE 4-3-93	③ 7-6-93
CONTRACTOR	DWG. NO
SIAM TONE CO., LTD.	4/4
Tel. 323281-300 Fax. 323304	

