

## **APPENDIX 7**

### **RESULTS OF NATURAL CONDITIONS SURVEY**

## **APPENDIX 7 RESULTS OF NATURAL CONDITIONS SURVEYS**

The following natural conditions surveys were conducted to obtain an accurate understanding of the topographical and geological conditions at 15 sites judged suitable for the construction of a cyclone shelter in order to determine the appropriate shelter location, structure and optimal size.

### **7.1 Topographical Survey**

- (1) Scope of Survey : some 400m × 400m square area with the planned shelter construction site at the centre and incorporating a village with a killa if any
- (2) Surveying Method : plane table surveying

The topographical plan for each site, prepared based on the results of the survey, is given as follows.











- LEGEND:
- 1. Structure (Solid perimeter, Thin line, etc.)
  - 2. Ditch, Drainage, Embankment
  - 3. Paddy, Field, Barren, etc.
  - 4. Survey Station
  - 5. Temporary Brick Work, Corner & Spoke
  - 6. Trees (Cereals, Date Palm, etc.)

NOTE:

Height measured from B.M. (Bench Mark) marked on plan and not top of wall or roof. (B.M. is 10.00 m. above sea level).

All buildings are in form of P.M. (Puccin Masonry).

Contours interval is 0.50 m.

Highest Road Level is 10.00 m.

Normal Road Level is 9.50 m.

High Tide Water Level is 10.00 m. at 10.00 A.M.

Low Tide Water Level is 9.50 m. at 10.00 A.M.

Area Surveyed is 10000 sq. m.

Site No. 2  
Rata Khordo G.P.S.

SCALE: 1:500

CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER.

**SITE SURVEY PLAN**  
AT RATA KHORDA, BANSHALI, CHITTAGONG.  
CYCLONE SHELTER NO-2.

CLIENT: JICA BASIC DESIGN STUDY TEAM.

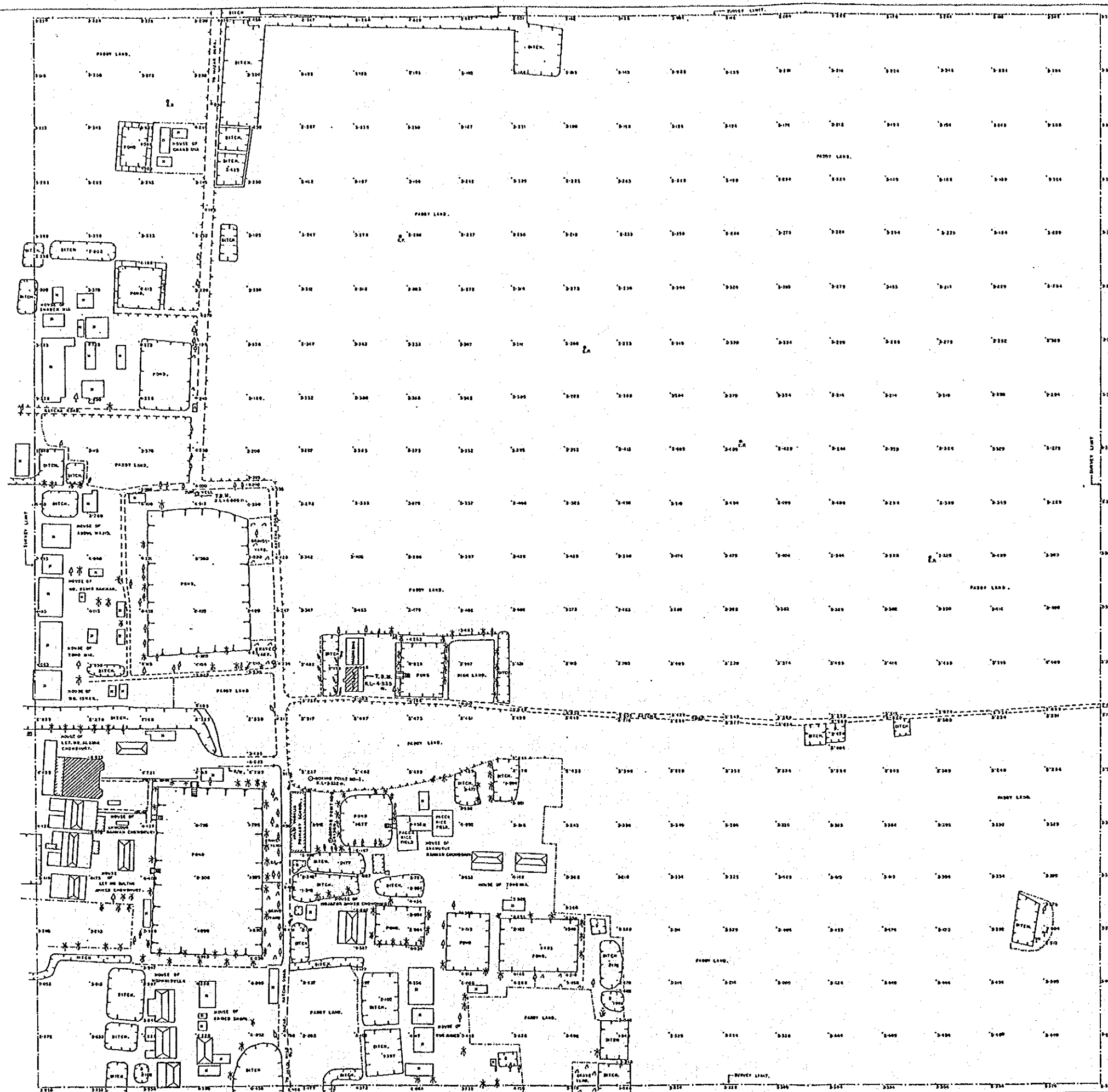
Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.

Drawn by: M. RAHMAN

DATE: 1984







- LEGEND:
- 1. Structure/Enclosure, etc. (see plan) [Symbol]
  - 2. Edge/contour line [Symbol]
  - 3. Road, ditch, boundary, etc. [Symbol]
  - 4. Survey line [Symbol]
  - 5. Temporary mark, hole, contour, etc. (see plan) [Symbol]
  - 6. Trees, coconut, etc. (see plan) [Symbol]

NOTE:

Height measured from M.S.L. (1984) and marked on plan with spot height and not at every 100 ft. interval. (e.g., 100 ft. contour line is marked at 100 ft. interval.)

All heights are in feet above M.S.L.

Contours shown at 10 ft. interval.

Highest Flood Level: 6.5 ft. (from M.S.L.)

Ground level: 5.5 ft. (from M.S.L.)

Area covered: 16,000 sq. ft.

Site No. 3  
Jaldi Vadalia G.P.S.

SCALE: 1"=100'

CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER

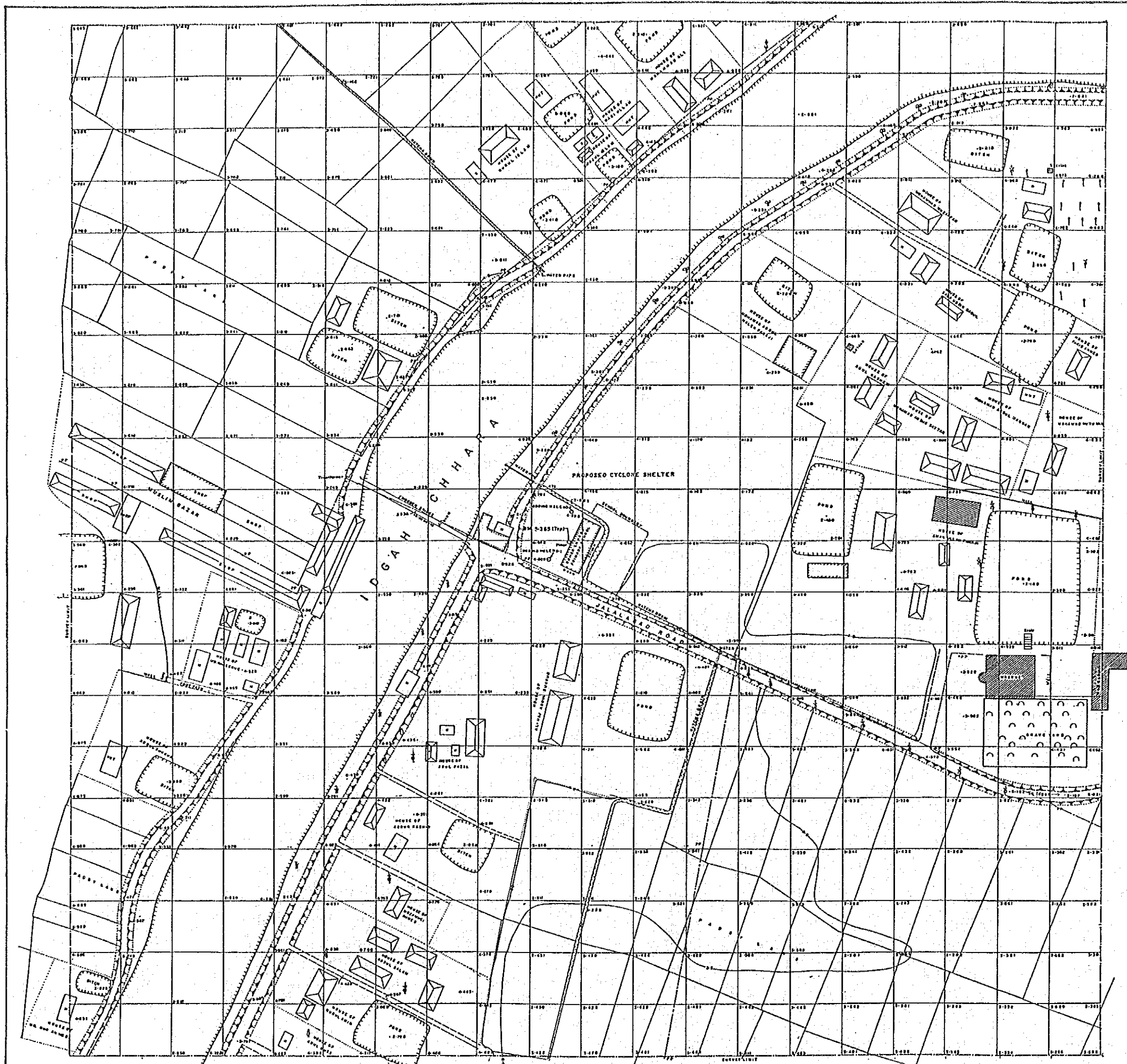
**SITE SURVEY PLAN**  
AT JALDI VADALIA, BANSHALI, CHITTAGONG  
CYCLONE SHELTER NO. - 3.

CLIENT: JICA BASIC DESIGN STUDY TEAM.

Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.  
40, RAJAB AGA, BANSHALI, CHITTAGONG-1205

PREPARED BY: ENGINEER M. KAMAL HUSSEIN ENGINEER  
DRAWN BY: M. KAMAL ENGINEER





- LEGEND:**
1. Structures, Permanent, Semi-permanent, The shed, Hut
  2. Road, Unmetalled, Embankment
  3. Road, Gravel, Barren, etc.
  4. Existing Road, Field, Pond, Home, etc.
  5. Temporary Road, Water, Canal, etc.
  6. Trees, Coconut, Mango, etc.

**NOTE:**

Height recorded from BM. Engaged on East parapet of road bridge in Khudhulbari about 7.5 miles North of Jagesh marked on Chiranga - Rama road. RL. 9.332 m.

All heights are in terms of PWD Datum (W.D.S.)

Center interval is 0.50 metre

Highest Flood Level... 5.348 m (1991) (from local information)

Normal Flood Level... 5.348 m

High Tide Water Level... 5.348 m

Low Tide Water Level... 5.348 m

Water Level... 5.348 m

Area Surveyed... 16.00 hectares

Site Map drawn at 10.00 m. interval.

**Site No. 4**  
**Edigaon Bahar Chara G.P.S.**

SCALE: 1:500

**CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER**

**SITE SURVEY PLAN**

**AT EDIGAON BAHAR CHHARA GP'S COXS BAZAR**

**CYCLONE SHELTER NO. 4**

**Client: JICA BASIC DESIGN STUDY TEAM**

**Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.**

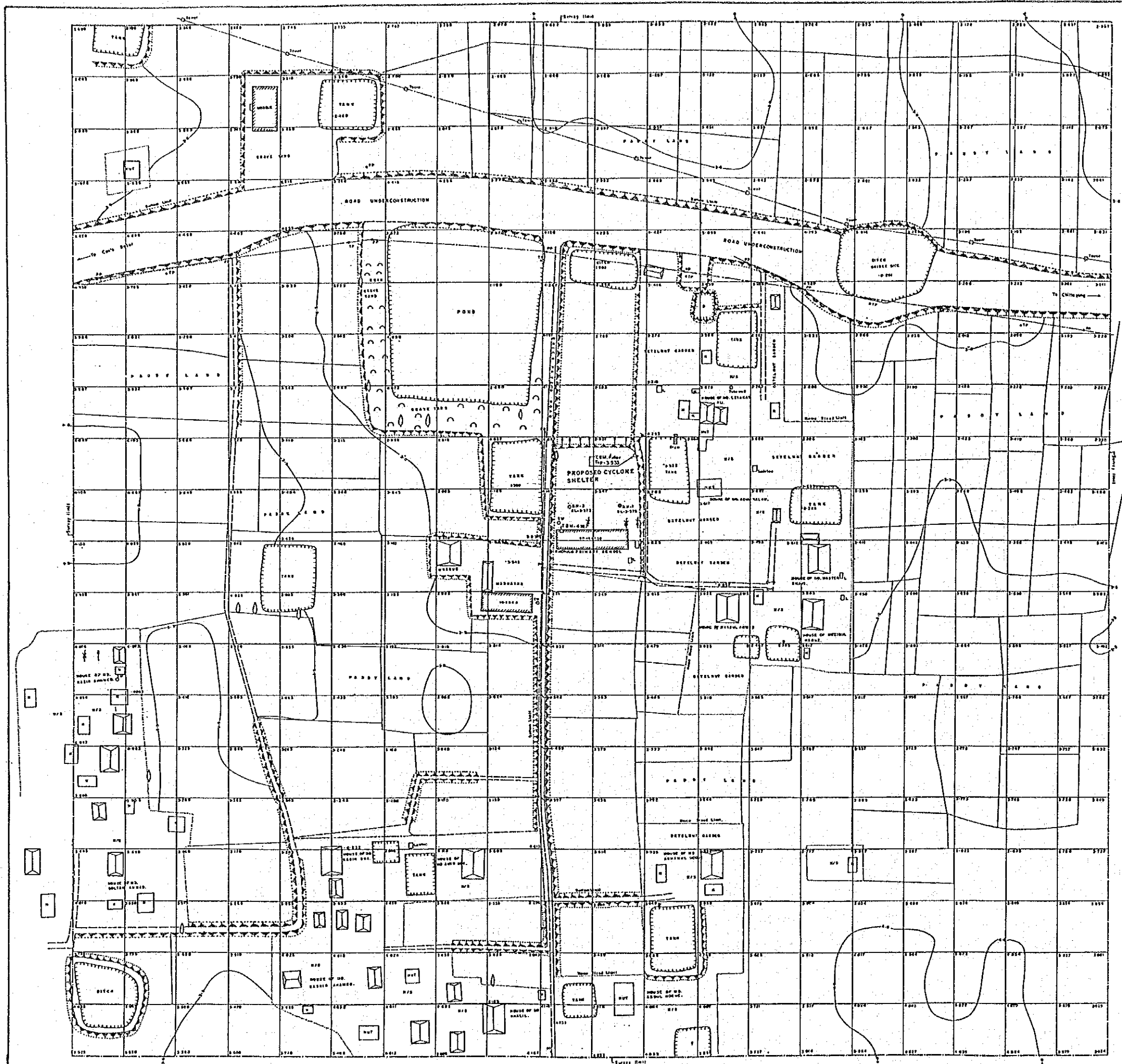
**46, ROAD HQS, DHAKA-1205**

**Surveyed by: M. T. Islam**

**Drawn by: B. S. P. Islam**

**Submitted by: M. T. Islam**





- LEGEND:
1. Structure, Permanent, Sandpore, Thatched, etc.
  2. Road, Unmetalled, Embankment, etc.
  3. Pond, Ditch, Bamboo, etc.
  4. Survey Mark, Field Book, Name, etc.
  5. Temporary Road Mark, Contour & Spot Height, etc.
  6. Trees, Coconut, Date palm, Teak, etc.

NOTE:

Height recorded from Mean Sea Level at station CH 94-400M.

From Chittagong, West of main side of Road, RL 3.551m.

All heights are in meters of PWD Datum (M.D. 5).

Contour Interval is 0.50 m.

Highest Flood Level... 4.55m in 1988 (from local information)

Normal Flood Level... 3.55m (from local information)

High Tide Water Level... M

Low Tide Water Level... M

Area Surveyed... 16.00 Acres

Grid Lines drawn at 20.00 m. Interval.

Site No. 5  
South Khorulia G.P.S.

SCALE: 1:500

CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER

SITE SURVEY PLAN  
AT SOUTH KHORULIA G.P.S., COX'S BAZAR  
CYCLONE SHELTER NO. 5

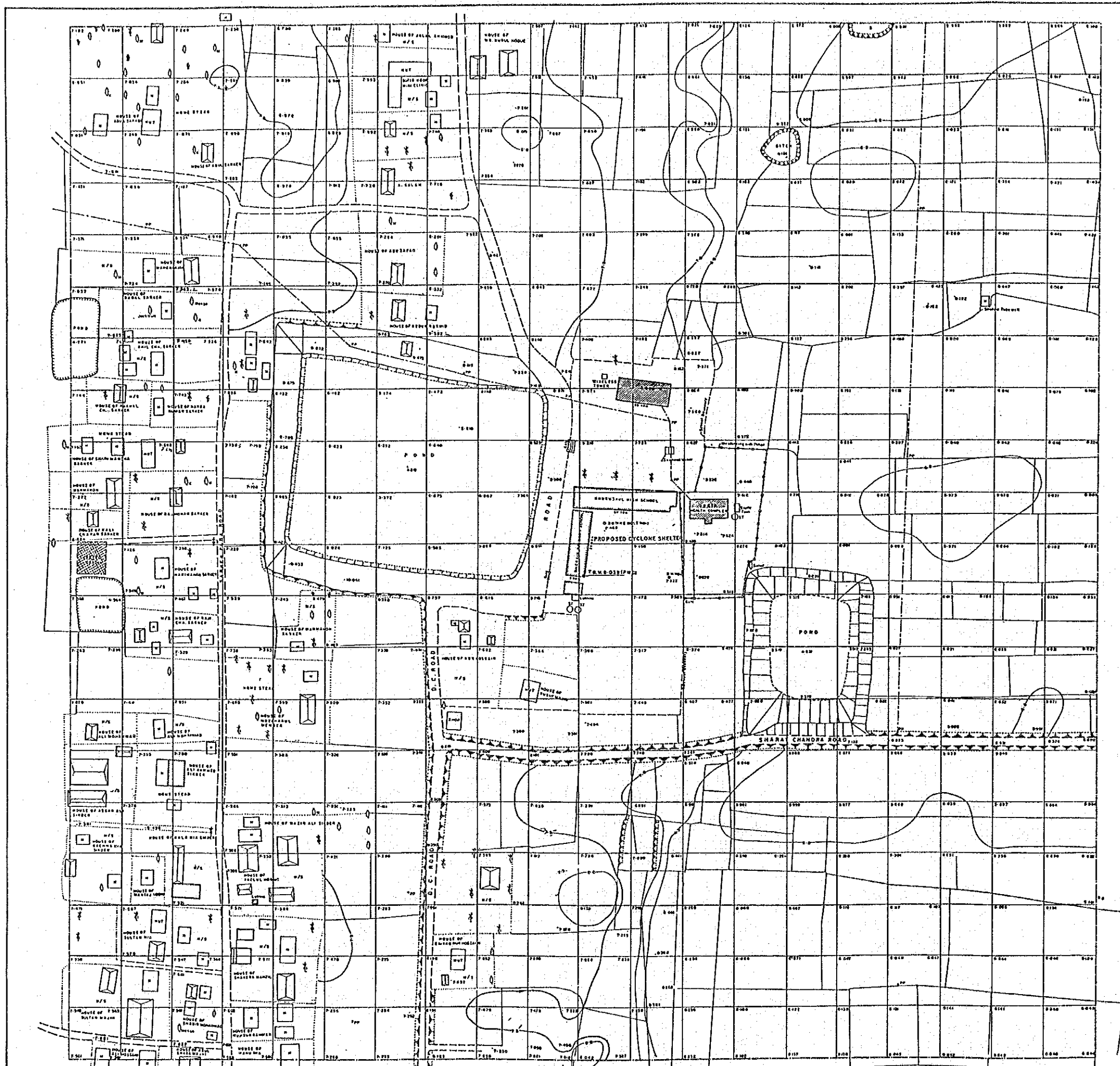
Client: JICA BASIC DESIGN STUDY TEAM

Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.

44, ROSS ROAD, DHAKA-1005

Drawn by: M.C. Paul





- LEGEND:
1. Structure, Permanent, Semi-permanent, Temporary
  2. Road (Unimproved, Improved)
  3. Pond, Ditch, Drainage, Canal
  4. Survey Mark, Field Book, Home Book, Station Book
  5. Temporary Bench Mark, Control B Spot Height, etc.
  6. Trees, Coconut, Date palm, Tamarind, Others

NOTE:

Height reduced from BM. R.P. Control No. 6 Cox's Bazar Ch. about 100+270  
 R/S near Inspection hut on Highway of ACC Power Supply T.M. R.L. 7-213  
 All heights are in terms of P.W.D. Datum (M.D.R.)  
 Control Interval is 0-50 mms  
 Highest Flood Level: ... 0-700m in 1981 (from latest information)  
 Normal Flood Level: ... Local Information  
 High Tide Water Level: ... 0-112  
 Low Tide Water Level: ... 0-112  
 Area Surveyed: ... 16-00 Bheera  
 Grid lines from 10-00 m. interval.

Site No. 6  
 Khorukul Dhiran G.P.S.

SCALE: 1:1000

CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER	
SITE SURVEY PLAN	
AT KHORUKUL DHIRAN G.P.S.	
CYCLONE SHELTER NO. 6	
Client: JICA BASIC DESIGN STUDY TEAM	
Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.	
45, ROAD NO. 3, DHAKA-1203	
Drawn by: T. Hossain	Submitted by: T. Hossain
Scale: 1:1000	Date: 1984







LEGEND:

- 1. Structure, Boundary, Tie Road, etc. — [Symbol]
- 2. Road, Unimproved, Embankment — [Symbol]
- 3. Pond, Ditch, Drainage, etc. — [Symbol]
- 4. Survey Mark — [Symbol]
- 5. Temporary Bench Mark, Contour & Spot Height — [Symbol]
- 6. Tree, Coconut, Mango, etc. — [Symbol]

NOTE:

Height reduced from 6.00m to 5.00m on the top of a person in the old hospital compound, Chakaria, about 12m east from Chakaria Bus Stand. Information collected from BWS's S.O. office Chakaria. All heights are in terms of P.M.D. Datum. Contour interval is 0.30 metre. Highest Flood Level — 4.54m in 1978 (from local information). Normal Flood Level — 2.81m. High Tide Water Level — 2.81m. Low Tide Water Level — 2.81m. Area Surveyed — 100.000 hectares.

Site No. 9  
Boro Bheola G.P.S.

SCALE: 1:2500

CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER (I)

**SITE SURVEY PLAN**  
AT BARA BHEOLA, UR EAST BARA BHEOLA,  
CHAKARIA, COX'S BAZAR  
CYCLONE SHELTER NO. 9

Client: JICA BASIC DESIGN STUDY TEAM

Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.  
No. 5000 M.D. Surveying Office, Dhaka-1000

Drawn by: Md. Tahirul Haque

Approved: [Signature]

FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

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Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

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Drawn: Md. Tahirul Haque

Approved: [Signature]

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Drawn: Md. Tahirul Haque

Approved: [Signature]

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Design: Basic Design Study Team

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Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

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Drawn: Md. Tahirul Haque

Approved: [Signature]

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Drawn: Md. Tahirul Haque

Approved: [Signature]

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Drawn: Md. Tahirul Haque

Approved: [Signature]

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Drawn: Md. Tahirul Haque

Approved: [Signature]

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Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

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Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

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Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose Cyclone Shelter

Location: Bara Bheola, Cox's Bazar

Client: JICA

Design: Basic Design Study Team

Survey: Bangladesh Survey Organisation Ltd.

Drawn: Md. Tahirul Haque

Approved: [Signature]

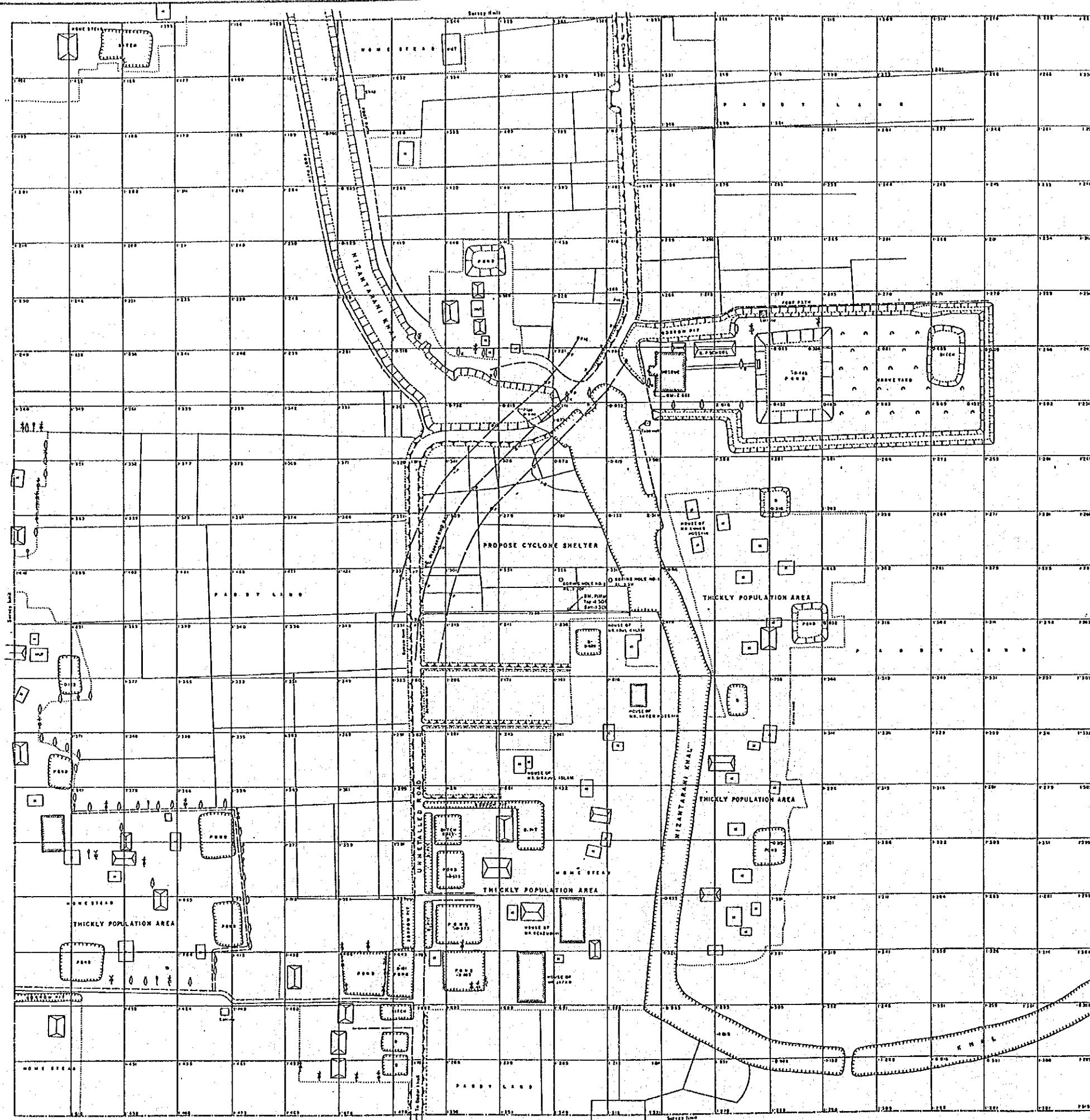
Date: FEB - 1994

Sheet No. 1 of 1

Scale: 1:2500

Project: Construction of Multipurpose





- LEGEND:
1. Structure, Permanent, Spilliment, Tashed, etc.
  2. Road, Unmetalled, Embankment
  3. Pond, Blitch, Burrow pit, Khali
  4. Survey Unit, Field book, Home land
  5. Temporary Bench Mark, Contour & Spot height
  6. Trees, Coconut, Date palm, Tadam & Others

NOTE:  
 "Multipurpose Shelter" South-West corner of Photo levelled  
 Kutubnagar G.P.S. Street Map, B.L. 2481 Metre.  
 AS before and in line of PWD Order 1W.D.83  
 Contour interval is 0.50 metre  
 Highest Flood Level... 6.150 m. to 1991 (from sea level)  
 Normal Flood Level... 2.010 m. Local Information  
 High Tide Water Level... 2.785 m. 15-2-84 from 12-30 Pm.  
 Low Tide Water Level... 0.540 m. 15-2-84 from 7-00 Am.  
 Area Surveyed... 16.00 hectare  
 Grid Box drawn at 20.00m. interval.

Site No. 11  
 Kutubnagar G.P.S.

SCALE: 1:500

CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER

SITE SURVEY PLAN

AT KUTUB NAGAR G.P.S., COX'S BAZAR

CYCLONE SHELTER NO. II

Client: JICA BASIC DESIGN STUDY TEAM

Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.

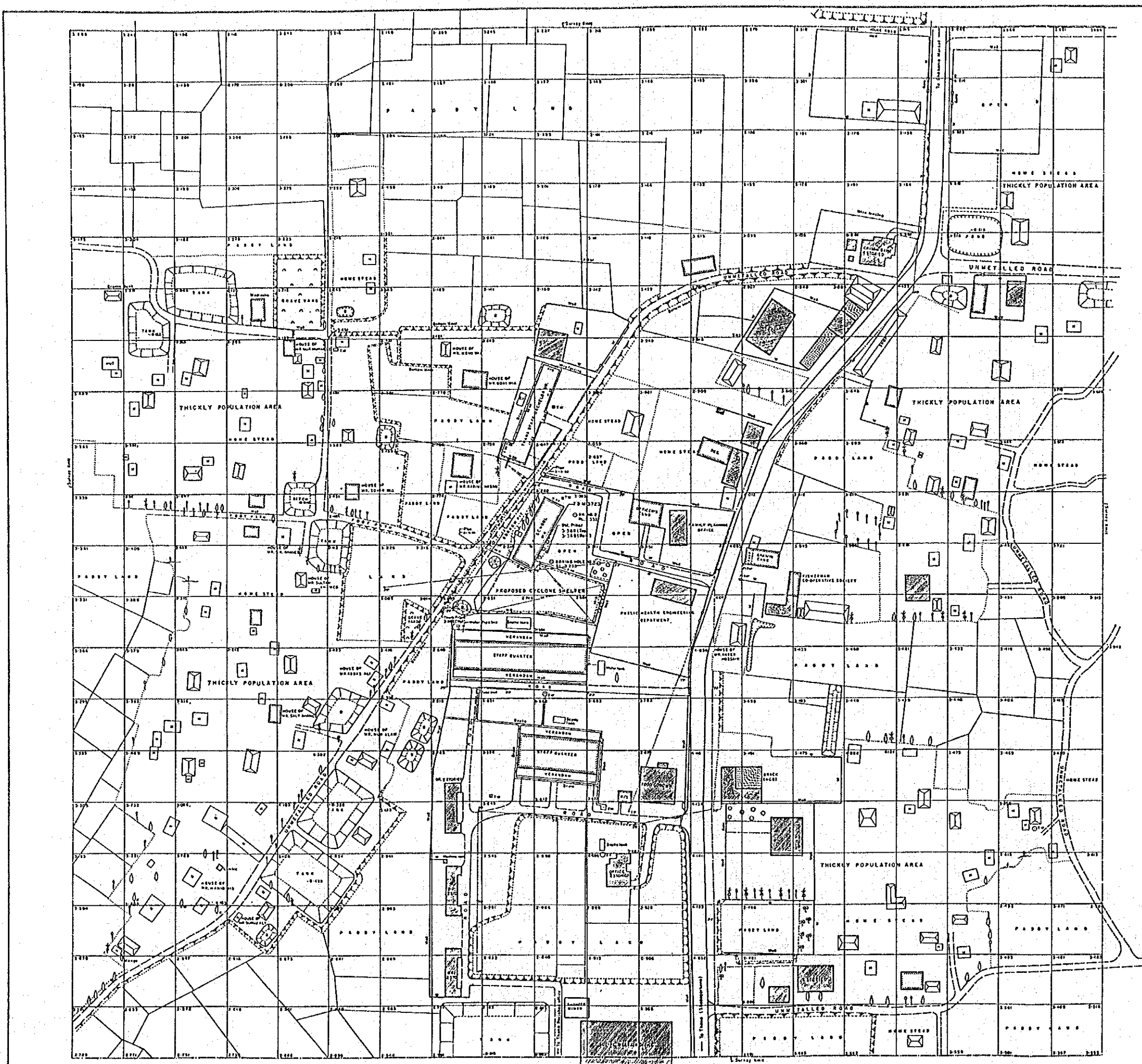
46, ROAD NO. 5, SHARMOUSHA, DHAKA-1205

Surveyed by: Mr. Nuruddin

Drawn by: Muzahid

Submitted by: Muzahid





- LEGEND:**
- 1. Structure (Permanent, Semi-permanent, Under construction) [Symbol]
  - 2. Thatched, Mud, Strand Wall [Symbol]
  - 3. Ready Made, Unmanned [Symbol]
  - 4. Brickwork, Embankment [Symbol]
  - 5. Well, Wire fencing, Drain [Symbol]
  - 6. Road, Ditch, Borrowpit, Canal [Symbol]
  - 7. Survey Mark, Field Book, Station Mark [Symbol]
  - 8. Temporary Bench Mark, Contour B. Spot Height [Symbol]
  - 9. Trees: Mango, Coconut, Betel nut, Bamboo [Symbol]
  - 10. Brakes, Bush B. Others [Symbol]

**NOTE:**

Height reduced from BM height 5.650 taken from B.T.S. BM situated in the N.W. Part of the Compound of C.B.D. Inspection Bungalow at Chokoria. To convert the MSL into P.W.D. CL 4 to be added. All heights are in terms of Mean Sea Level (MSL).

Contour Interval is 0.50 metre

Highest Flood Level... 7.930m. in 1951 (from local information)

Harmful Flood Level... 2.540m. in 1950 (from local information)

High Tide Water Level... Nil

Low Tide Water Level... Nil

Area Surveyed... 16.00 Bighas

Grid Lines drawn at 20.00m. interval.

Site No. 12  
Middle Chokoria G.P.S.

SCALE: 1:500

CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER

**SITE SURVEY PLAN**  
AT MIDDLE CHOKORIA G.P.S.  
CYCLONE SHELTER NO.12

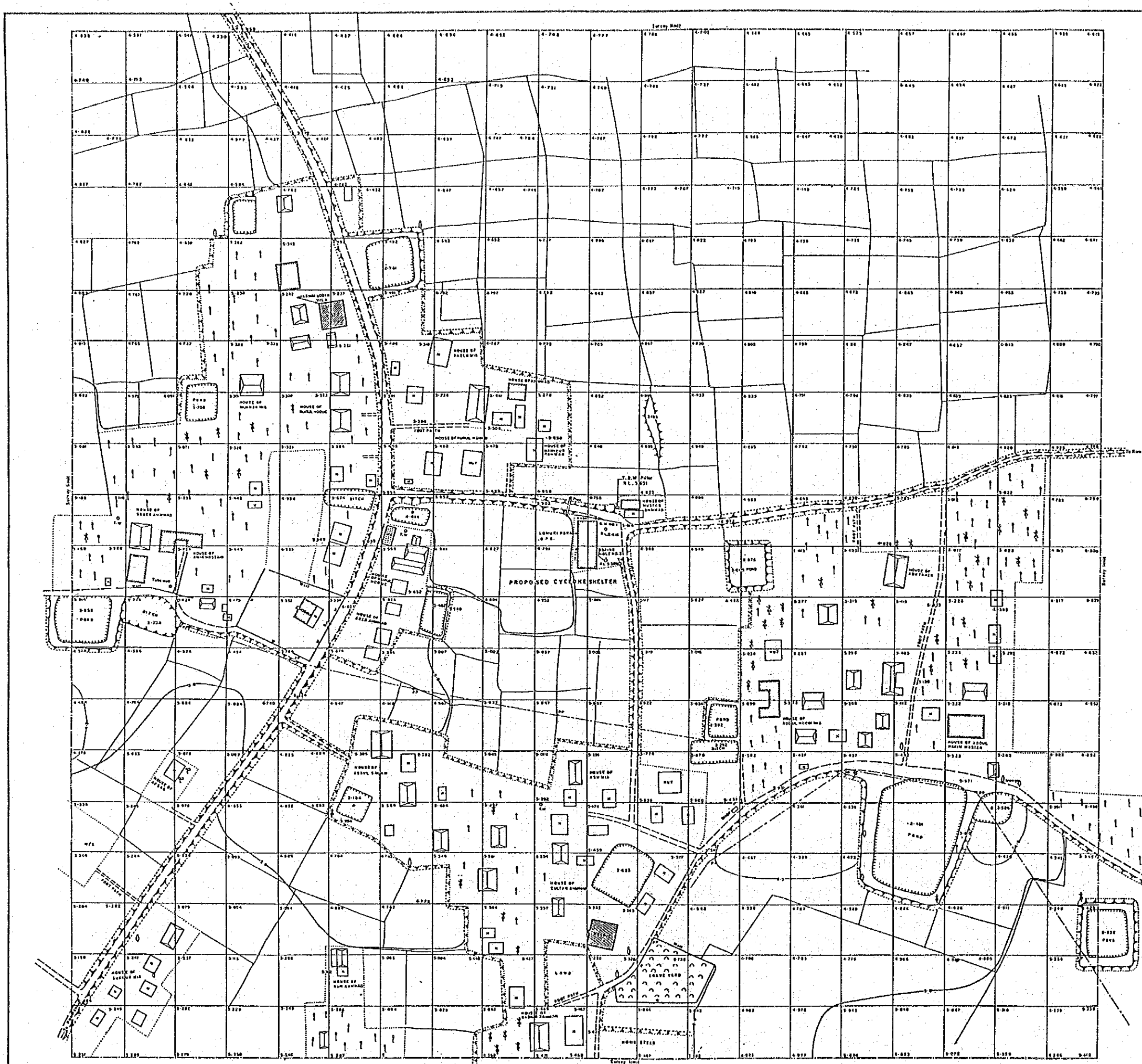
Client: JICA BASIC DESIGN STUDY TEAM

Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.  
40, ROAD NO.2, DHAKA-1205

Surveyed by: M.A. Hossain  
Drawn by: M.A. Hossain

FEB-1994





- LEGEND:**
- 1. Structures, Permanent, Steel permanent, Tin shed, etc.
  - 2. Road, Unmetalled, Embankment, etc.
  - 3. Pond, Ditch, Burrow, etc.
  - 4. Survey line, Field book, Horizontal, Bottom book
  - 5. Temporary Bench Mark, Contour & Spot Height
  - 6. Tally, Contour, Date, Name, Title, Date, Sheet & Sheet No.

**NOTE:**  
 Height reduced from B.M. on Concrete Pillar at distance CH. 601840X M.  
 From Chittagong situated on north side of road, on unmetalled road R.C. 3-707  
 All heights are in terms of P.W.D. Datum (W.D.B.)  
 Contour Interval 0.50 m.  
 Highest Peak Level 6.264 m. 1981 (from local information)  
 Lowest Peak Level ..... Nil Local Information  
 High Tide Water Level ..... Nil  
 Low Tide Water Level ..... Nil  
 Area Surveyed ..... 1000 sq. m.  
 Grid has been drawn at 20.00 m. interval.

Site No. 15  
 Lomuri Para G.P.S.

SCALE: 1:500

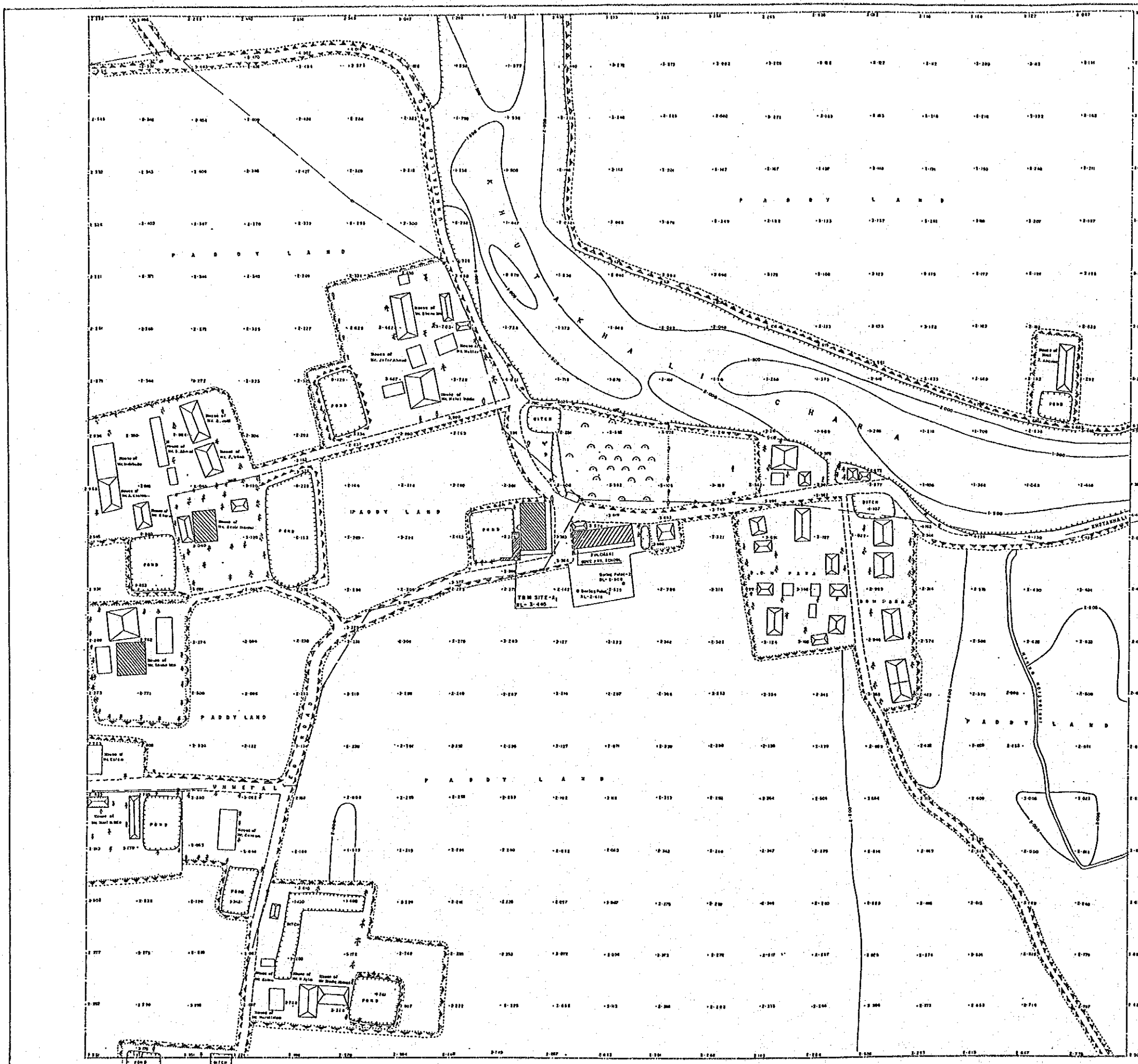
CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER	
SITE SURVEY PLAN	
AT LOMURI PARA G.P.S. COX'S BAZAR	
CYCLONE SHELTER NO. 15	
Client: JICA BASIC DESIGN STUDY TEAM	
Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.	
44, ROAD NO. 2, DHAKA-1205	
PER-1994	Surveyed by: A. K. A. 102
	Checked by: A. K. A. 102
	Drawn by: A. K. A. 102











- LEGEND:**
- 1. Structures, Sanitaryman, Tin Shed, etc. [Symbol]
  - 2. Road, Unmetalled, Embankment [Symbol]
  - 3. Pond, Ditch, Burroughs, etc. [Symbol]
  - 4. Survey Mark [Symbol]
  - 5. Temporary Bench Mark, Control & Spot Height - TBM [Symbol]
  - 6. Trees, Coconut, Mango, Betel, Others & Bamboo [Symbol]
  - 7. Electric Pole [Symbol]

**NOTE:**

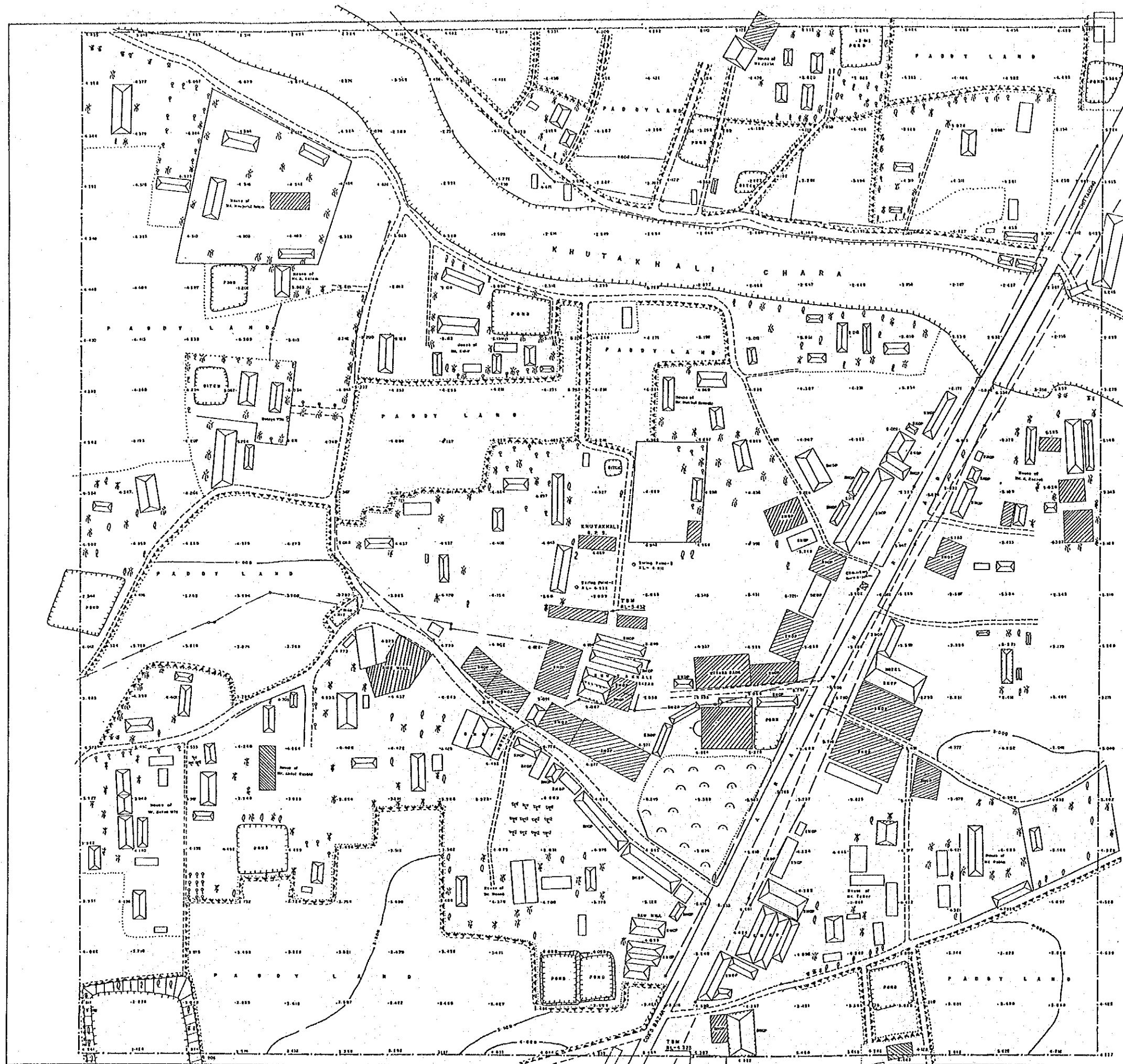
Height reduced from BM-15 (RL-9.078m.) Road & Highways Department  
 Stationed at the N/E Corner of Khutakhali High School Compound.  
 Information collected from BNG office G.S. Bazar.  
 All heights are in terms of P.W.D. Datum.  
 Contour Interval is 0.50 metre.  
 Highest Flood Level --- 4.825m. in 1978 (from local information)  
 Highest Flood Level --- 3.720m.  
 Highest Flood Level --- 3.720m.  
 High Tide Water Level --- No tidal effect due to Shales Canal.  
 Low Tide Water Level ---  
 Area Surveyed --- 16.000 Hectare.

Site No. 31  
 Fulchhari G.P.S.

SCALE: 1:500

CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER (M)		
SITE SURVEY PLAN		
AT FULCHARI, UR KHUTAKHALI		
CHAKARIA, COX'S BAZAR		
CYCLONE SHELTER NO. 31		
Client: JICA BASIC DESIGN STUDY TEAM		
Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.		
M. RASHID HAS, BANSHAGHAT AREA, BANAR-1205		
Prepared by: M. Shaukat Kabir	Drawn by: M. M. Mollor Rahman	Submitted:





# LEGEND:

1. Structure, Pucca, Impermanent, Tin Shed, Hut - [Symbol]
2. Road, Metalled, Unmetalled, Embankment - [Symbol]
3. Paddy, Ditch, Barrenly, Shad - [Symbol]
4. Survey Line - [Symbol]
5. Temporary Bench Mark, Control & Spot Height of TBM - [Symbol]
6. Tree, Coconut, Banana, Betel, & Others - [Symbol]
7. Electric Pole, Telephone Pole - [Symbol]

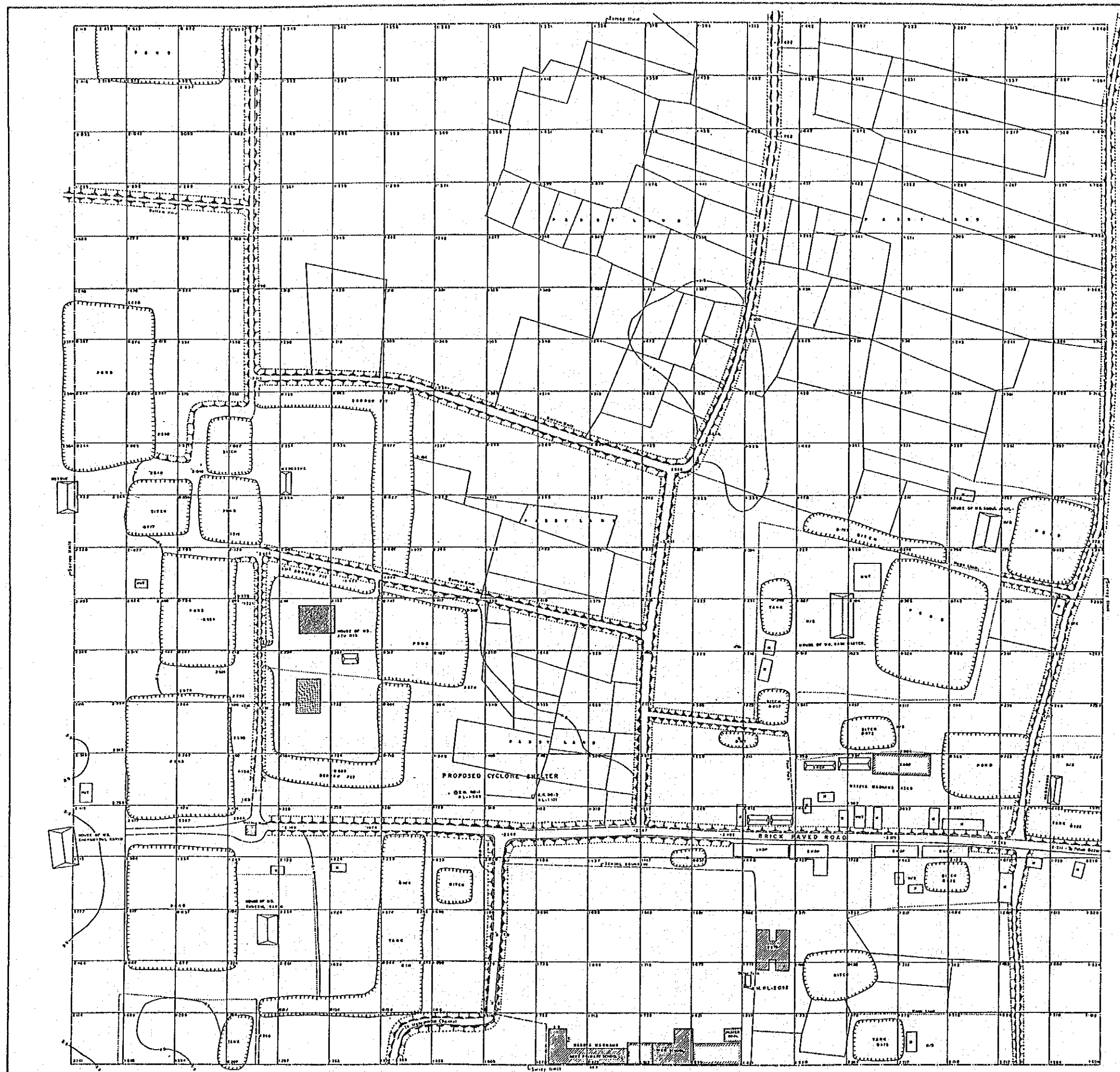
NOTE:  
 Height reduced from S.W.-19 (81-5-07m) of Roads & Highways Department, Surveyed in the S/E Corner of Khutakhali High School, Information Collected from AHD Office, Cox's Bazar.  
 All heights are in terms of R.M.D. Datum.  
 Contour Interval is 0.50m.  
 Highest Field Level - 5.481m. (in 1981 from local information)  
 Hardest Field Level - 4.759m.  
 High Tide Water Level - No tidal effect due to Sluice Control.  
 Low Tide Water Level -  
 Area Surveyed - 18.000 hectares.

Site No. 32  
 Khotakhali G.P.S.

SCALE: 1:1500

CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER (1)	
SITE SURVEY PLAN	
AT KHUTAKHALI, UP KHUTAKHALI CHAKARIA, COX'S BAZAR	
CYCLONE SHELTER NO. 32	
Client: JICA BASIC DESIGN STUDY TEAM	
Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.	
40, 50/50 HOS, BANARMONDI, D/O, Dhaka-1100	
Surveyed by: Md. Jashim Uddin	
FEB-1994	
Drawn by: MN Yeasir Ali	Reviewed:





- LEGEND:
1. Structure: Permanent, Semi-permanent, Temporary, etc.
  2. Road: Unimproved, Embankment, etc.
  3. Pond, Ditch, Barren or Salt.
  4. Survey Mark, Field book, Name from, etc.
  5. Temporary Bench Mark, Contour & Spot height.
  6. Trace: Contour, Ditch, etc.

NOTE:

Height received from BM Top of Wing wall of new Sluice gate over Canal River, RL. 2142M.

All heights are in terms of PWD Datum (W.D.87)

Contour interval is 0.50 metre

Highest Flood Level: 4.632 m. in 1991 (from local observation)

Highest Road Level: 4.755 m. Local information

High Tide Water Level: ... M

Low Tide Water Level: ... M

Area Surveyed: ... M<sup>2</sup> (approx)

Grid lines drawn at 20.00m interval.

Site No. 33  
Maddaya Magnama G.P.S.

SCALE: 1:500

CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER

**SITE SURVEY PLAN**  
AT MADDAYA MAGNAMA G.P.S., COX'S BAZAR  
CYCLONE SHELTER NO. 33

Client: JICA BASIC DESIGN STUDY TEAM

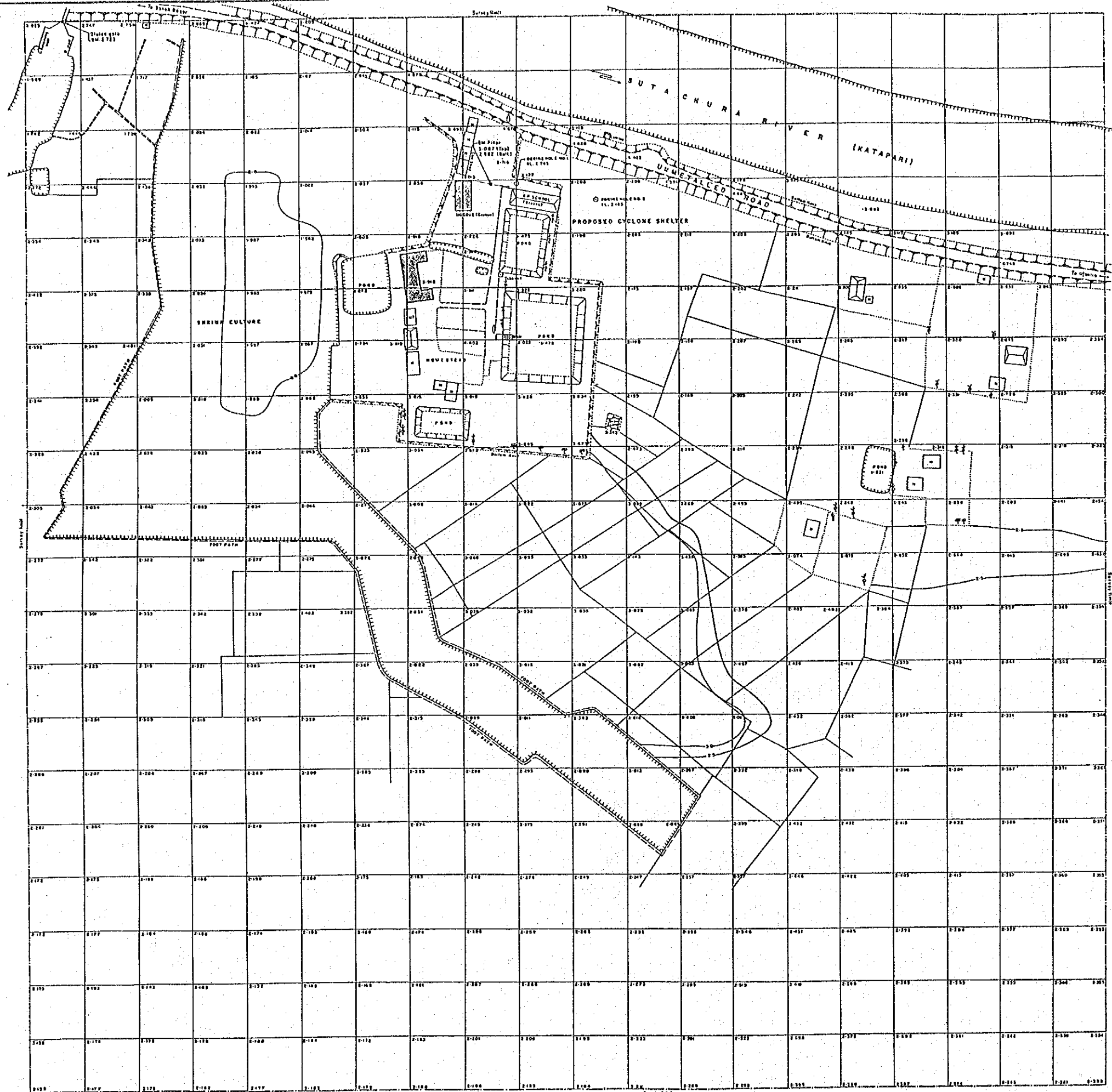
Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.  
M. MOHD NO. 3, DHAKA-1102

Drawn by: M. C. Paul

Sheet No. 1 of 1







- LEGEND:**
- 1. Structure/Permanent, Semi-permanent, Temporary
  - 2. Road, Lane, Police, Embankment
  - 3. Pond, Shrub, Bamboo, Kailash
  - 4. Survey Mark, Field Mark, House Mark
  - 5. Temporary Mark, Corner & Intersection
  - 6. Trees, Cactus, Date palm, Ficus, etc.

**NOTE:**  
 Height reduced from B.M. on top of Head wall of Sutachura gate no. 43. B.M. situated at 200 m. west from Sutachura gate no. 43. B.M. at 2732 m. All heights are from B.M. Datum (W.D. 81)  
 Contour Interval is 0.50 m.  
 Highest Flood Level: 2.55 m. (from local information)  
 Normal Flood Level: 2.50 m. (from local information)  
 High Tide Water Level: 2.45 m.  
 Low Tide Water Level: 2.35 m.  
 Area Surveyed: 1000 m. x 1000 m.  
 Grid lines drawn at 1000 m. interval.

Site No. 34  
 Sutachura G.P.S.

SCALE: 1:500

CONSTRUCTION OF MULTIPURPOSE CYCLONE SHELTER

**SITE SURVEY PLAN**  
 AT SUTACHURA G.P.S., COX'S BAZAR  
 CYCLONE SHELTER NO. 34

Client: JICA BASIC DESIGN STUDY TEAM

Surveyed by: BANGLADESH SURVEY ORGANISATION LTD.  
 44, ROAD NO. 3, BANSHAMUKH, D/A, DHAKA 1209

Surveyed by: M. Nazimuddin  
 Drawn by: M. Nazimuddin

FEB-1994





## **7.2 Geological Survey**

### **(1) Survey Contents**

- 1) Boring (soil survey) : soil survey consisting of 2 boring holes at each shelter site with a boring depth of approximately 5m below the surface of the bearing layer or of approximately 30m in total depth if no bearing layer exists
- 2) Standard Penetration Test : in principle, every meter
- 3) Soil Test : unconfined compression strength, grain size distribution, natural moisture content, etc.

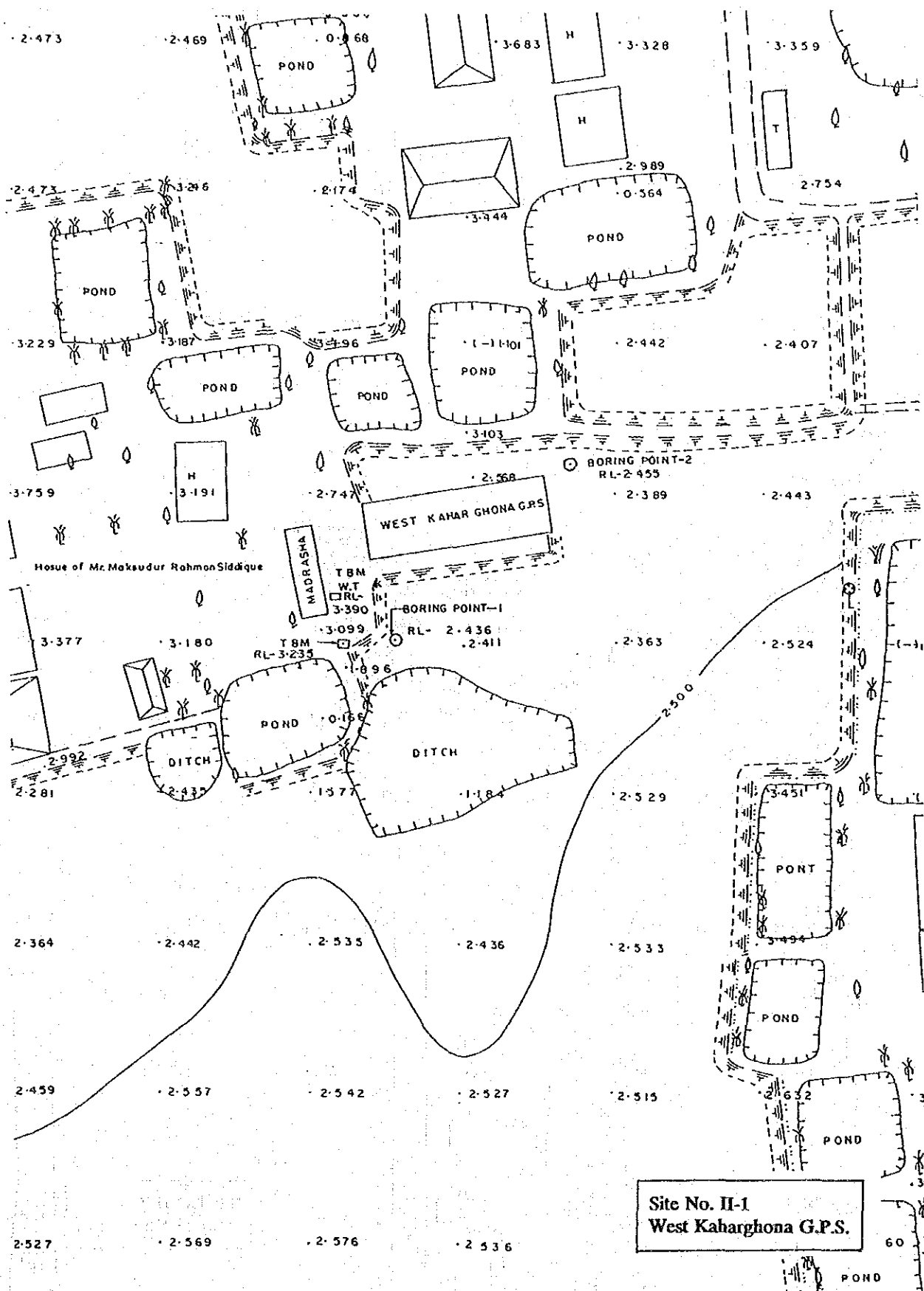
The results of the geological survey are given as follows.



## **APPENDIX 7.2.1**

### **LOCATIONS OF BORING HOLES**

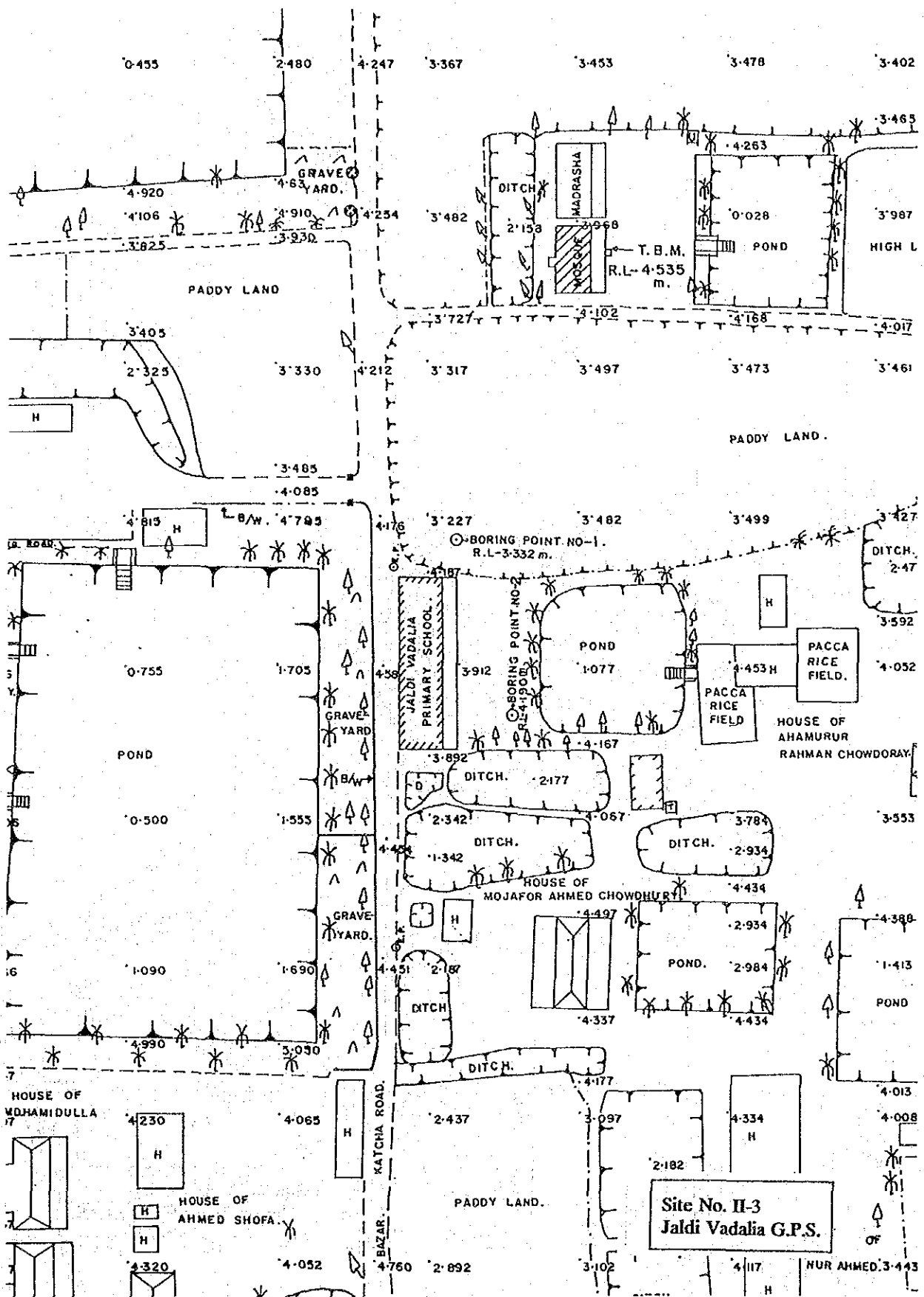


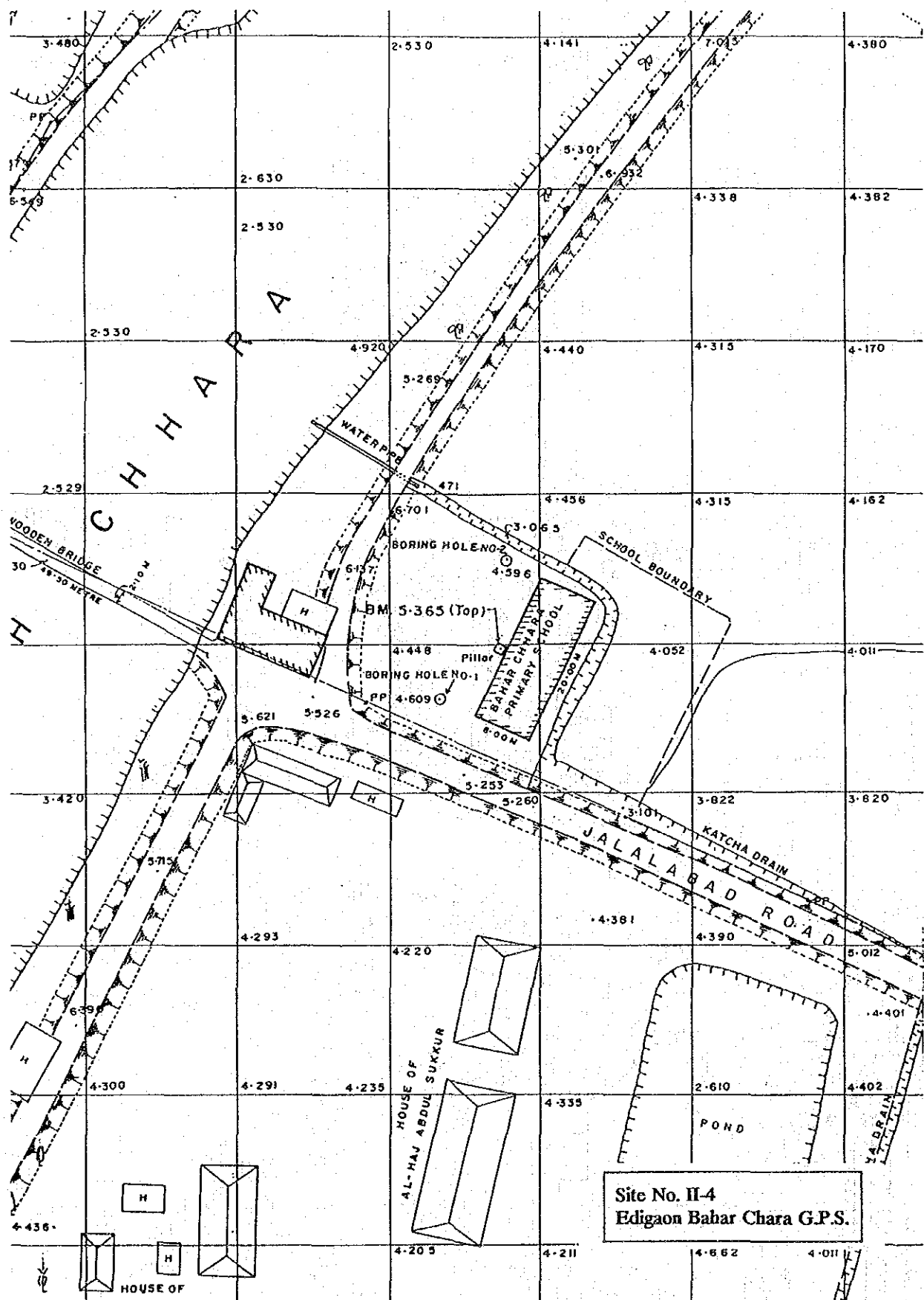


Site No. II-1  
West Kaharghona G.P.S.

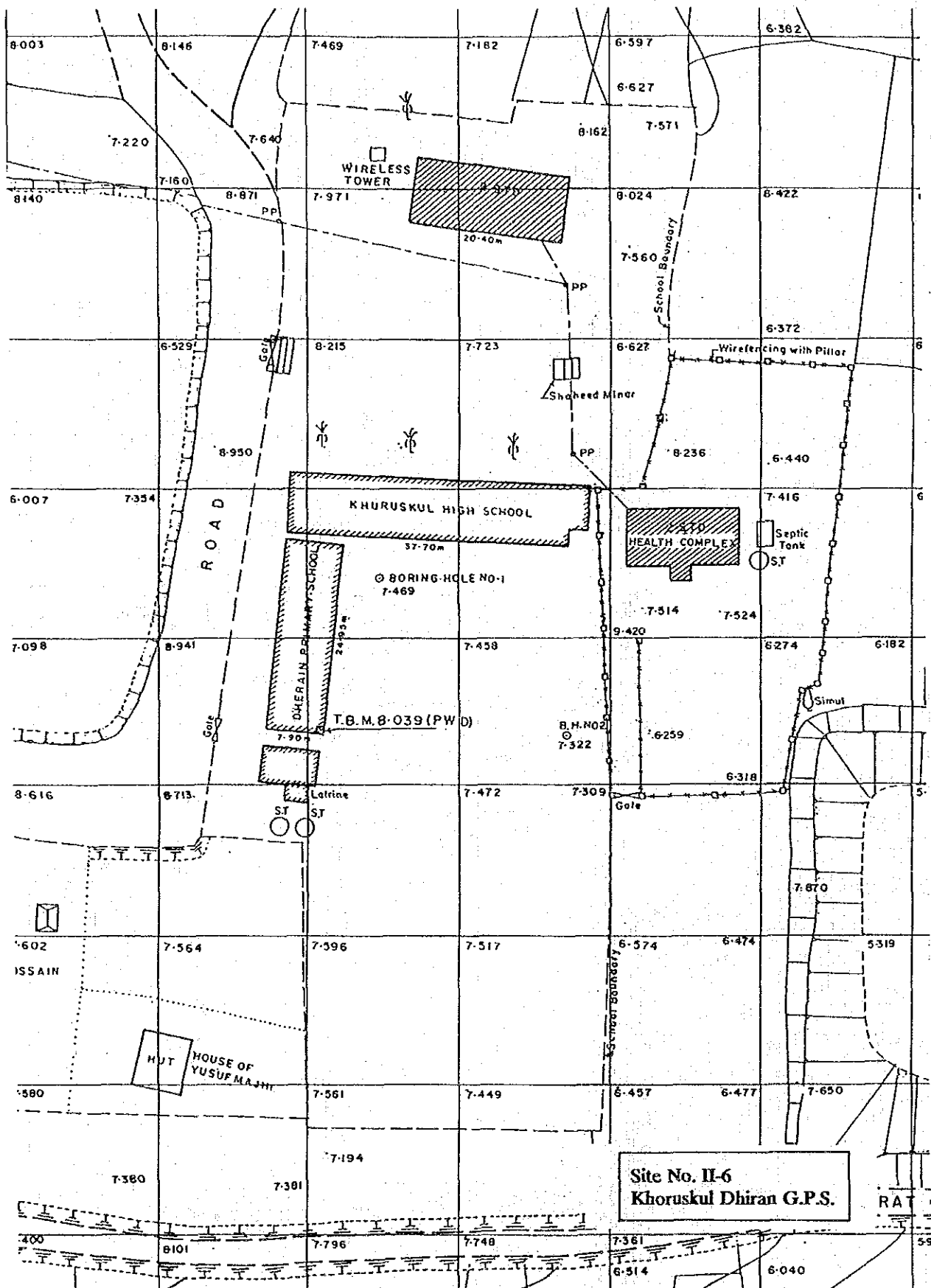


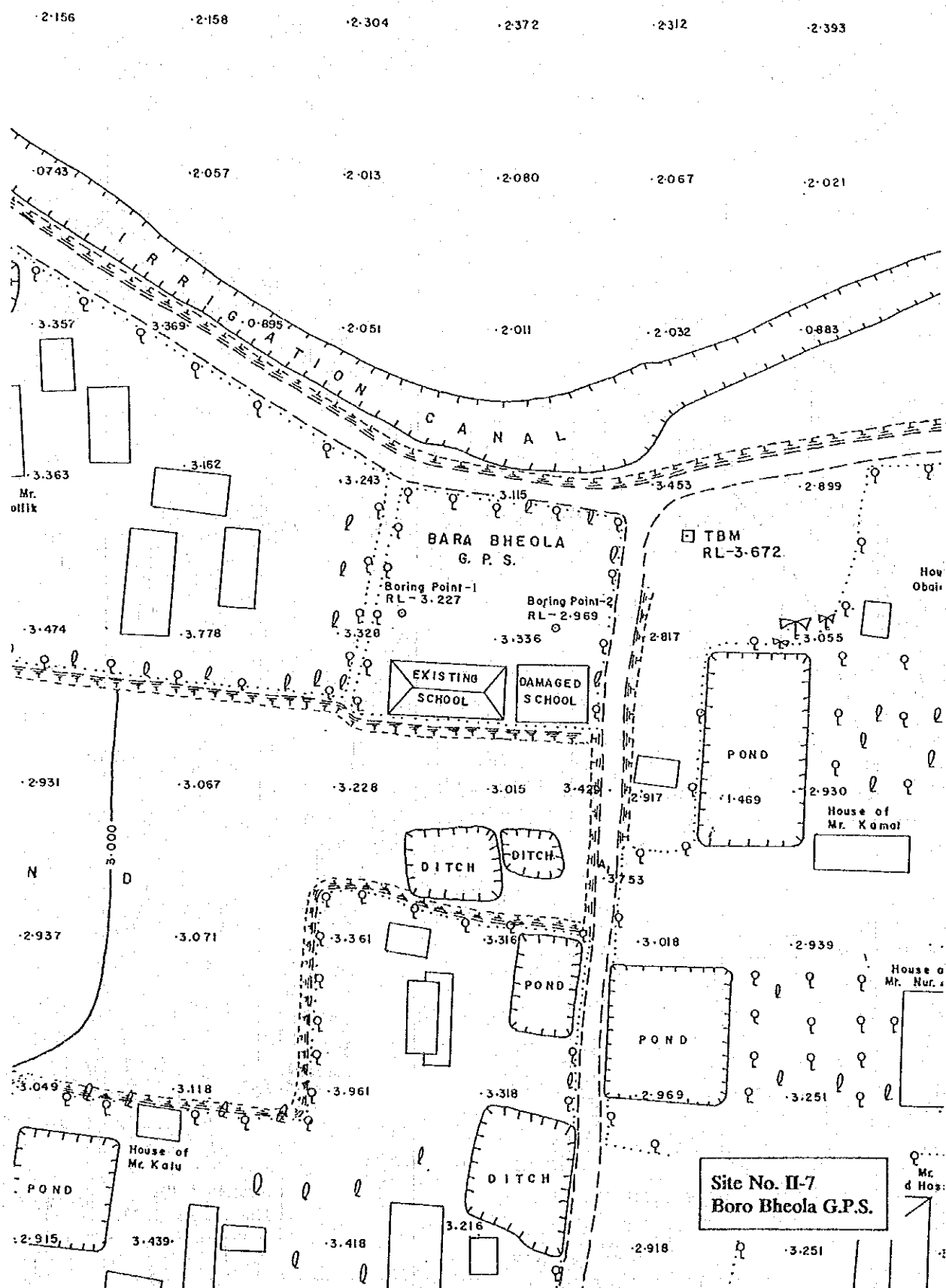


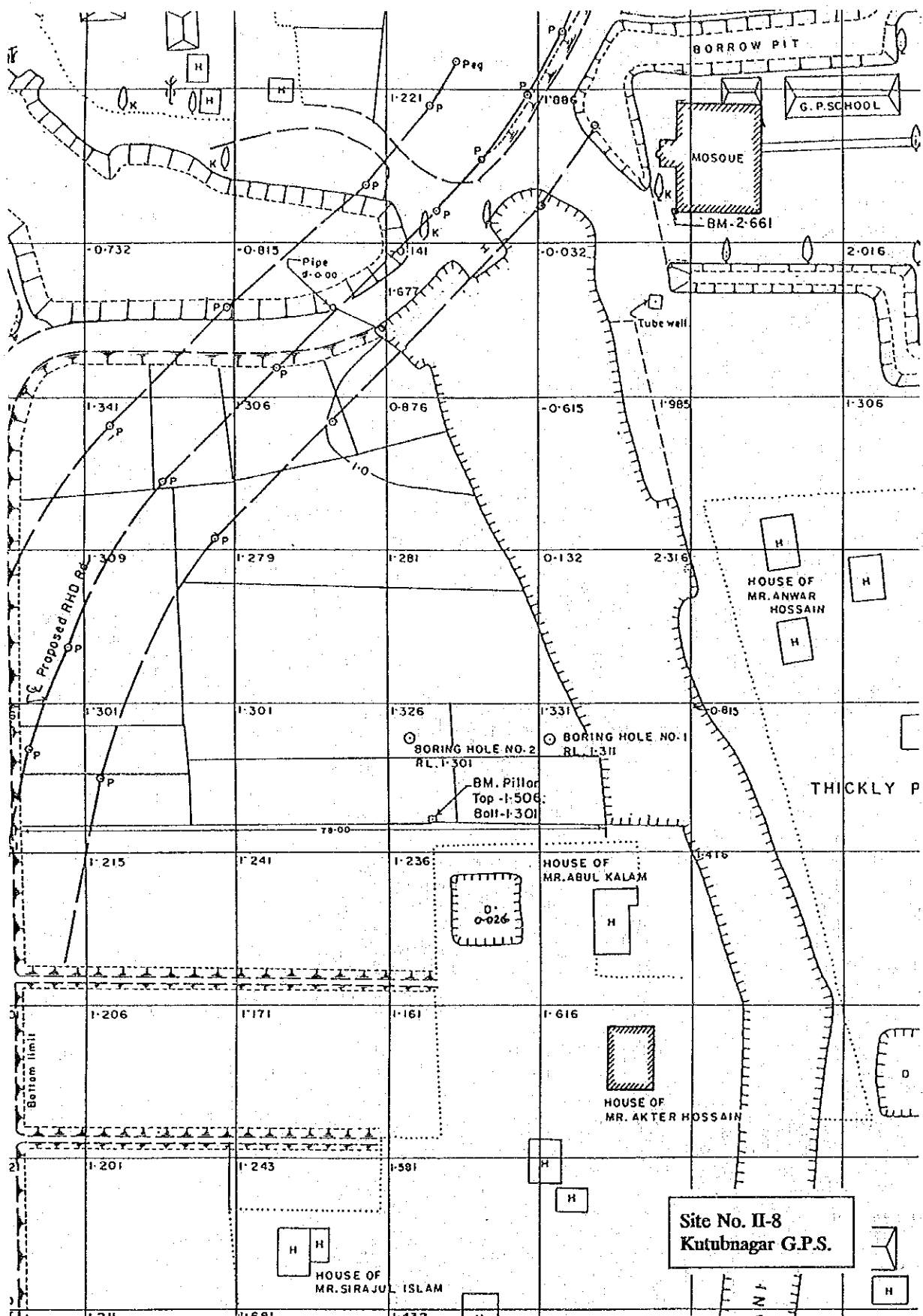






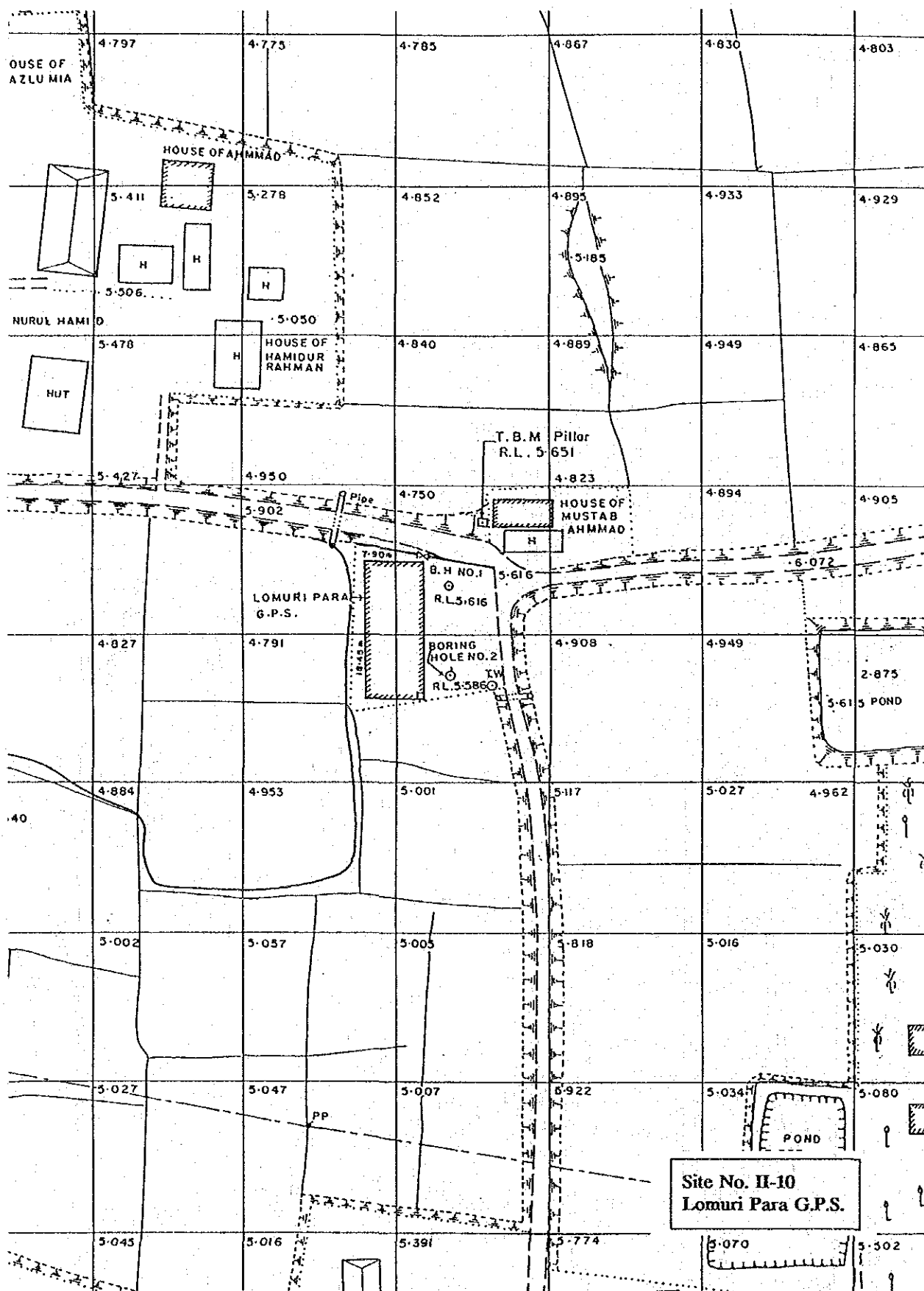


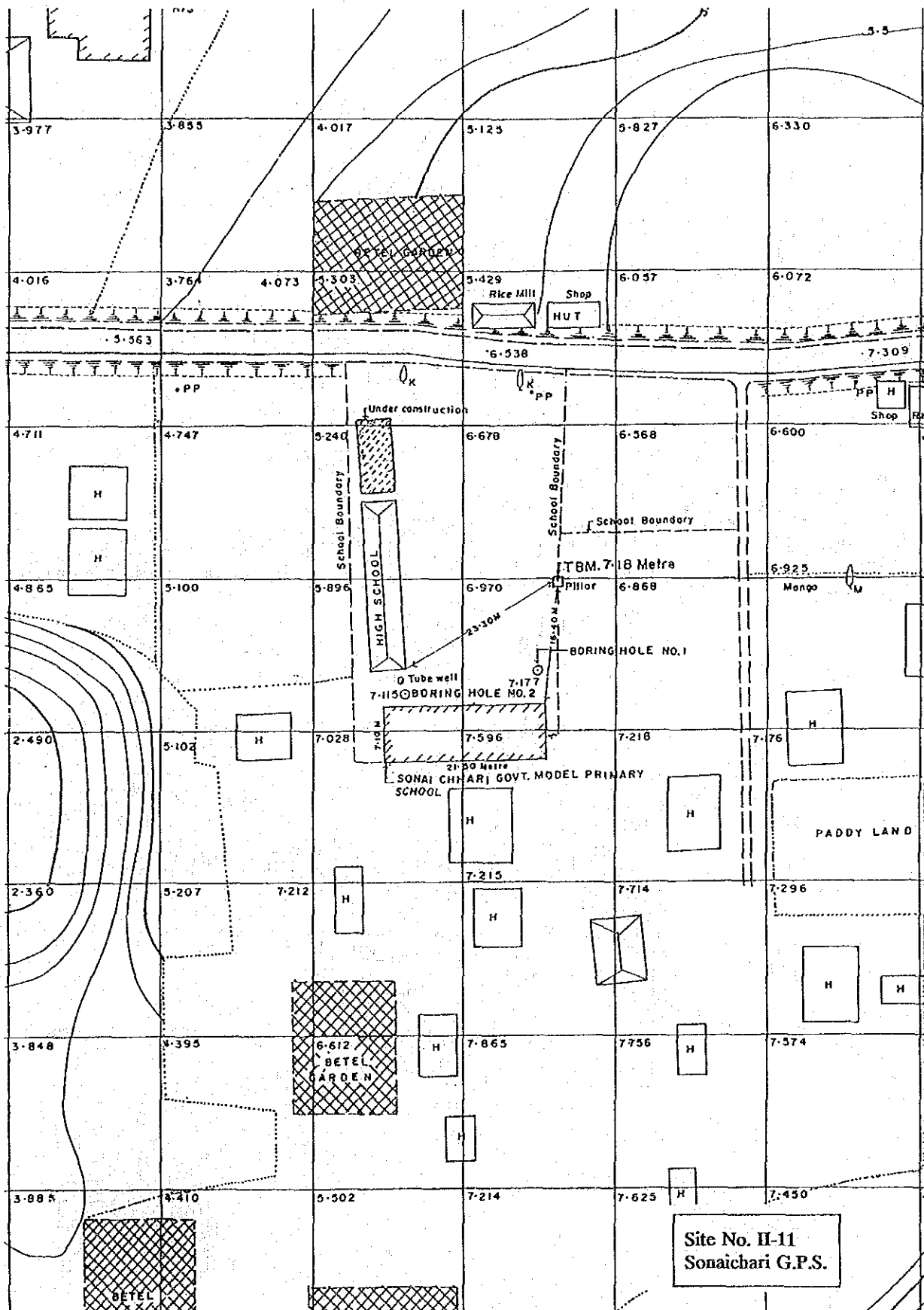






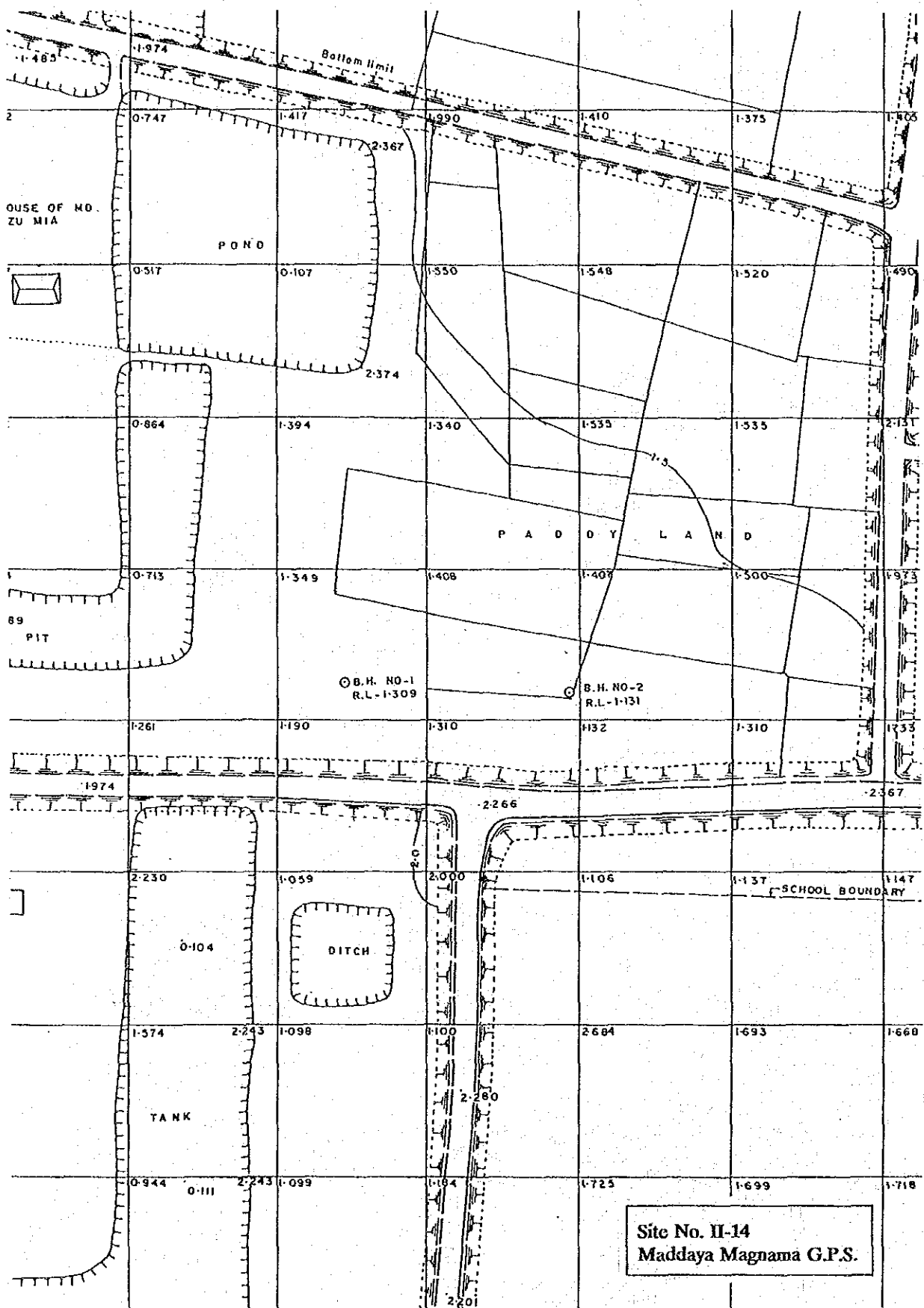












Site No. II-14  
Maddaya Magnama G.P.S.

