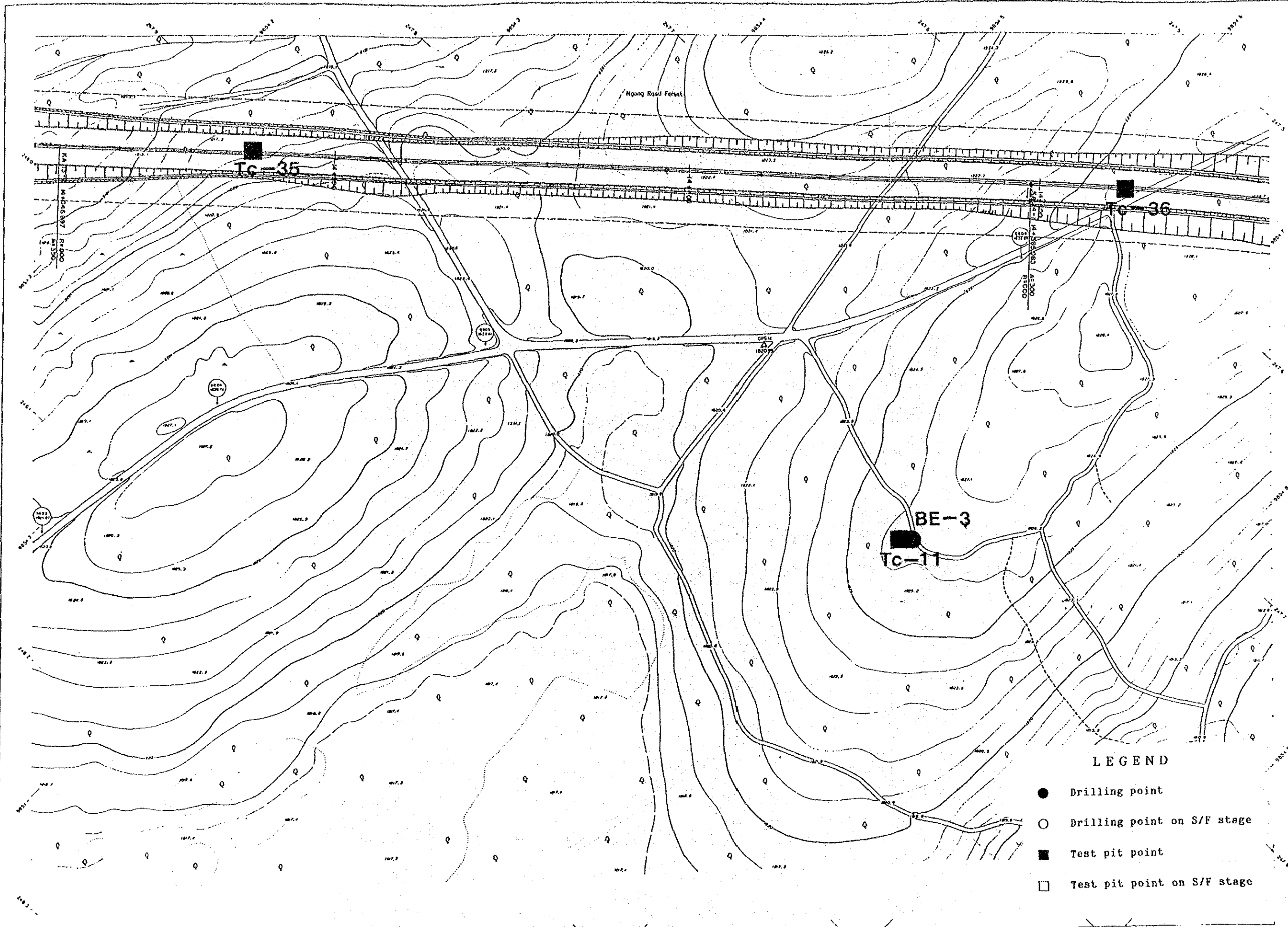


# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 23

22 23 24

INDEX TO ADJOINING SHEETS



## LEGEND

- △ GNS Point
- Traverse Point
- Bench Mark
- 1234.5 Direct Leveling Height
- 1234.5 Spot Height
- 1234.5 Contours (V.L. Int)
- Outcrop (Rock)
- ▨ Building (Farmhouse)
- ▨ Building (Other)
- ▨ Discontinued Road
- ▨ Road
- ▨ Track
- ▨ Railway
- ▨ Bridge, Culvert
- ▨ River
- ▨ Stream
- ▨ Dam
- ▨ Pond
- ▨ Water Tank
- ▨ Ductile Line
- ▨ Telephone Line
- ▨ Fence Gate
- ▨ Hedge
- ▨ Stone Wall
- ▨ Dump or Mound
- ▨ Quarry Pit
- ▨ Cutting
- ▨ Embankment
- ▨ Cultivated Land
- Orchard or Permanent C.
- Plantation
- Grassland
- Bush
- Forest
- ▨ Swamp
- ▨ Vegetation Boundary
- ▨ Planning Partition

HORIZONTAL DATUM: UTM ZONE 37  
CLARK 1866 Spheroid

VERTICAL DATUM: MEAN SEA LEVEL

AERIAL PHOTOGRAPHY BY: JICA International Cooperation Agency

GROUND CONTROL SURVEYED BY: December

STEREO PLOTTED BY: MARCH

CARTOGRAPHED BY: JICA

## LEGEND

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

CHIEF ENGINEER: DATE

CHIEF Supt. Eng.: DATE

CHIEF Supt. Eng.: DATE

Supt. Engineer: DATE

PROJECT ENGINEER: DATE

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OFFICE OF ORIGIN

JICA TOKYO, JAPAN

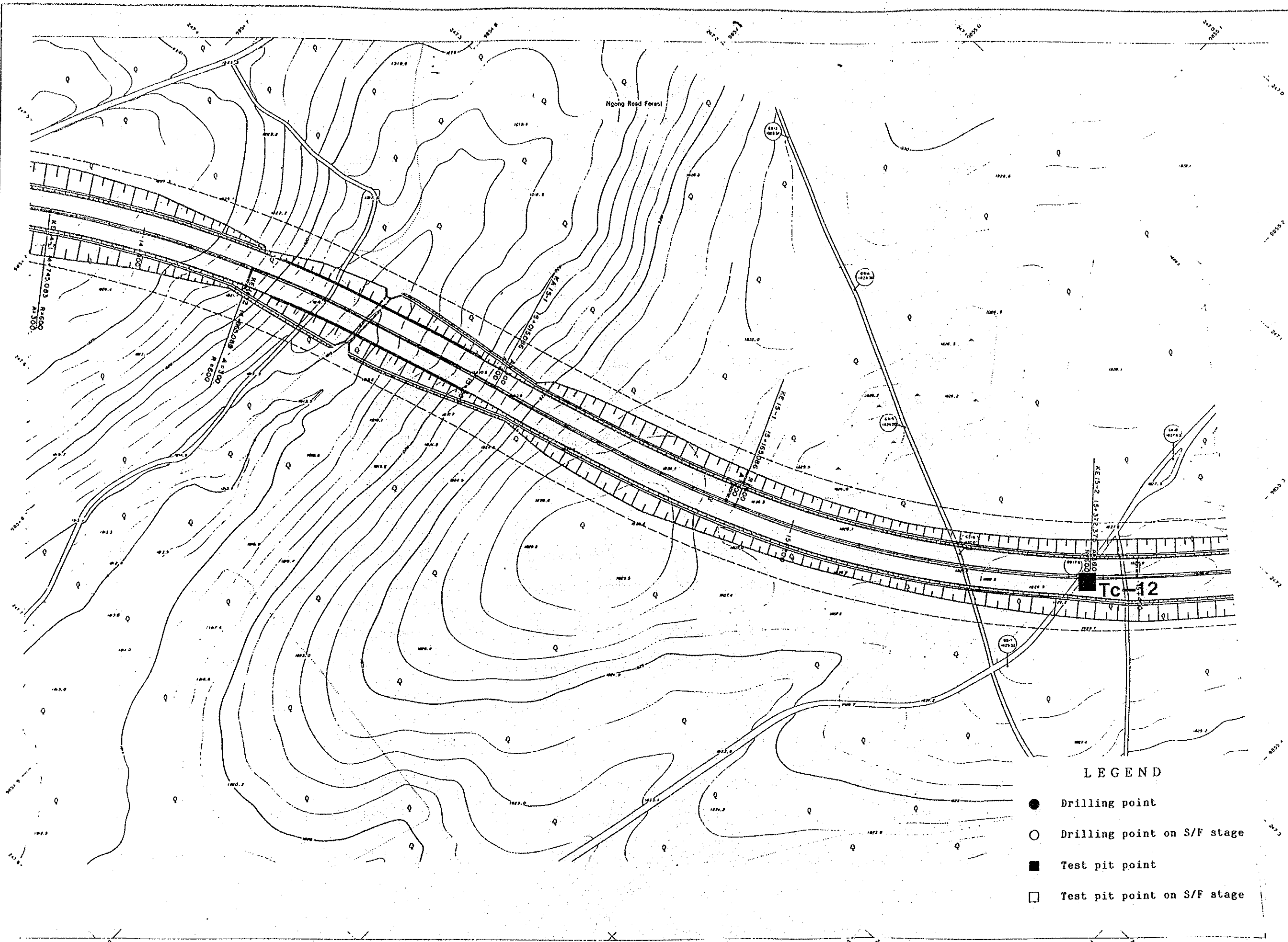
SHEET 23 OF 46

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 24

23 24 25  
25-1  
INDEX TO ADJOINING SHEETS



Scale 1:12,000  
HEI HTS IN METERS

- LEGEND**
- △ GIS Point
  - Traverse Point
  - ⊕ Bench Mark
  - 1234.5 Direct Leveling Height
  - 1234.5 Spot Height
  - Contours (V.I. Int.)
  - Outcrop (Rock)
  - ▨ Building (Permanent)
  - ▨ Building (Others)
  - ▨ Hutteness Road
  - ▨ Road
  - ▨ Track
  - ▨ Railway
  - ▨ Bridge, Culvert
  - ▨ River
  - ▨ Stream
  - ▨ Dam
  - ▨ Pond
  - ▨ Water Tank
  - ▨ Power Line
  - ▨ Telephone Line
  - ▨ Fence, Gate
  - ▨ Hedge
  - ▨ Stone Wall
  - ▨ Dump or Mound
  - ▨ Quarry, Pit
  - ▨ Cutting
  - ▨ Embankment
  - ▨ Cultivated Lands
  - ▨ Orchard or Permanent
  - ▨ Plantation
  - ▨ Grassland
  - ▨ Bush
  - ▨ Forest
  - ▨ Swamp
  - ▨ Vegetation Boundary
  - ▨ Planting Partition

HORIZONTAL DATUM: UTM ZONE 37  
CLARK 1948 SPHEROID

VERTICAL DATUM: MEAN SEA LEVEL

AERIAL PHOTOGRAPHY BY: Japan International Cooperation Agency

GROUND CONTROL SURVEYED BY: Directorate

STEREO PLOTTED BY: MARKO

CARTOGRAPHY BY: D.I.V.

CHIEF ENGINEER: [ ] DATE: [ ]

CHIEF SUPT. ENG.: [ ] DATE: [ ]

CHECKED BY: SEN. SUPT. ENG.: [ ] DATE: [ ]

SUPT. ENGINEER: [ ] DATE: [ ]

PROJECT ENGINEER: [ ] DATE: [ ]

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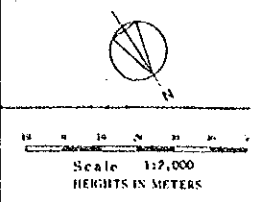
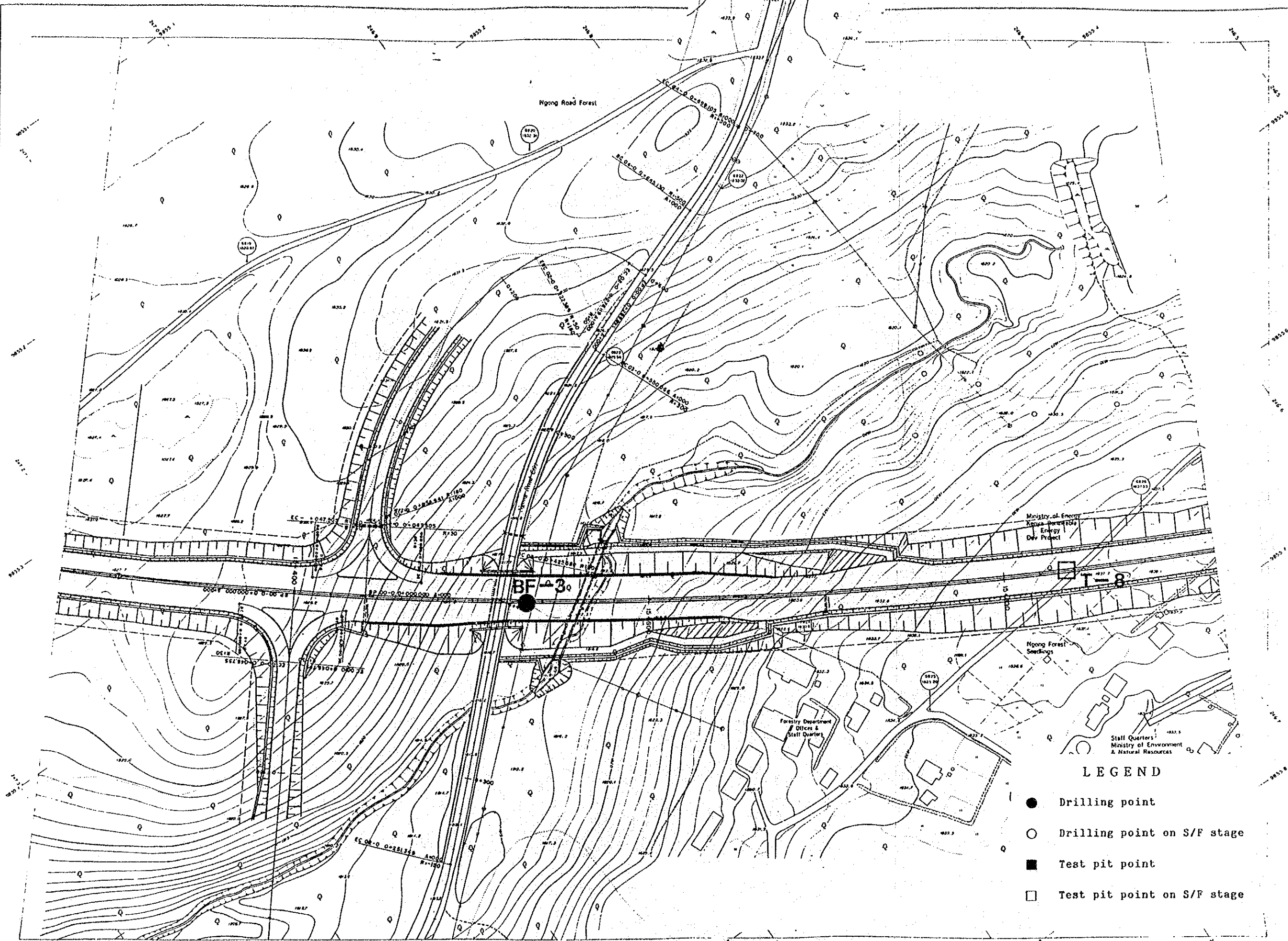
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SHEET 24 OF 46

- LEGEND**
- Drilling point
  - Drilling point on S/F stage
  - Test pit point
  - Test pit point on S/F stage

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY



**LEGEND**

- GPS Point
- ⊙ Traverse Point
- ⊕ Bench Mark
- 1234.5 Direct Leveling Height
- 123.4 Spot Height
- 123.4 Continuous 1/10m
- ⊠ Outcrop (Rock)
- ▭ Building, Permanent
- ▭ Building, Others
- ▭ Hut/wooded Road
- ▭ Road
- ▭ Track
- ▭ Rails
- ▭ Bridge, Culvert
- ▭ River
- ▭ Stream
- ▭ Dam
- ▭ Pond
- ▭ Water Tank
- ▭ Fences Line
- ▭ Telephone Line
- ▭ Fence, Gate
- ▭ Hedge
- ▭ Stone Wall
- ▭ Dump or Mound
- ▭ Quarry Pit
- ▭ Cutting
- ▭ Embankment
- ▭ Cultivated Lands
- ▭ Orchard or Permanent Cr.
- ▭ Plantation
- ▭ Grassland
- ▭ Bush
- ▭ Forest
- ▭ Swamp
- ▭ Vegetation Boundary
- ▭ Flaming Partition

HORIZONTAL DATUM UTM ZONE V  
(CLARKE 1866 SPHER)

VERTICAL DATUM MEAN SEA LEVEL

AERIAL PHOTOGRAPHED BY JR  
(Japan International Cooperation Year  
December)

GROUND CONTROL SURVEYED BY JR  
(December)

STEREO PLOTTED BY JR  
MARCH

CARTOGRAPHED BY JR  
JULY

CHIEF ENGINEER 1983  
DATE

CHIEF SUFF. ENG. 1983  
DATE

CHECKED BY: SEN. SUFF. ENG. 1983  
DATE

SUFF. ENGINEER 1983  
DATE

PROJECT ENGINEER  
DATE

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JICA TOKYO, JAPAN

**LEGEND**

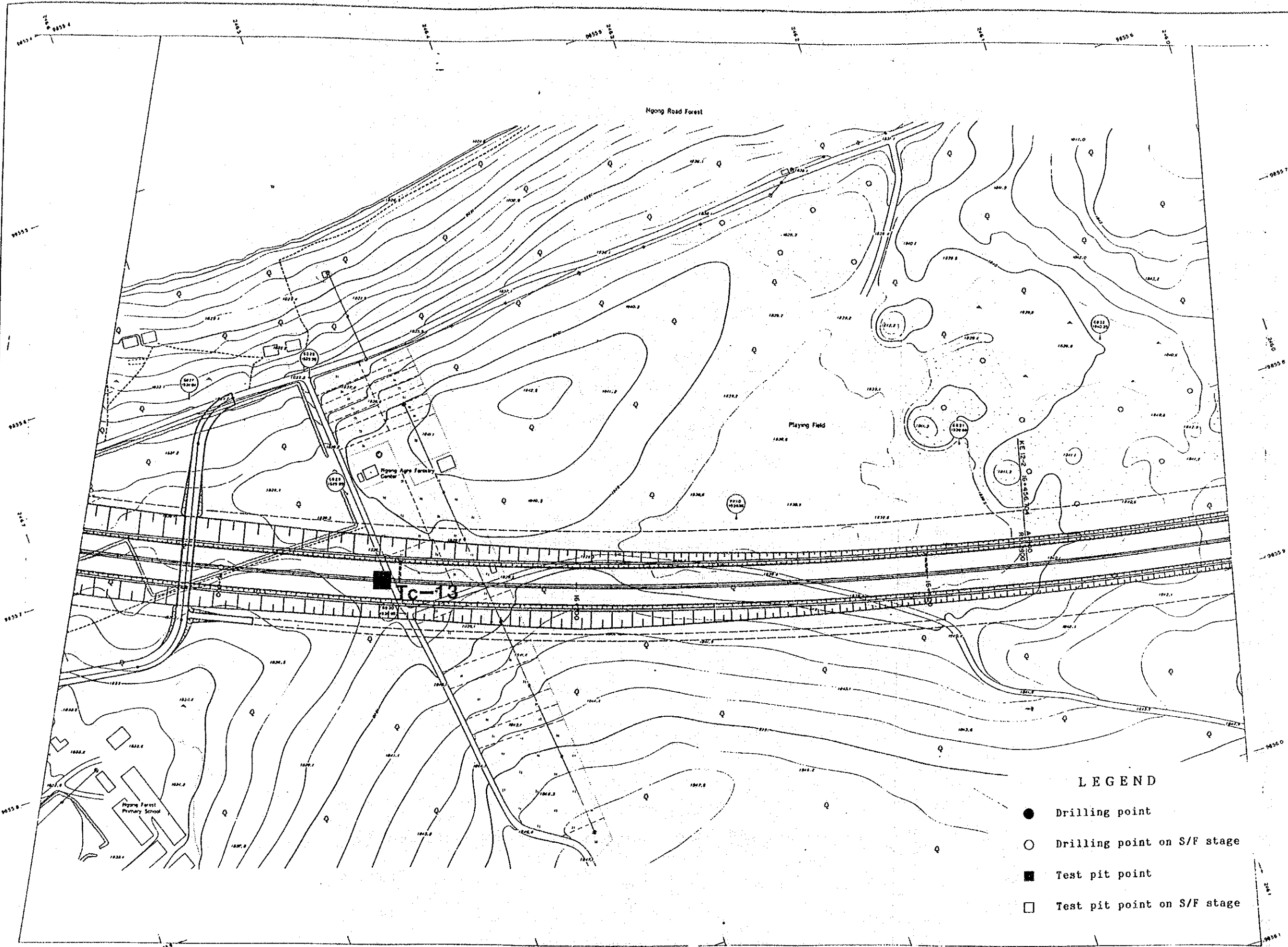
- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 26

25 26 27  
INDEX TO ADJOINING SHEETS



Scale 1:2,000  
HEIGHTS IN METERS

**LEGEND**

- GPS Point
- Traverse Point
- ⊙ Bench Mark
- 1224.5 Direct Leveling Height
- 1221.2 Spot Height
- Contours (1:1 m)
- ⊠ Outcrop (Rock)
- ▭ Building, Permanent
- ▭ Building, Other
- ▭ Bituminous Road
- ▭ Road
- ▭ Track
- ▭ Railway
- ▭ Bridge, Culvert
- ▭ River
- ▭ Stream
- ▭ Dam
- ▭ Pond
- Water Tank
- ▭ Power Line
- ▭ Telephone Line
- ▭ Fence, Gate
- ▭ Hedge
- ▭ Stone Wall
- ▭ Dump or Mound
- ▭ Quarry, Pit
- ▭ Cutting
- ▭ Embankment
- ▭ Cultivated Land
- ▭ Orchard or Permanent Cr.
- ▭ Plantation
- ▭ Grassland
- ▭ Bush
- ▭ Forest
- ▭ Swamp
- ▭ Vegetation Boundary
- ▭ Planting Partition

HORIZONTAL DATUM: UTM ZONE 32  
(CLARKE 1866 SPHERE)

VERTICAL DATUM: MEAN SEA LEVEL

AERIAL PHOTOGRAPHY BY: JICA  
Japan International Cooperation Agency  
December

GROUND CONTROL SURVEYED BY: JICA  
December

STEREO PLOTTED BY: JICA  
MARCH

CARTOGRAPHY BY: JICA  
JULY

CHECKED BY: SEN SUPT. ENG. DATE: \_\_\_\_\_

SUPT. ENGINEER DATE: \_\_\_\_\_

PROJECT ENGINEER DATE: \_\_\_\_\_

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SHEET 26 OF 46

**LEGEND**

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

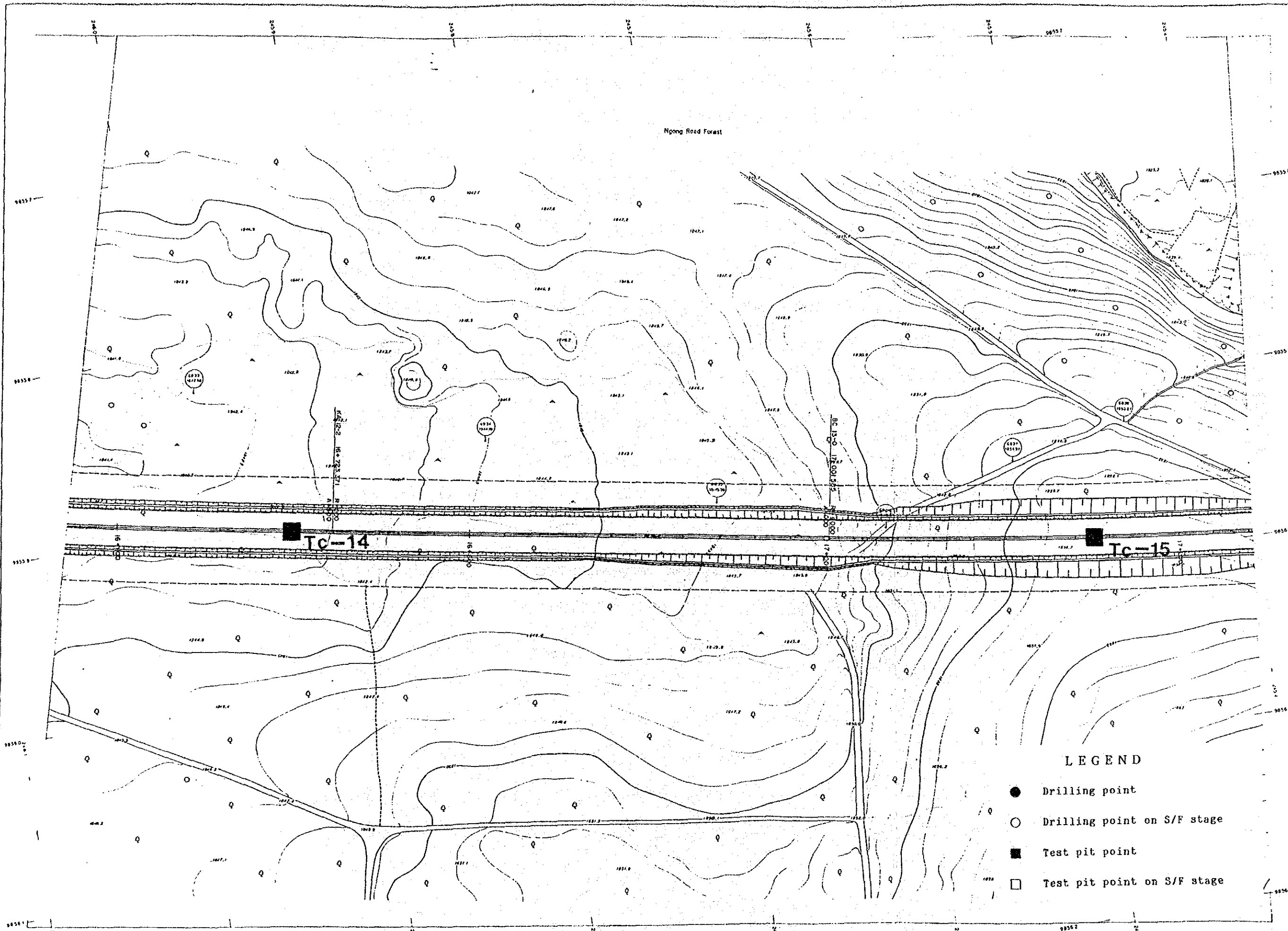
DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 27

26 27 28

INDEX TO ADJOINING SHEET



DETAILED LOCATION MAP OF GEOLOGICAL SURVEY



Scale 1:2,000  
HEIGHTS IN METERS

LEGEND

- △ GNS Point
- Traverse Point
- ⊕ Bench Mark
- 1234.5 Direct Leveling Hts.
- 1234.5 Spot Height
- Contours (V.I. Int)
- Outcrop (Rock)
- ▨ Building Footprint
- ▩ Building Others
- ▬ Bituminous Road
- ▬ Road
- ▬ Track
- ▬ Railway
- ▬ Hedge, Culvert
- ▬ River
- ▬ Stream
- ▬ Dam
- ▬ Pond
- Water Tank
- Power Line
- Telephone Line
- ▬ Fence, Gate
- ▬ Hedge
- ▬ Stone Wall
- ▬ Dump or Mound
- ▬ Quarry Pit
- ▬ Cuttong
- ▬ Embankment
- ▬ Cultivated Lands
- ▬ Orchard or Perimeter
- ▬ Plantation
- ▬ Grassland
- Bush
- Forest
- Swamp
- ▬ Vegetation Boundary
- ▬ Planting Perimeter

LEGEND

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

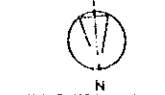
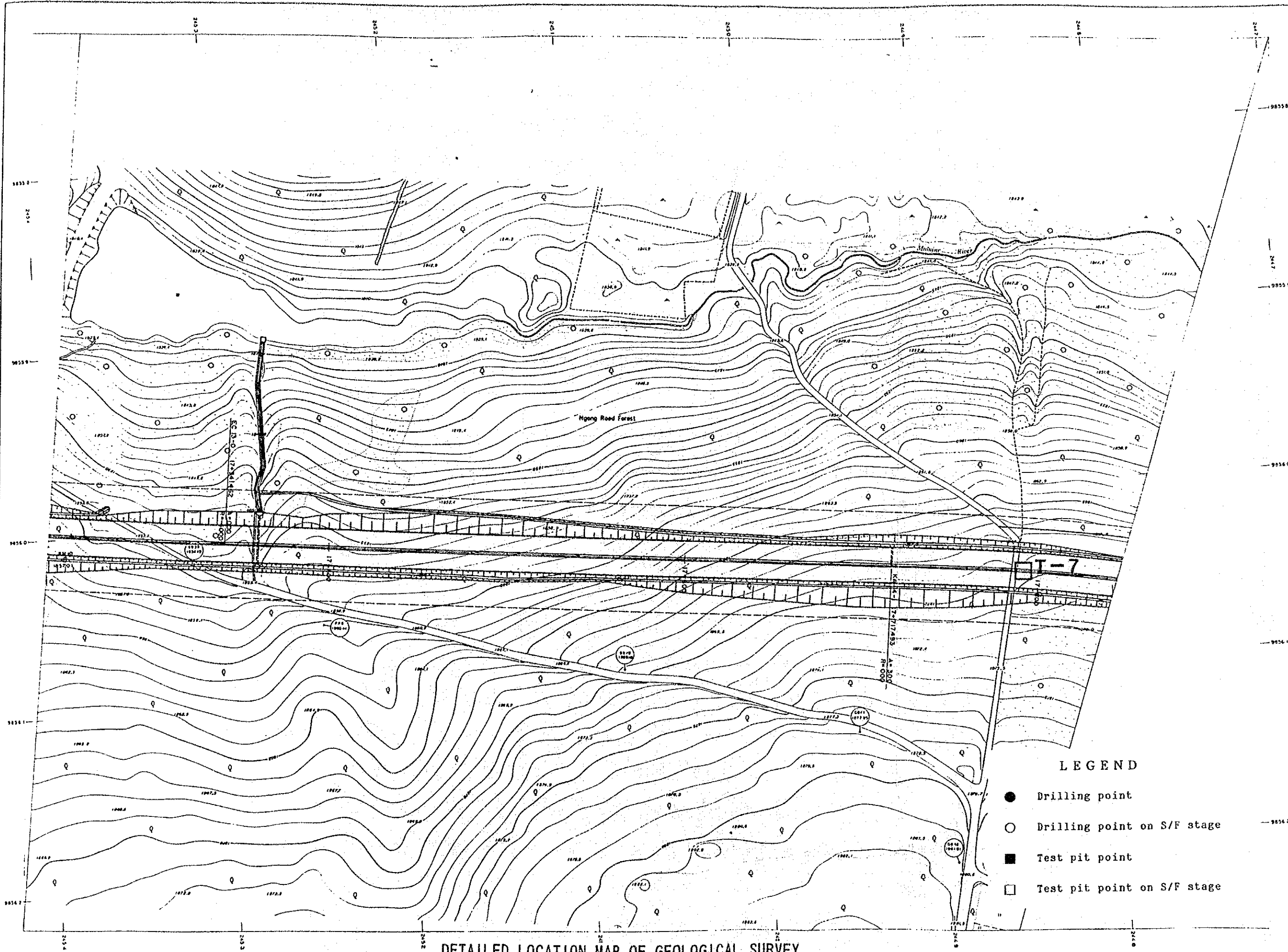
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CLARK 1958  
VERTICAL DATUM: MEAN SEA LEVEL  
AERIAL PHOTOGRAPHED BY: Japan International Cooperation Agency  
GROUND CONTROL SURVEYED BY: [Name]  
STEREO PLOTTED BY: [Name]  
CARTOGRAPHED BY: [Name]

CHIEF ENGINEER: [Name] DATE: [Date]  
CHIEF SPT. ENG.: [Name] DATE: [Date]  
CHIEF SPT. ENG.: [Name] DATE: [Date]  
SPT. ENGINEER: [Name] DATE: [Date]  
PROJECT ENGINEER: [Name] DATE: [Date]

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JICA TOKYO, JAPAN

SHEET 27 OF 46



Scale 1:2,000  
HEIGHTS IN METERS

**LEGEND**

- GNS Point
- Traverse Point
- Bench Mark
- Direct Leveling Height
- Spot Height
- Contours (V.L. Lm)
- Outcrop (Rock)
- Building (Permanent)
- Building (Others)
- Bituminous Road
- Road
- Track
- Railway
- Bridge, Culvert
- River
- Stream
- Dam
- Pond
- Water Tank
- Power Line
- Telephone Line
- Fence, Gate
- Hedge
- Stone Wall
- Dump or Mound
- Quarry Pit
- Cottage
- Embankment
- Cultivated Land
- Orchard or Permanent C.
- Plantation
- Grassland
- Bush
- Forest
- Swamp
- Vegetation Boundaries
- Planning Partition

HORIZONTAL DATUM: UTM ZONE 17  
CLARKE 1866 SPHEROID

VERTICAL DATUM: MEAN SEA LEVEL

AERIAL PHOTOGRAPHY BY:  
Japan International Cooperation Agency  
December

GROUND CONTROL SURVEYED BY:  
December

STEREO PLOTTED BY:  
MARCH

CARTOGRAPHY BY:  
JULY

CHECKED BY: SEN. Supt. Eng. / /  
DATE: / /

Supt. Engineer / /  
DATE: / /

PROJECT ENGINEER / /  
DATE: / /

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SHEET 28 OF 46

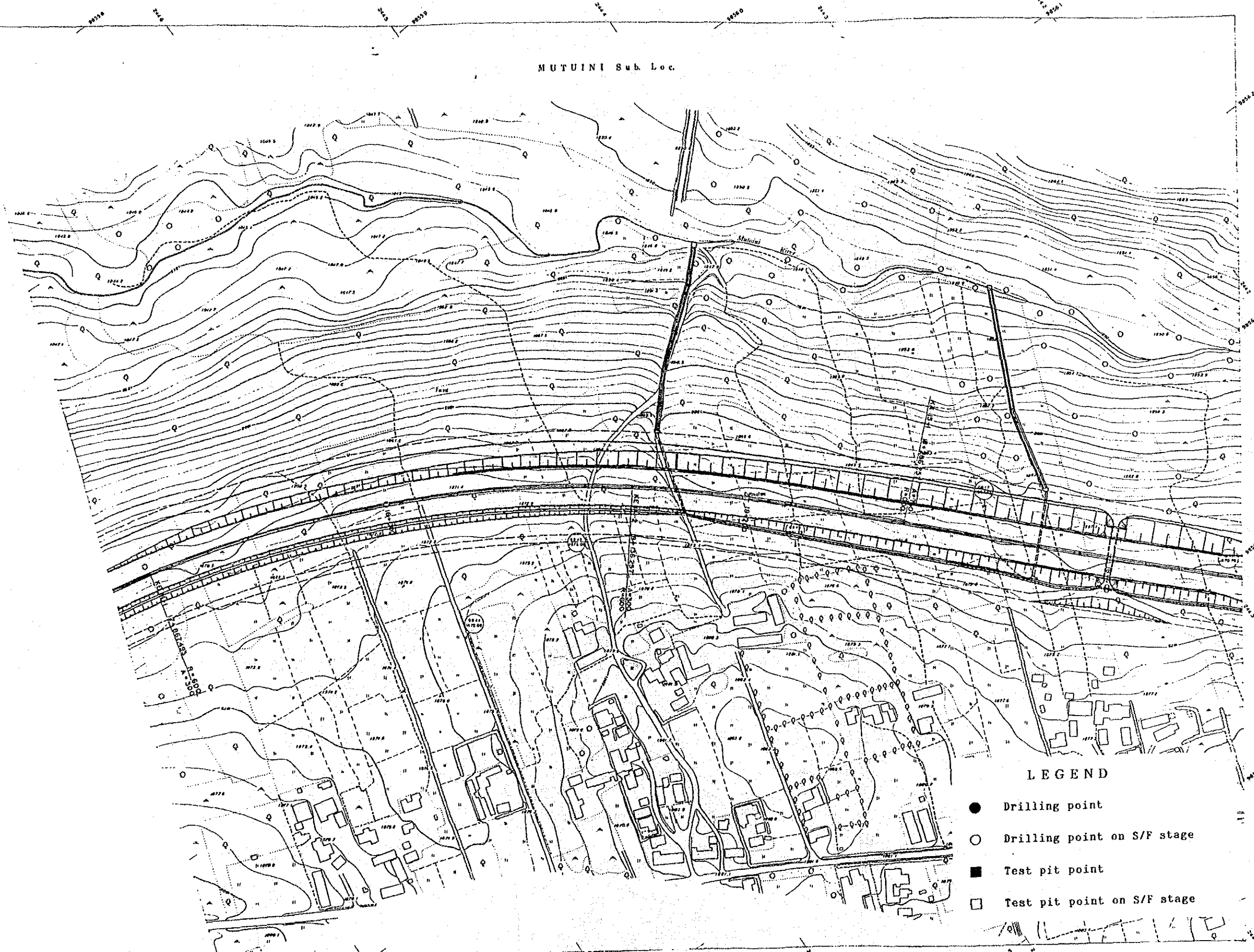
- LEGEND**
- Drilling point
  - Drilling point on S/F stage
  - Test pit point
  - Test pit point on S/F stage

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 29

INDEX TO ADJOINING SHEETS



MUTUINI Sub Loc.

Scale 1:2,000  
HEIGHTS IN METERS

**LEGEND**

- △ GPS Point
- Traverse Point
- ⊙ Bench Mark
- 1234.5 Direct Leveling Height
- 123.5 Spot Height
- Contours (V.L. 1m)
- Outcrop (Rock)
- ▨ Building (Permanent)
- ▭ Building (Others)
- Bituminous Road
- Road
- Track
- Railway
- Bridge, Culvert
- River
- Stream
- Dam
- Pond
- Water Tank
- Power Line
- Telephone Line
- Fence, Gate
- Hedge
- Stone Wall
- Dump or Mound
- Quarry Pit
- Cutting
- Embankment
- Cultivated Land
- Orchard or Permanent C.
- Plantation
- Grassland
- Bush
- Forest
- Swamp
- Vegetarian Boundaries
- Planting Partition

HORIZONTAL DATUM UTM ZONE 47  
CLARKE 1866 SPHEROID

VERTICAL DATUM MEAN SEA LEVEL

AERIAL PHOTOGRAPHED BY JICA  
Japan International Cooperation Agency

GROUND CONTROL SURVEYED BY JICA  
December

STEREO PLOTTED BY JICA

CARTOGRAPHED BY JICA

**LEGEND**

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

CHIEF ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF SUPT. ENG. \_\_\_\_\_ DATE \_\_\_\_\_

CHECKED BY SEN. SUPT. ENG. \_\_\_\_\_ DATE \_\_\_\_\_

SUPT. ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

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JICA TOKYO, JAPAN

SHEET 29 OF 16

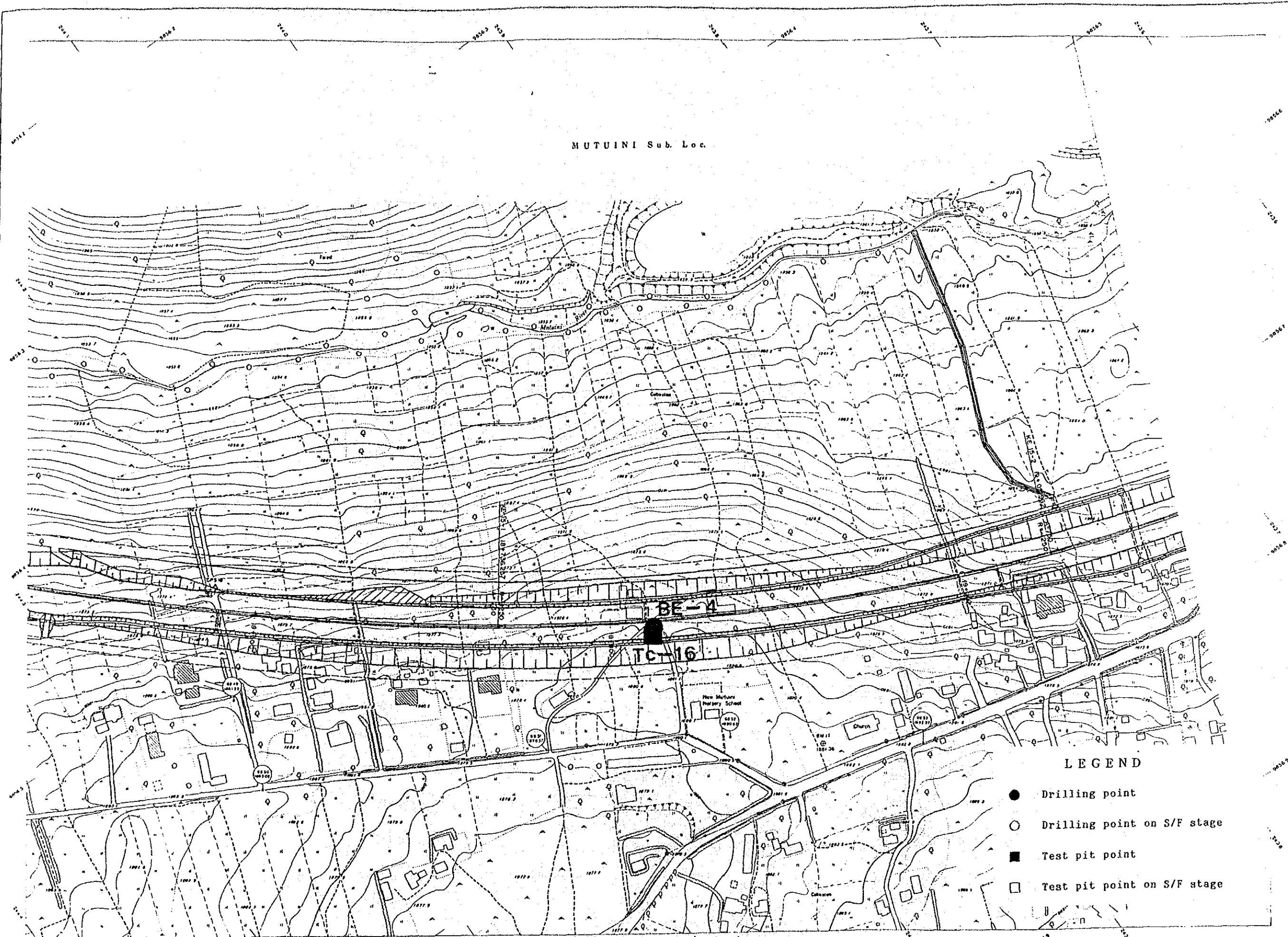
DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

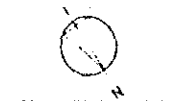
SHEET NO. 30

29 30 31

INDEX TO ADJOINING SHEETS



DETAILED LOCATION MAP OF GEOLOGICAL SURVEY



Scale 1:2,000  
HEIGHTS IN METERS

**LEGEND**

- GPS Point
- Traverse Point
- Bench Mark
- 1234.5 Direct Leveling Height
- 123.4 Spot Height
- Contours (V.I. 1m)
- Outcrop (Rock)
- ▨ Building (Permanent)
- ▩ Building (Others)
- ▧ Burmished Road
- ▬ Road
- ▬ Track
- ▬ Railway
- ▬ Bridge, Culvert
- ▬ River
- ▬ Stream
- ▬ Dam
- Water Tank
- ▬ Power Line
- ▬ Telephone Line
- ▬ Fence, Gate
- ▬ Hedge
- ▬ Stone Wall
- ▬ Dump or Mound
- ▬ Quarry, Pit
- ▬ Cutting
- ▬ Embankment
- ▬ Cultivated Lands
- ▬ Orchard or Permanent C.
- ▬ Plantation
- ▬ Grassland
- Bush
- Forest
- ▬ Swamp
- ▬ Vegetation Boundaries
- ▬ Planting Partition

HORIZONTAL DATUM: UTM ZONE V, CLARKE 1866 SPHEROID  
 VERTICAL DATUM: MEAN SEA LEVEL  
 AERIAL PHOTOGRAPHY BY: JICA (Japan International Cooperation Agency) December 1978  
 GROUND CONTROL SURVEYED BY: JICA December 1978  
 STEREO PLOTTED BY: JICA MAK:14  
 CARTOGRAPHY BY: JICA JULY 1979

**LEGEND**

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

CHECKED BY: CHIEF ENGINEER DATE: \_\_\_\_\_  
 CHIEF SUPT. ENG. DATE: \_\_\_\_\_  
 SEN. SUPT. ENG. DATE: \_\_\_\_\_  
 SPT. ENGINEER DATE: \_\_\_\_\_  
 PROJECT ENGINEER DATE: \_\_\_\_\_

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 JICA TOKYO, JAPAN  
 SHEET 30 OF 46

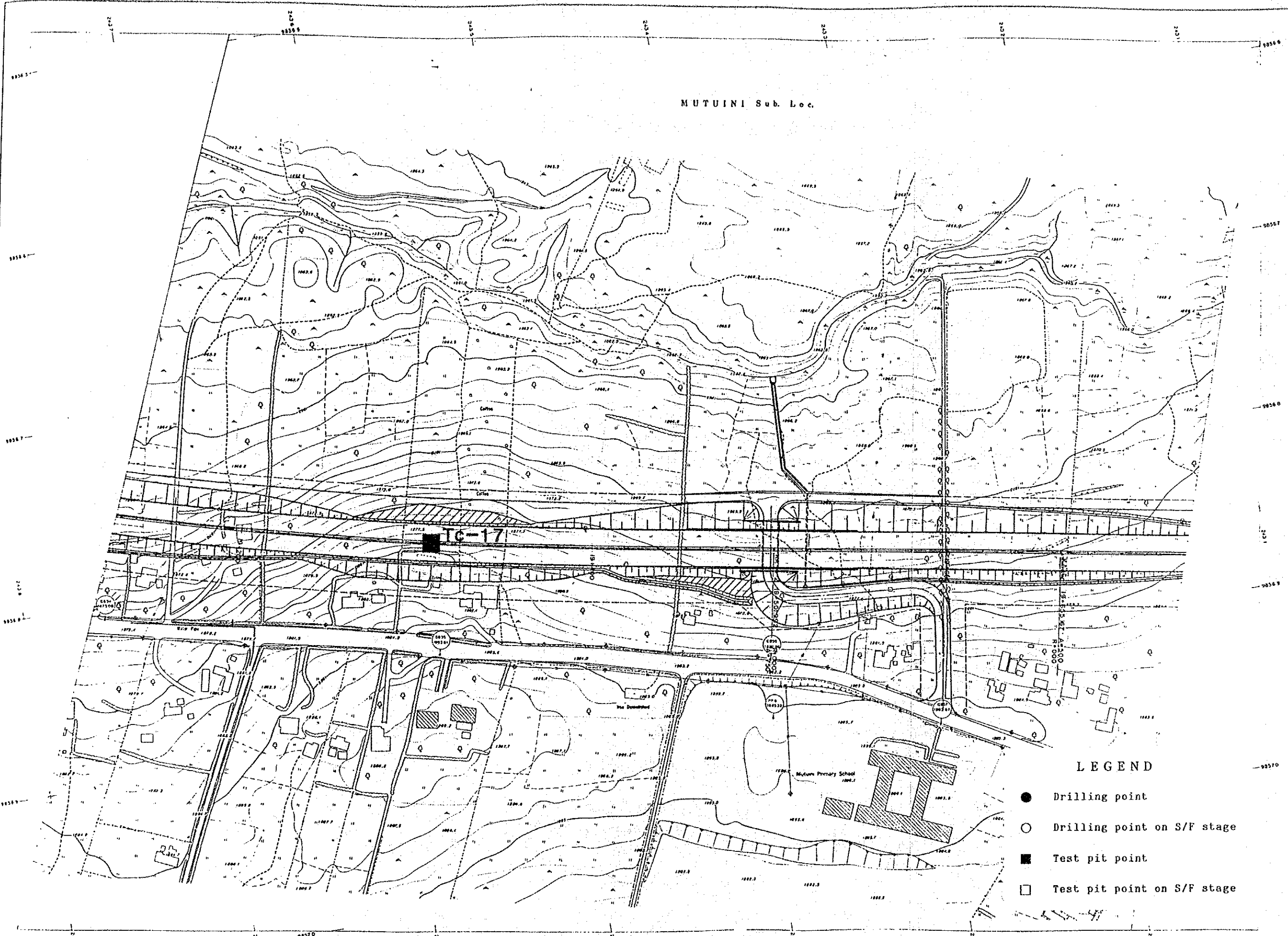


# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 31

30 / 31 32

INDEX TO ADJOINING SHEETS



Scale 1:2,000  
HEIGHTS IN METERS

**LEGEND**

- △ GNS Point
- Traverse Point
- ⊕ Bench Mark
- ② Direct Leveling Height
- ③ Spot Height
- Contours (V:1 Int)
- Outcrop (Rock)
- ▨ Building (Permanent)
- ▩ Building (Others)
- ▬ Paved Road
- ▬ Road
- ▬ Track
- ▬ Railway
- ▬ Bridge, Culvert
- ▬ River
- ▬ Stream
- ▬ Dam
- Pond
- Water Tank
- ▬ Power Line
- ▬ Telephone Line
- ▬ Fence, Gate
- ▬ Hedge
- ▬ Stone Wall
- ▬ Dump or Mound
- ▬ Quarry Pit
- ▬ Cutting
- ▬ Embankment
- ▬ Cultivated Lands
- ▬ Orchard or Permanent Crop
- ▬ Plantation
- ▬ Grassland
- Bush
- Tree
- Swamp
- ▬ Vegetation Boundary
- ▬ Planting Partition

HORIZONTAL DATUM: UTM ZONE 17  
CLARKE 1866 SPHEROID

VERTICAL DATUM: MEAN SEA LEVEL

AERIAL PHOTOGRAPHED BY: JICA  
JAPAN INTERNATIONAL COOPERATION AGENCY

GROUND CONTROL SURVEYED BY: JICA

STEREO PLOTTED BY: JICA

CARTOGRAPHED BY: JICA

**LEGEND**

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

CHECKED BY: SEN SUPT. ENG. [DATE]

SUPT. ENGINEER [DATE]

PROJECT ENGINEER [DATE]

MINISTRY OF PUBLIC WORKS

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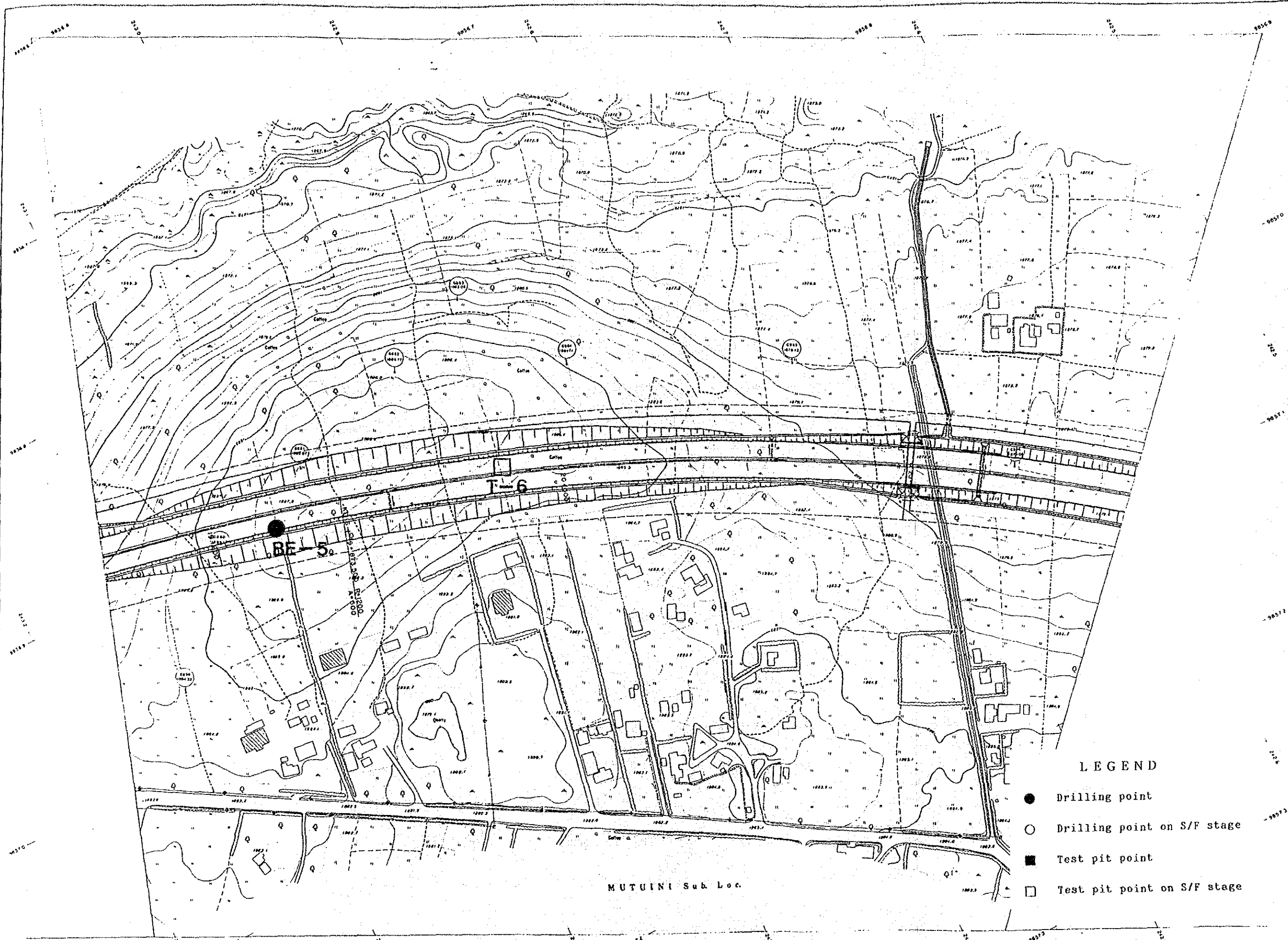
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JICA TOKYO, JAPAN

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 32

31 32 33  
INDEX TO ADJOINING SHEETS



Scale 1:2,000  
HEIGHTS IN METERS

### LEGEND

- ▲ GPS Point
- Traverse Point
- Bench Mark
- 1234.5 Direct Leveling Height
- 1234.5 Spot Height
- 1234.5 Contours (1:1m)
- Ditch (1:1m)
- ▭ Building, Farmhouse
- ▭ Building, Other
- ▭ Unimproved Road
- ▭ Road
- ▭ Track
- ▭ Railway
- ▭ Bridge, Culvert
- ▭ River
- ▭ Stream
- ▭ Dam
- ▭ Pond
- ▭ Water Tank
- ▭ Power Line
- ▭ Telephone Line
- ▭ Fence, Gate
- ▭ Hedge
- ▭ Stone Wall
- ▭ Embankment
- ▭ Quarry Pit
- ▭ Cutting
- ▭ Embankment
- ▭ Cultivated Land
- ▭ Orchard or Permaculture
- ▭ Plantation
- ▭ Grassland
- ▭ Moor
- ▭ Forest
- ▭ Swamp
- ▭ Vegetation Boundary
- ▭ Pasture Partition

### LEGEND

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

HORIZONTAL DATUM: UTM ZONE U  
CLARKE 1866 SPHEROID  
VERTICAL DATUM: MEAN SEA LEVEL  
AERIAL PHOTOGRAPHY BY: Japan International Co-operation Agency  
GROUND CONTROL SURVEYED BY: December  
STEREO PLOTTED BY: MARCH  
CARTOGRAPHY BY: JULY

CHIEF ENGINEER: DATE  
CHIEF Supt. Eng.: DATE  
CHECKED BY: SEN. Supt. Eng.: DATE  
Supt. Engineer: DATE  
PROJECT ENGINEER: DATE

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**M.O.P.W.**  
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JICA TOKYO, JAPAN

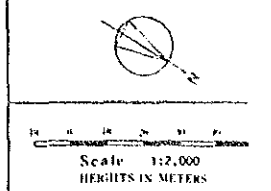
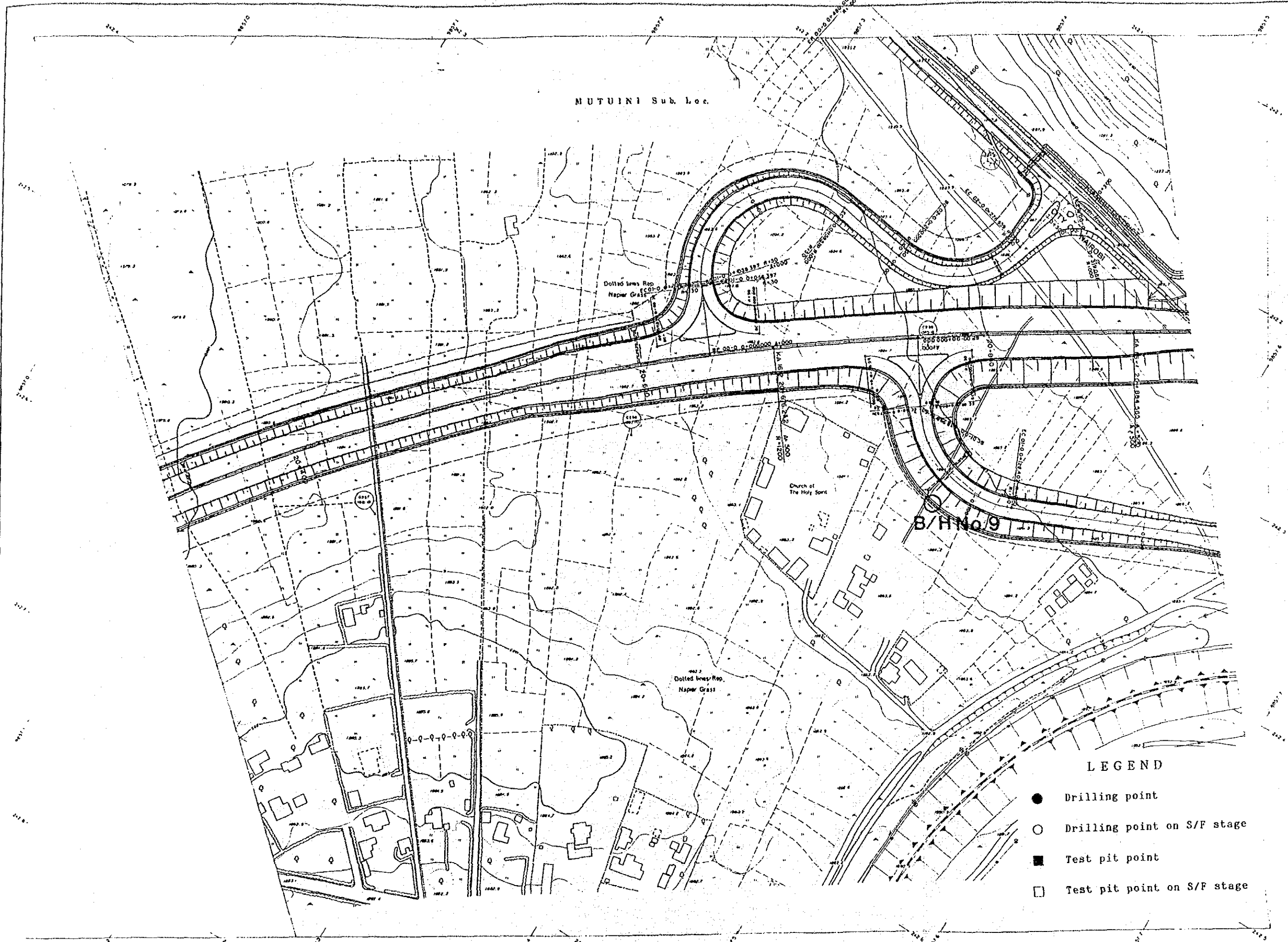
SHEET 32 OF 16

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 33

INDEX TO ADJOINING SHEETS:



**LEGEND**

	GPS Point
	Traverse Point
	Bench Mark
	Direct Leveling Height
	Spot Height
	Contours (V.L. Int.)
	Outcrop (Rock)
	Building Footprint
	Building Other
	Bituminous Road
	Road
	Track
	Railway
	Bridge/Culvert
	River
	Stream
	Dam
	Pond
	Water Tank
	Power Line
	Telephone Line
	Fence/Gate
	Hedge
	Stone Wall
	Ditch or Moat
	Quarry Pit
	Cutting
	Embankment
	Cultivated Land
	Orchard or Permanent Crop
	Plantation
	Grassland
	Bush
	Forest
	Swamp
	Vegetation Boundary
	Planting Partisan

HORIZONTAL DATUM: U.T.M. ZONE 37  
 SCALE: 1:50,000  
 VERTICAL DATUM: MEAN SEA LEVEL  
 AERIAL PHOTOGRAPHY BY: JICA  
 GROUND CONTROL SURVEYED BY: JICA  
 STEREO PLOTTED BY: JICA  
 CARTOGRAPHED BY: JICA

CHIEF ENGINEER: [Signature] DATE: [Date]  
 CHIEF Supt. Eng.: [Signature] DATE: [Date]  
 CHECKED BY: [Signature] DATE: [Date]  
 Supt. Engineer: [Signature] DATE: [Date]  
 PROJECT ENGINEER: [Signature] DATE: [Date]

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 JICA TOKYO, JAPAN  
 SHEET 33 OF 46

**LEGEND**

	Drilling point
	Drilling point on S/F stage
	Test pit point
	Test pit point on S/F stage

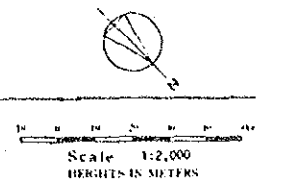
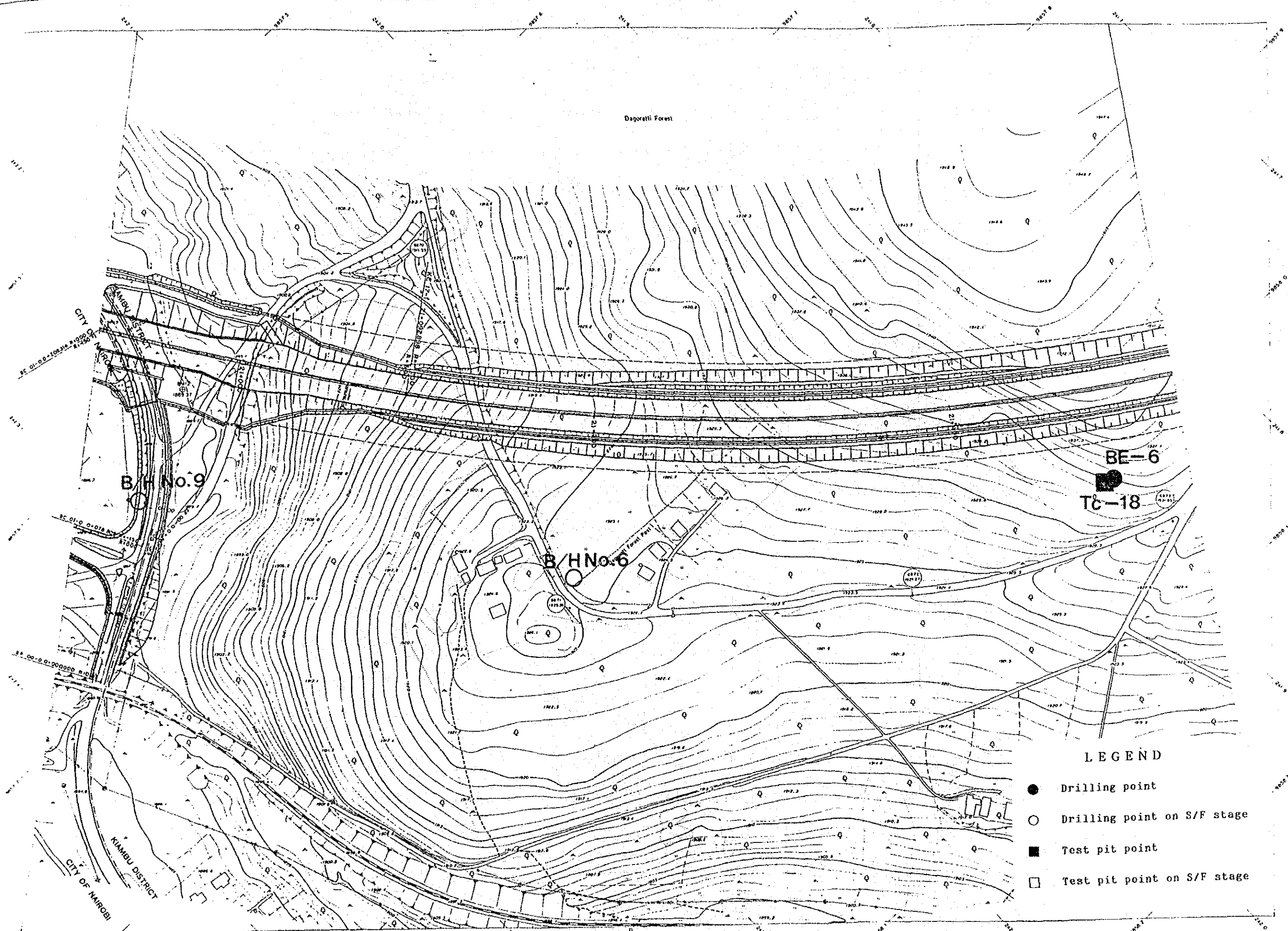
DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 34

33 34 35

INDEX TO ADJOINING SHEETS



**LEGEND**

	GPS Point
	Traverse Point
	Bench Mark
	Direct Leveling Height
	Spot Height
	Contours (V.L. Im.)
	Outcrop (Rock)
	Building (Permanent)
	Building (Others)
	Bituminous Road
	Road
	Track
	Railway
	Bridge, Culvert
	River
	Stream
	Dam
	Pond
	Water Tank
	Power Line
	Telephone Line
	Fence, Gate
	Hedge
	Stone Wall
	Dump or Mound
	Quarry Pit
	Cutting
	Embankment
	Cultivated Land
	Orchard or Permanent Crop
	Plantation
	Grassland
	Bush
	Forest
	Swamp
	Vegetation Boundary
	Planting Partition

HORIZONTAL DATUM: UTM ZONE 37  
 CLARKE 1880 SPHEROID  
 VERTICAL DATUM: MEAN SEA LEVEL  
 AERIAL PHOTOGRAPHY BY: JICA  
 Japan International Cooperation Agency  
 December 1978  
 GROUND CONTROL SURVEYED BY: JICA  
 December 1978  
 STEREO PLOTTED BY: JICA  
 MARCH 1979  
 CARTOGRAPHED BY: JICA  
 JUNE 1979

CHECKED BY	CHIEF ENGINEER	DATE
	CHIEF SUPT. ENG.	DATE
	SEN. SUPT. ENG.	DATE
	SUPT. ENGINEER	DATE
	PROJECT ENGINEER	DATE

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 OFFICE OF ORIGIN  
 JICA TOKYO, JAPAN  
 SHEET 34 OF 46

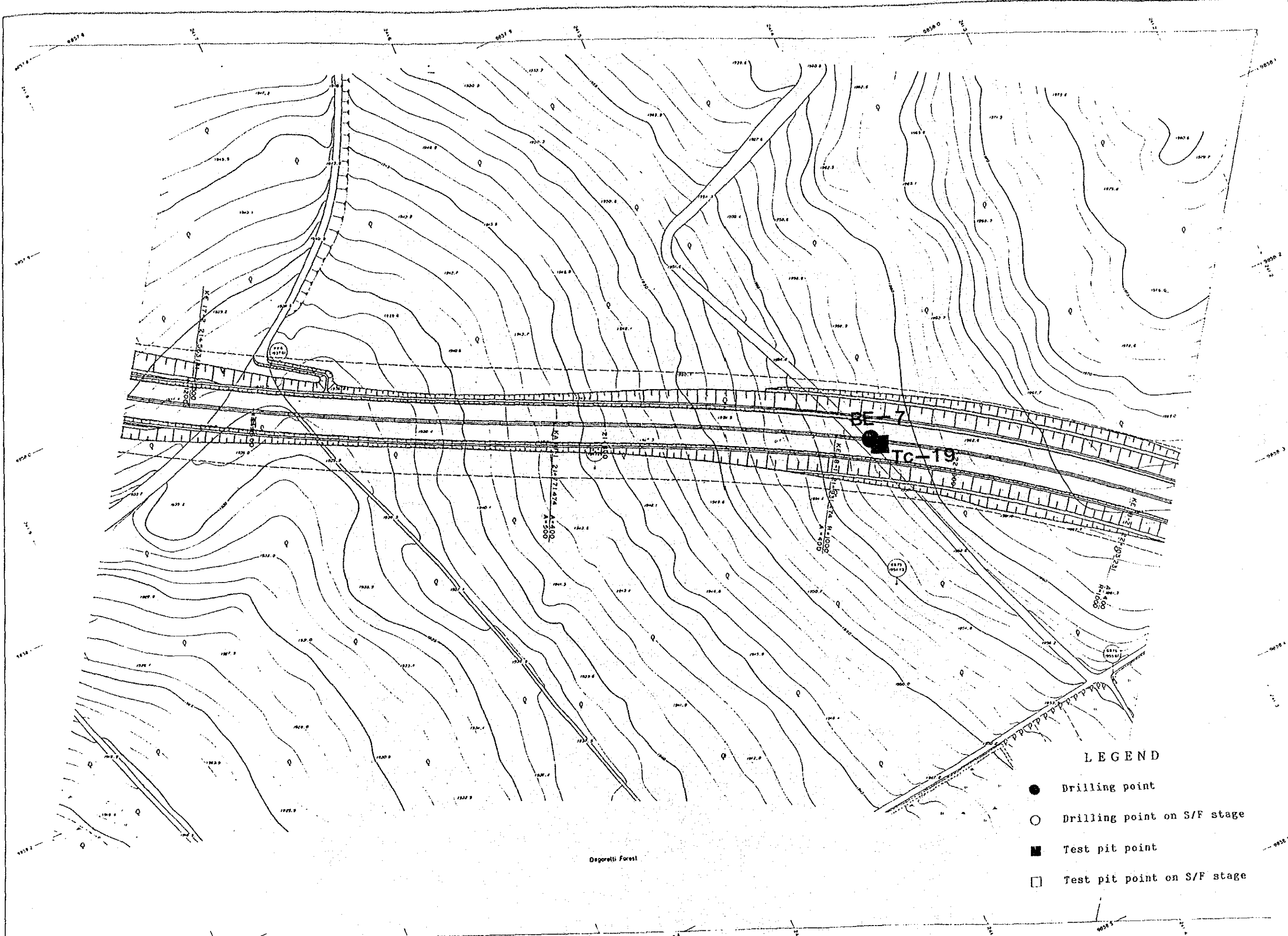
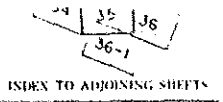
**LEGEND**

	Drilling point
	Drilling point on S/F stage
	Test pit point
	Test pit point on S/F stage

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 35



**LEGEND**

- △ GTS Point
- Traverse Point
- Bench Mark
- 1234.5 Direct Leveling Height
- 1234.5 Spot Height
- Contours (V.I. Im)
- Outcrop (Rock)
- ▭ Building Permanent
- ▭ Building Others
- ▭ Hampered Road
- ▭ Road
- ▭ Track
- ▭ Rainas
- ▭ Bridge, Culvert
- ▭ River
- ▭ Stream
- ▭ Dam
- ▭ Pond
- ▭ Water Tank
- ▭ Power Line
- ▭ Telephone Line
- ▭ Fence Gate
- ▭ Hedge
- ▭ Stone Wall
- ▭ Pump or Mound
- ▭ Quarry Pit
- ▭ Cutline
- ▭ Embankment
- ▭ Cultivated Lands
- ▭ Orchard or Permanent C.
- ▭ Plantation
- ▭ Grassland
- ▭ Heath
- ▭ Forest
- ▭ Swamp
- ▭ Vegetation Boundaries
- ▭ Planting Partition

HORIZONTAL DATUM U.T.M. ZONE V  
SCALE 1:7,000  
VERTICAL DATUM MEAN SEA LEVEL  
AERIAL PHOTOGRAPHY BY  
Japan International Co-operation Agency  
GROUND CONTROL SURVEYED BY  
STEREO PLOTTED BY  
CARTOGRAPHED BY

CHECKED BY  
CHIEF ENGINEER  
DATE  
CHIEF SUPT. ENG.  
DATE  
SEN. SUPT. ENG.  
DATE  
SUIT. ENGINEER  
DATE  
PROJECT ENGINEER  
DATE

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OFFICE OF ORIGIN  
JICA TOKYO, JAPAN  
SHEET 35 OF 16

**LEGEND**

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

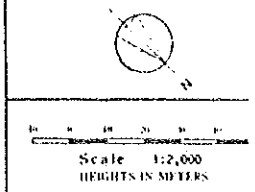
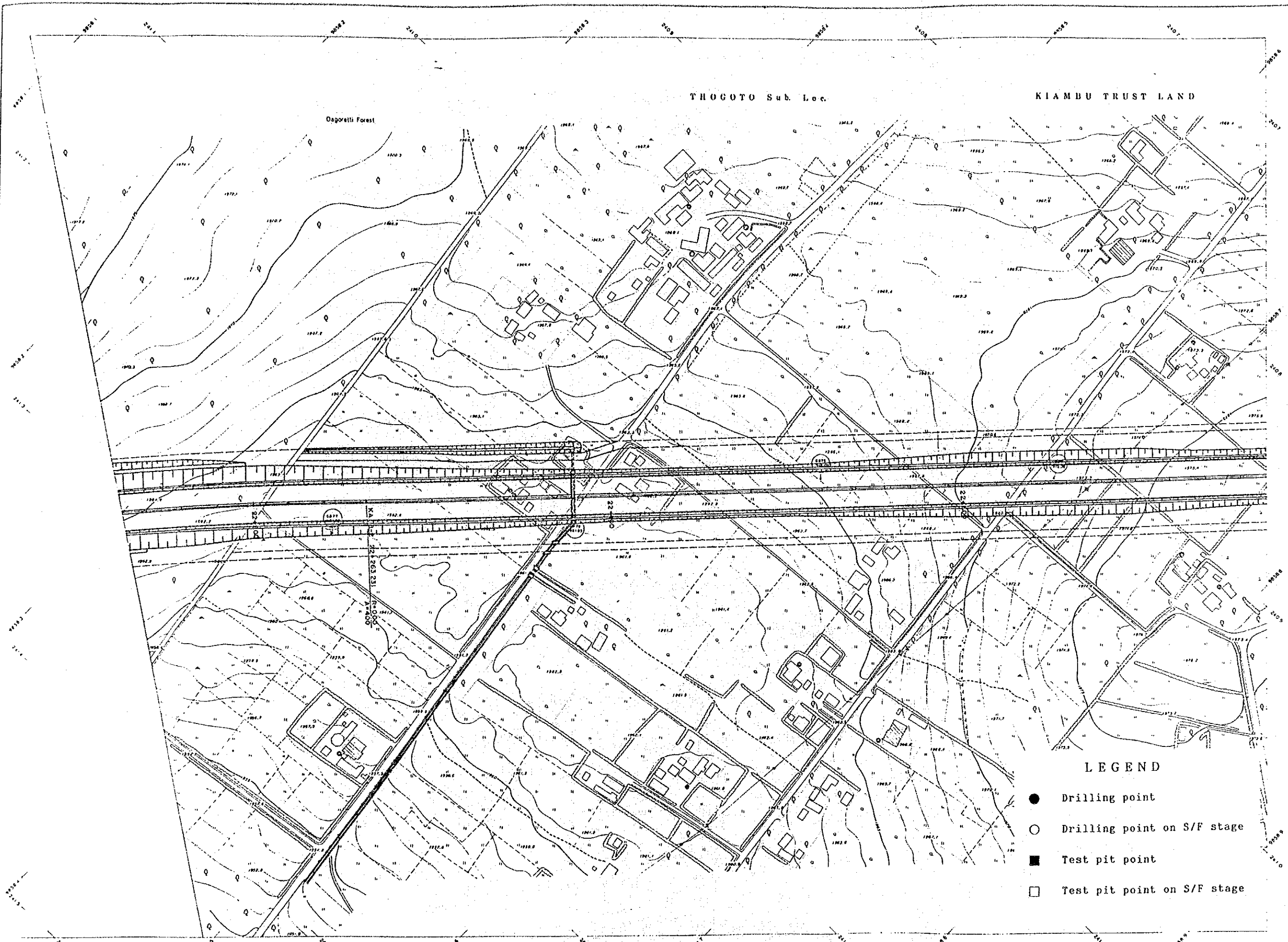
DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 36

36-1 37-2

INDEX TO ADJOINING SHEETS



**LEGEND**

- △ GNS Point
- Traverse Point
- ⊙ Bench Mark
- 1234.5 Direct Leveling Head
- 1234.2 Spot Height
- 1234.1 Contours at 1 m
- ⊠ Outcrop (Rock)
- ▭ Building Permanent
- ▭ Building Others
- ▭ Bituminous Road
- ▭ Road
- ▭ Track
- ▭ Railway
- ▭ Bridge Culvert
- ▭ River
- ▭ Stream
- ▭ Elm
- ▭ Pond
- ▭ Water Tank
- ▭ Power Line
- ▭ Telephone Line
- ▭ Fence, Gate
- ▭ Hedge
- ▭ Stone Wall
- ▭ Dump or Mound
- ▭ Quarry Pit
- ▭ Cutting
- ▭ Embankment
- ▭ Cultivated Land
- ▭ Orchard or Permaculture
- ▭ Plantation
- ▭ Grassland
- ▭ Bush
- ▭ Forest
- ▭ Swamp
- ▭ Vegetation Boundary
- ▭ Hunting Partition

HORIZONTAL DATUM UTM ZONE 36  
 (CLARKE 1866 SPHEROID)

VERTICAL DATUM MEAN SEA LEVEL

AERIAL PHOTOGRAPHY BY  
 (Japan International Cooperation Agency)

GROUND CONTROL SURVEYED BY  
 (Department of Public Works)

STEREO PLOTTED BY  
 MAKU

CARTOGRAPHED BY  
 B.L.

CHIEF ENGINEER  
 DATE

CHIEF SUPT. ENG.  
 DATE

CHECKED BY  
 SEN. SUPT. ENG.  
 DATE

SUPT. ENGINEER  
 DATE

PROJECT ENGINEER  
 DATE

MINISTRY OF PUBLIC WORKS

**M.O.P.W.**

OFFICE OF ORIGIN  
 JICA TOKYO, JAPAN

SHEET 36 OF 46

**LEGEND**

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

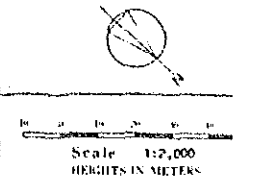
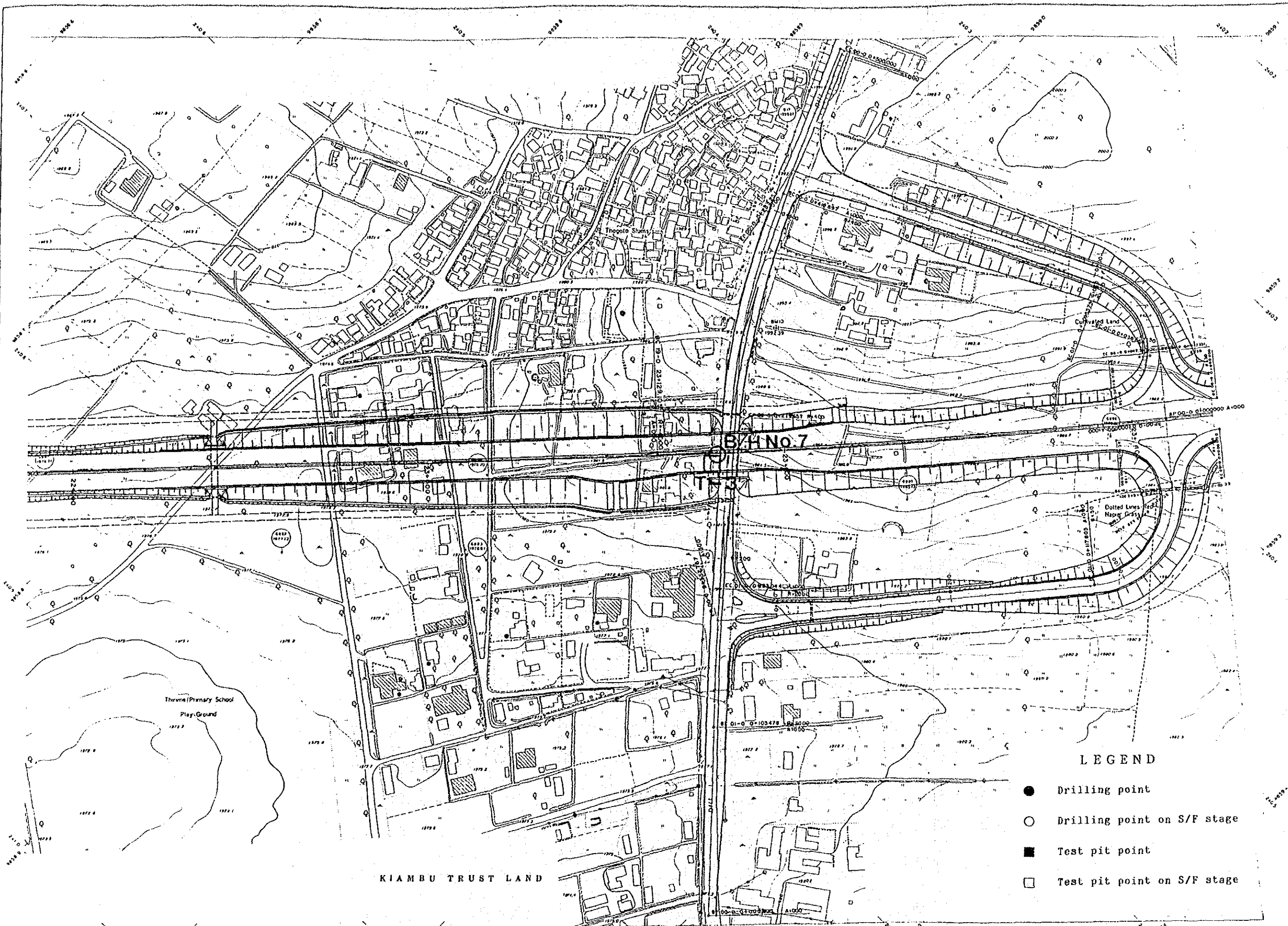
# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 37

36 37 38

37-2

INDEX TO ADJOINING SHEET



Scale 1:2,000  
HEIGHTS IN METERS

**LEGEND**

- △ GTS Point
- Traverse Point
- ⊙ Bench Mark
- 1221.3 Direct Leveling Htg
- 1221.3 Spot Height
- 1221.3 Contours (V.I. Im)
- ⊠ Outcrop (Rocks)
- ▨ Building (Parmaise)
- ▨ Building (Others)
- ▨ Bituminous Road
- ▨ Road
- ▨ Track
- ▨ Railway
- ▨ Drain. Culvert
- ▨ River
- ▨ Stream
- ▨ Dam
- ▨ Pond
- ▨ Water Tank
- ▨ Power Line
- ▨ Telephone Line
- ▨ Fence, Gate
- ▨ Hedge
- ▨ Stone Wall
- ▨ Dump or Mound
- ▨ Quarry, Pit
- ▨ Cutline
- ▨ Embankment
- ▨ Cultivated Lands
- ▨ Orchard or Permanent
- ▨ Pasture
- ▨ Grassland
- ▨ Bush
- ▨ Forest
- ▨ Swamp
- ▨ Vegetation Boundaries
- ▨ Planning Partition

HORIZONTAL DATUM: U.T.M. ZONE U  
CLARKE 1866 SPHEROID

VERTICAL DATUM: MEAN SEA LEVEL

AERIAL PHOTOGRAPHED BY: Japan International Cooperation Agency  
December

GROUND CONTROL SURVEYED BY: JICA  
December

STEREO PLOTTED BY: JICA  
MARCH

CARTOGRAPHED BY: JICA  
JULY

CHECKED BY: [Signature] DATE: [Date]

CHIEF ENGINEER: [Signature] DATE: [Date]

CHIEF SURV. ENG.: [Signature] DATE: [Date]

PROJECT ENGINEER: [Signature] DATE: [Date]

**LEGEND**

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

MINISTRY OF PUBLIC WORKS

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JICA TOKYO, JAPAN

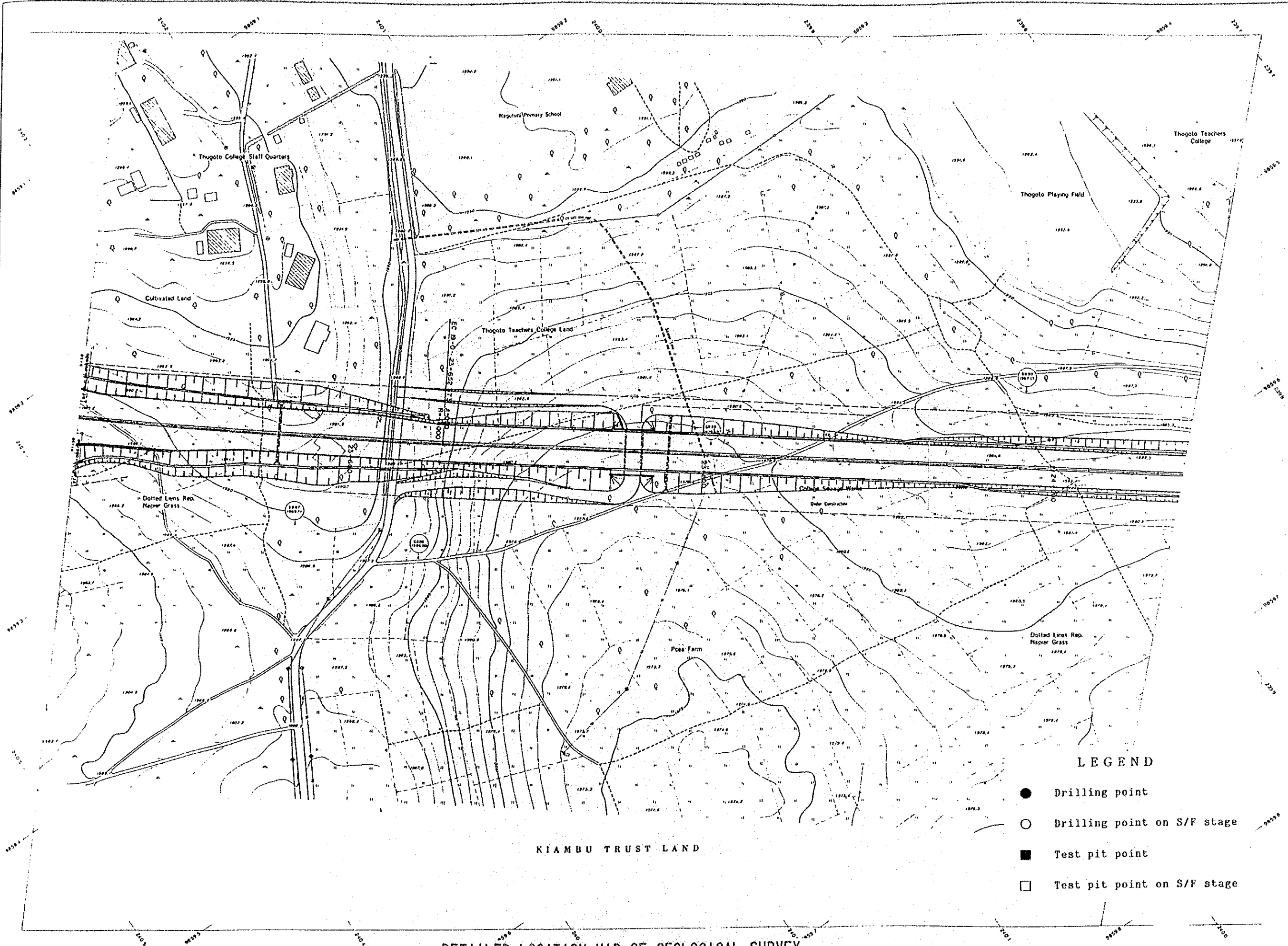
SHEET 37 OF 16

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 38

37 38 39  
37-2  
INDEX TO ADJOINING SHEETS



Scale 1:17,000  
HEIGHTS IN METERS

- LEGEND**
- △ GPS Point
  - ⊙ Traverse Point
  - ⊙ Bench Mark
  - 1234.5 Direct Leveling Height
  - 1234.5 Spot Height
  - Contours (V.I. 1m)
  - Outcrop (Rock)
  - ▭ Building, Farmhouse
  - ▭ Building, Others
  - ▭ Bituminous Road
  - ▭ Road
  - ▭ Track
  - ▭ Railway
  - ▭ Bridge, Culvert
  - ▭ River
  - ▭ Stream
  - ▭ Dam
  - ▭ Pond
  - ▭ Water Tank
  - ▭ Power Line
  - ▭ Telephone Line
  - ▭ Fence Gate
  - ▭ Hedge
  - ▭ Stone Wall
  - ▭ Dump or Mound
  - ▭ Quarry, Pit
  - ▭ Cutting
  - ▭ Embankment
  - ▭ Cultivated Land
  - ▭ Orchard or Permanent Crop
  - ▭ Plantation
  - ▭ Grassland
  - ▭ Bush
  - ▭ Forest
  - ▭ Swamp
  - ▭ Vegetation Boundary
  - ▭ Planting Partition

HORIZONTAL DATUM: UTM ZONE 37  
CLASSIC 1950 STIPES  
VERTICAL DATUM: MEAN SEA LEVEL  
AERIAL PHOTOGRAPHY BY: Japan International Cooperation Agency  
GROUND CONTROL SURVEYED BY: [Name]  
STEREO PLOTTED BY: [Name]  
CARTOGRAPHY BY: [Name]

CHEF ENGINEER: [Name] DATE: [Date]  
CHIEF SUPT. ENG.: [Name] DATE: [Date]  
CHECKED BY: SEN. SUPT. ENG.: [Name] DATE: [Date]  
SUPT. ENGINEER: [Name] DATE: [Date]  
PROJECT ENGINEER: [Name] DATE: [Date]

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JICA TOKYO, JAPAN  
SHEET 38 OF 16

- LEGEND**
- Drilling point
  - Drilling point on S/F stage
  - Test pit point
  - Test pit point on S/F stage

KIAMBU TRUST LAND

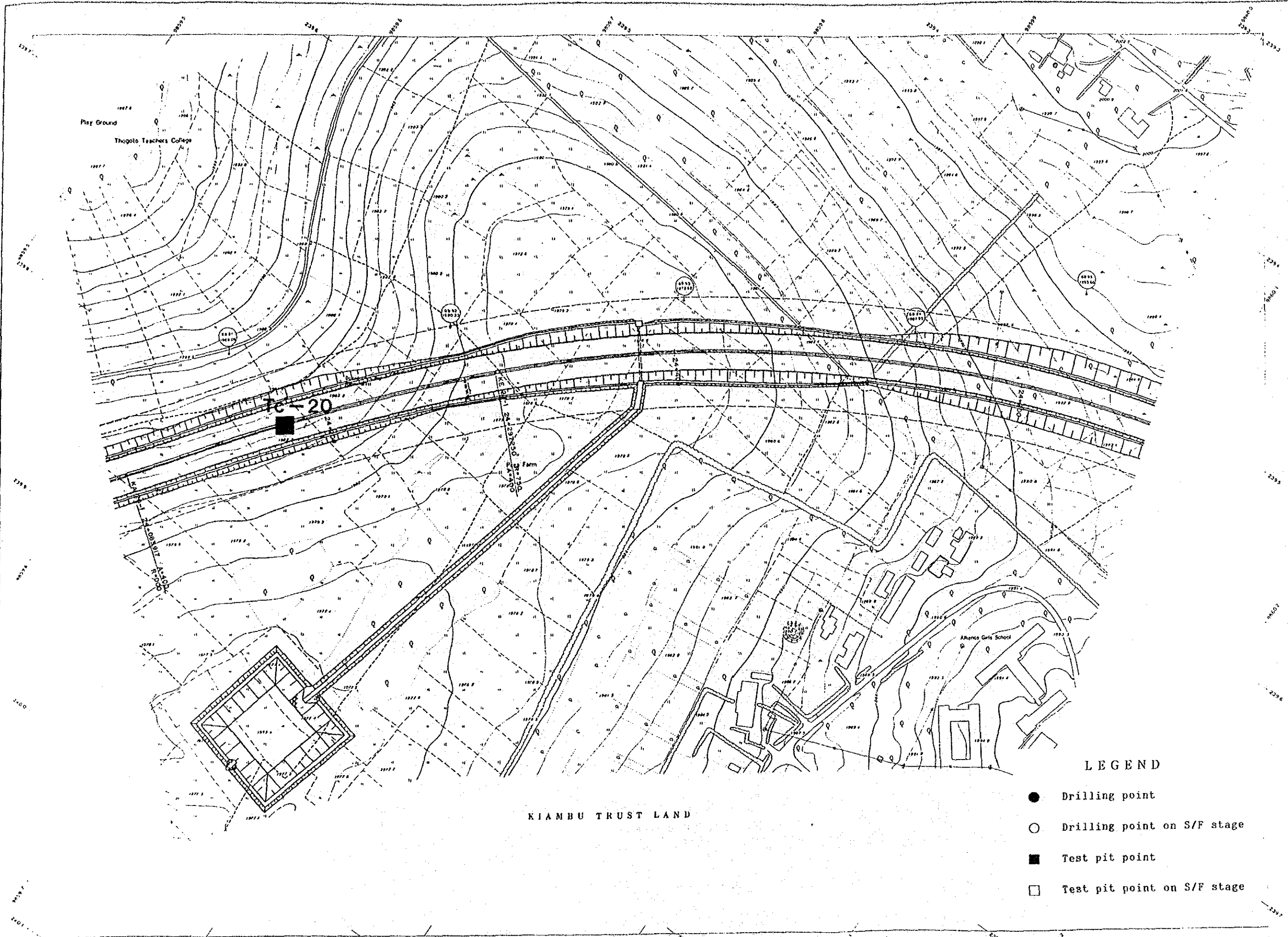
DETAILED LOCATION MAP OF GEOLOGICAL SURVEY



# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 39

INDEX TO ADJOINING SHEETS



Scale 1:12,000  
HEIGHTS IN METERS

**LEGEND**

	GIS Point
	Traverse Point
	Bench Mark
	Direct Leveling Height
	Spot Height
	Contours 4' Contour
	Outcrop (Rock)
	Building (Farmhouse)
	Building (Others)
	Illuminated Road
	Road
	Track
	Railway
	Bridge, Culvert
	River
	Stream
	Dam
	Pond
	Water Tank
	Power Line
	Telephone Line
	Fence, Gate
	Hedge
	Stone Wall
	Dump or Mound
	Quarry Pit
	Cutbank
	Embankment
	Cultivated Land
	Orchard or Permanent C.
	Plantation
	Grassland
	Bush
	Forest
	Swamp
	Vegetation Boundary
	Pasture Partition

HORIZONTAL DATUM: UTM ZONE U  
CLARK 1866 MERK  
VERTICAL DATUM: MEAN SEA LEVEL  
AERIAL PHOTOGRAPHED BY: J  
Japan International Cooperation Agency  
GROUND CONTROL SURVEYED BY: J  
LAWRENCE  
STEREO PLOTTED BY: MARLB  
CARTOGRAPHED BY: J  
J.I.V.

CHEF ENGINEER: 1965  
DATE: \_\_\_\_\_  
CHIEF SURV. ENG.: 1965  
DATE: \_\_\_\_\_  
CHECKED BY: SEN. SURV. ENG.: 1965  
DATE: \_\_\_\_\_  
SURV. ENGINEER: 1965  
DATE: \_\_\_\_\_  
PROJECT ENGINEER: \_\_\_\_\_  
DATE: \_\_\_\_\_

MINISTRY OF PUBLIC WORKS  
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JICA TOKYO, JAPAN  
SHEET 39 OF 46

**LEGEND**

	Drilling point
	Drilling point on S/F stage
	Test pit point
	Test pit point on S/F stage

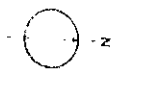
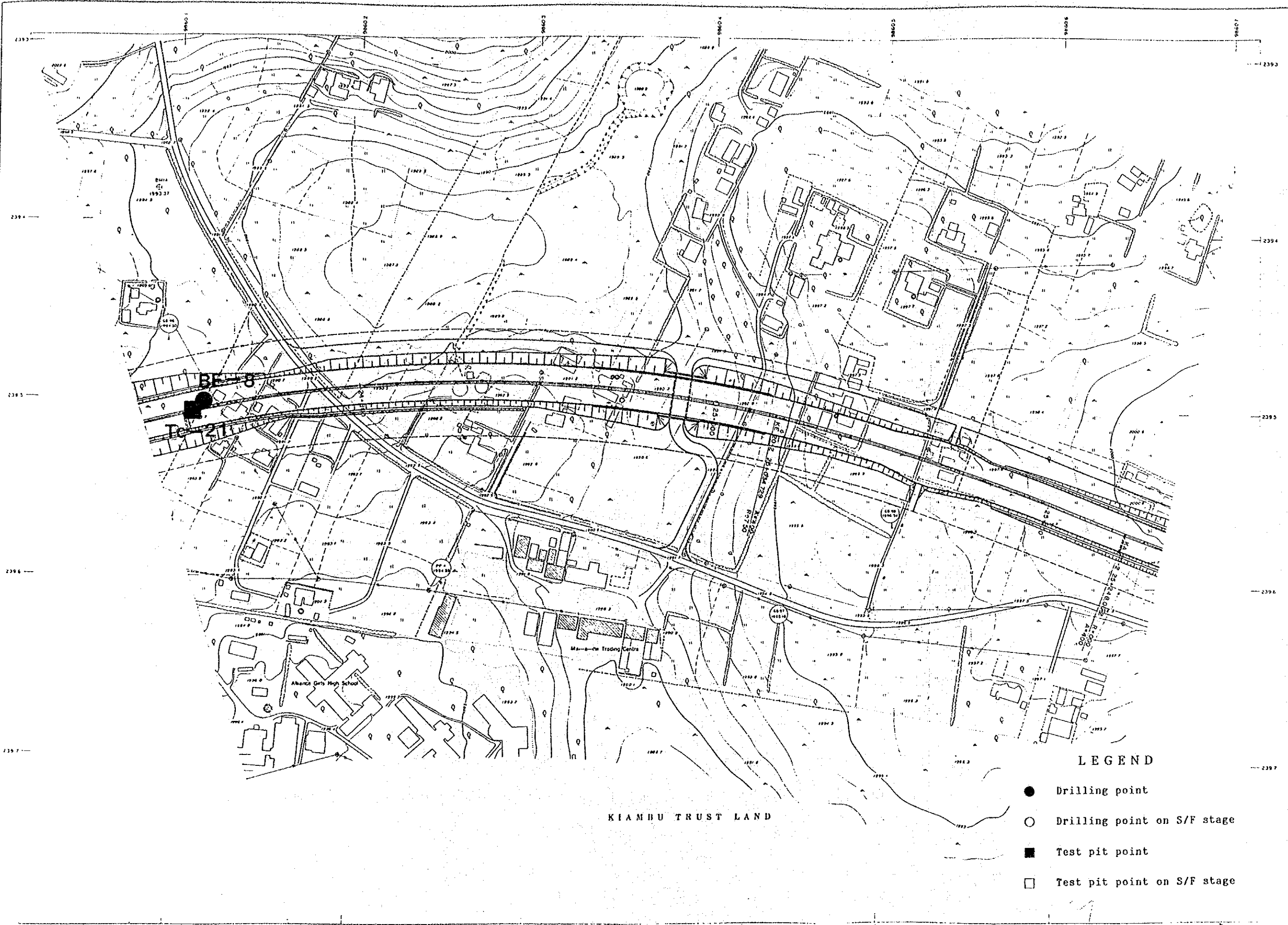
DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 40

40

INDEX TO ADJOINING SHEETS



Scale 1:2,000  
HEIGHTS IN METERS

### LEGEND

- △ GPS Point
- Traverse Point
- Bench Mark
- 1234.5 Direct Leveling Height
- 1234.5 Spot Height
- Contours (V.L. Int.)
- Outcrop (Rock)
- ▨ Building Permanent
- ▨ Building Others
- ▨ Bituminous Road
- ▨ Road
- ▨ Track
- ▨ Railway
- ▨ Bridge, Culvert
- ▨ River
- ▨ Stream
- ▨ Dam
- ▨ Pond
- ▨ Water Tank
- ▨ Power Line
- ▨ Telephone Line
- ▨ Fence, Gate
- ▨ Hedge
- ▨ Stone Wall
- ▨ Dump or Mound
- ▨ Quarry, Pit
- ▨ Cutting
- ▨ Embankment
- ▨ Cultivated Land
- Orchard or Permanent
- Irrigation
- Grassland
- Bush
- Forest
- Swamp
- Vegetation Boundaries
- Planting Pattern

HORIZONTAL DATUM: U.T.M. ZONE 37  
CLARKE 1866 SPHEROID

VERTICAL DATUM: MEAN SEA LEVEL

AERIAL PHOTOGRAPHY BY:  
Japan International Association, December

GROUND CONTROL SURVEYED BY:  
December

STEREO PLOTTED BY: MARY

CARTOGRAPHED BY: D.L.

### LEGEND

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

CHECKED BY: SEN. SEPT. ENG. 04 DATE

PROJECT ENGINEER: DATE

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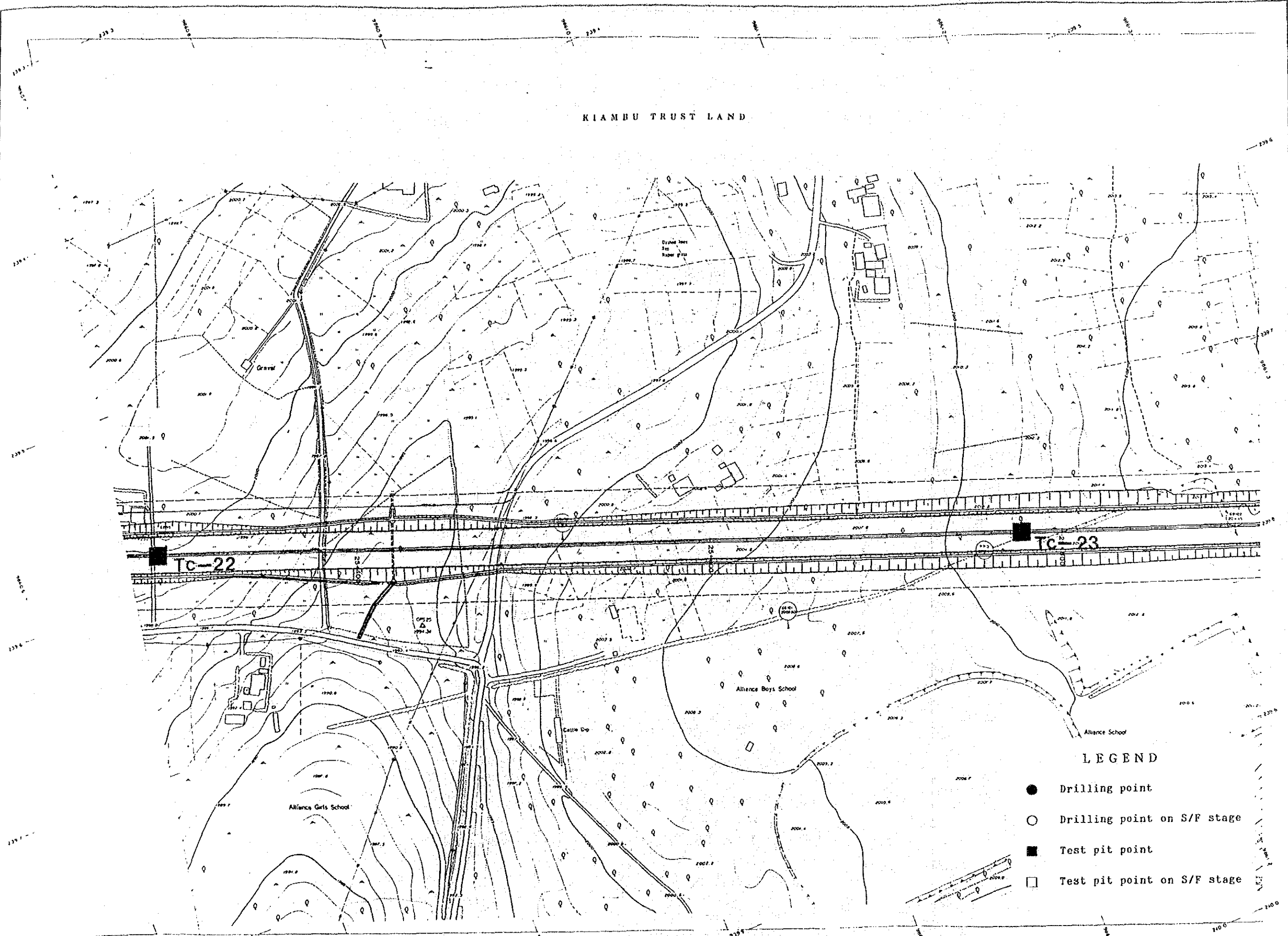
SHEET 40 OF 16

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 41

INDEX TO ADJOINING SHEETS



DETAILED LOCATION MAP OF GEOLOGICAL SURVEY



Scale 1 : 2,000  
HEIGHTS IN METERS

LEGEND	
	GPS Point
	Traverse Point
	Bench Mark
	Direct Leveling Height
	Spot Height
	Contours 1/4 Unit
	Outcrop (Rock)
	Building (Farmhouse)
	Building (Others)
	Bituminous Road
	Road
	Track
	Railway
	Bridge/Culvert
	River
	Stream
	Dam
	Well
	Water Tank
	Power Line
	Telephone Line
	Fence/Gate
	Hedge
	Stone Wall
	Dump or Mound
	Quarry Pit
	Cutting
	Embankment
	Cultivated Land
	Orchard or Permanent Crop
	Plantation
	Grazeland
	Bush
	Forest
	Swamp
	Vegetation Boundary
	Planning Partition

HORIZONTAL DATUM: UTM ZONE 37  
VERTICAL DATUM: MEAN SEA LEVEL  
AERIAL PHOTOGRAPHED BY: [Name]  
GROUND CONTROL SURVEYED BY: [Name]  
STEREO PLOTTED BY: [Name]  
CARTOGRAPHED BY: [Name]

CHECKED BY: [Name] DATE: [Date]  
[Name] DATE: [Date]  
[Name] DATE: [Date]  
PROJECT ENGINEER DATE: [Date]

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JICA TOKYO, JAPAN  
SHEET 41 OF 46

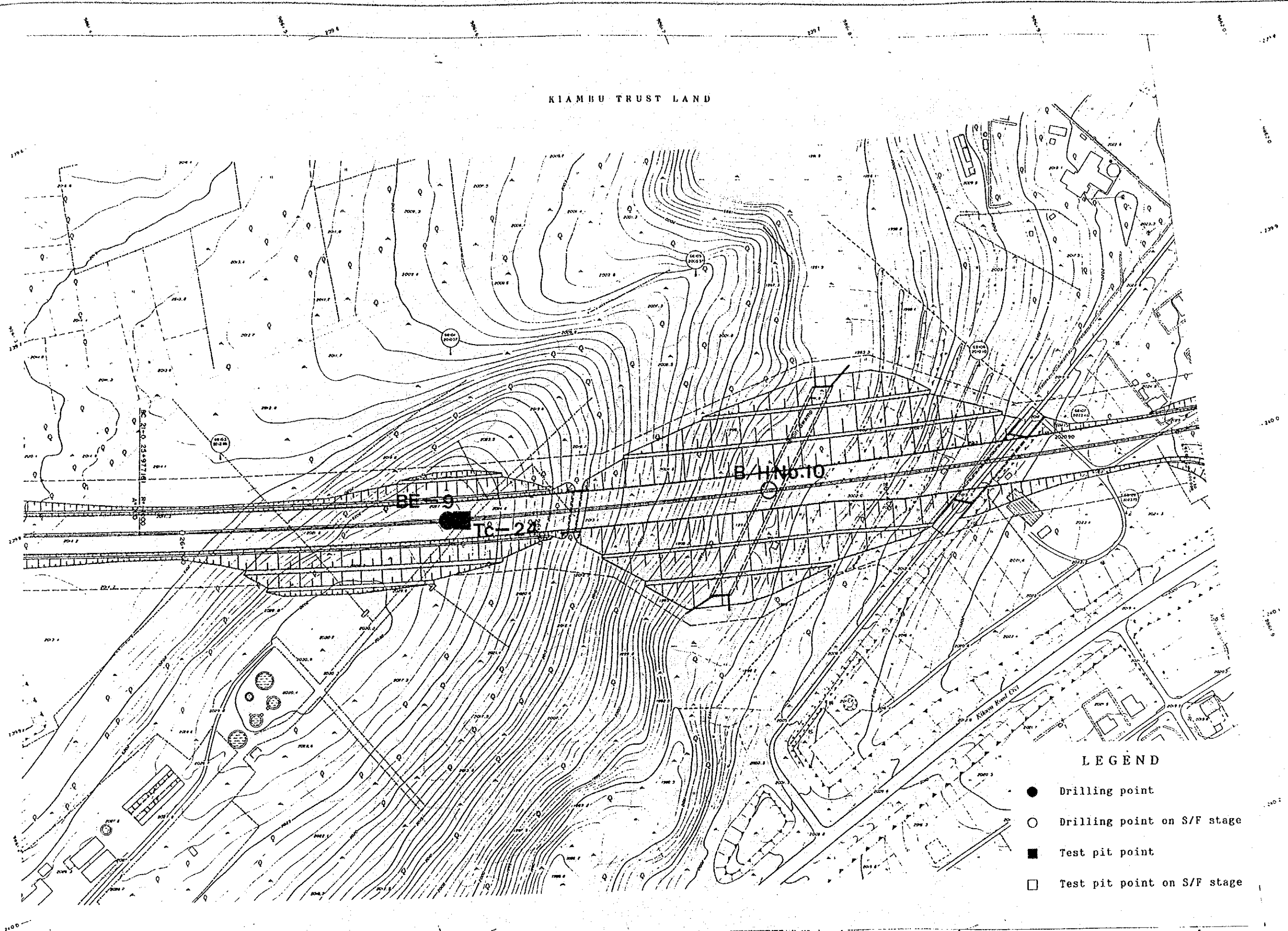
LEGEND	
	Drilling point
	Drilling point on S/F stage
	Test pit point
	Test pit point on S/F stage

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

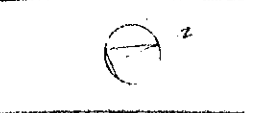
SHEET NO. 42

41 42 43

INDEX TO ADJOINING SHEETS



DETAILED LOCATION MAP OF GEOLOGICAL SURVEY



Scale 1 : 2,000  
HEIGHTS IN METERS

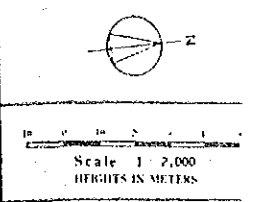
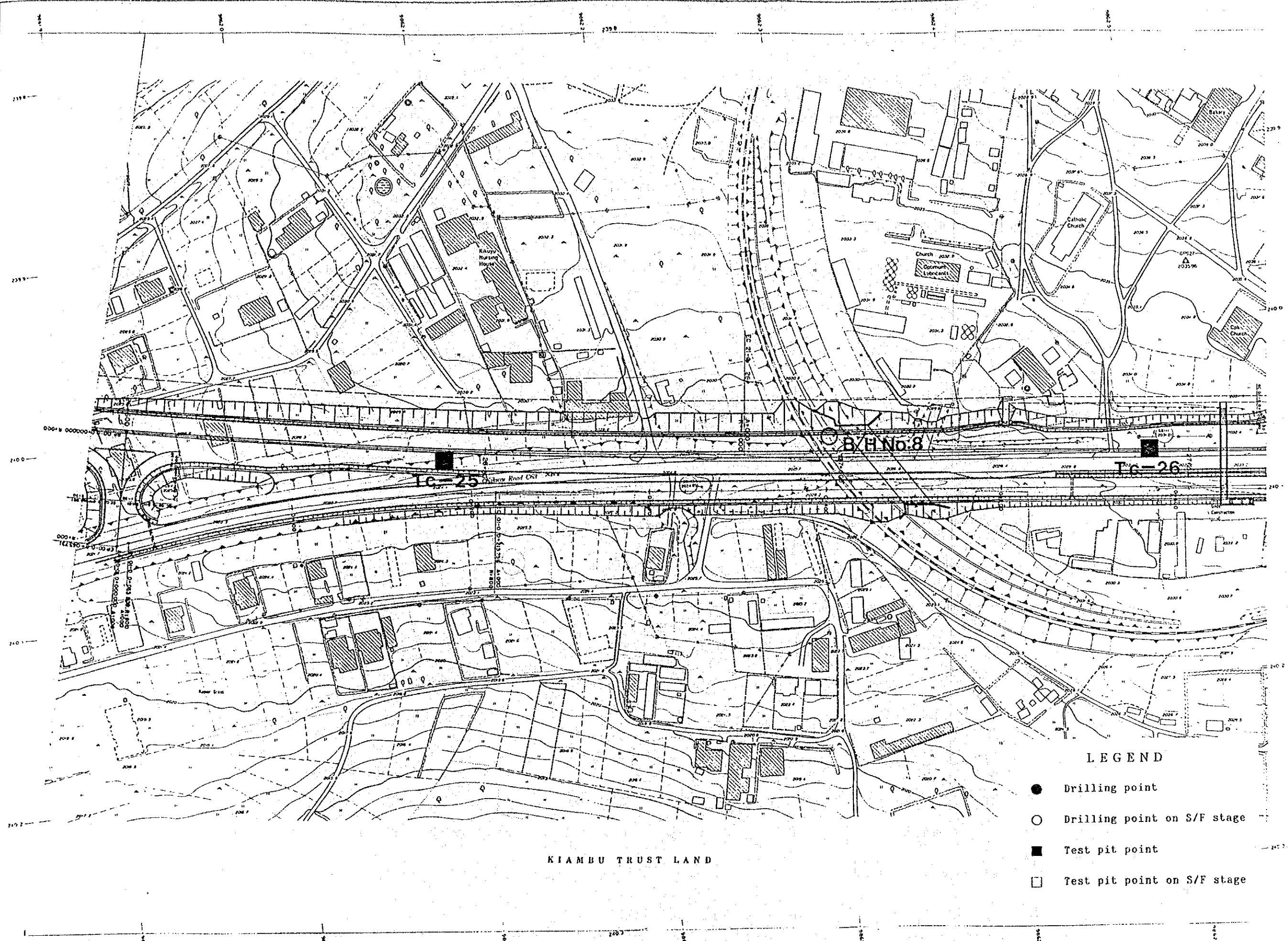
LEGEND	
	GPS Point
	Traverse Point
	Bench Mark
	Direct Leveling Height
	Spot Height
	Contours at 1m
	Outcrop (Rocks)
	Building Permanent
	Building Others
	Illuminated Road
	Road
	Track
	Railways
	Header Culvert
	River
	Stream
	Dam
	Pond
	Water Tank
	Power Line
	Telephone Line
	Fence Gate
	Heder
	Stone Wall
	Dump or Mound
	Quarry Pit
	Cutting
	Embankment
	Cultivated Land
	Orchard or Permanent Plantation
	Plantation
	Grassland
	Bush
	Forest
	Swamp
	Vegetation Boundary
	Planning Partition

HORIZONTAL DATUM: UTM ZONE U  
CLARK 1960 SPHEROID  
VERTICAL DATUM: MEAN SEA LEVEL  
AERIAL PHOTOGRAPHY BY: [Name]  
GROUND CONTROL SURVEYED BY: [Name]  
STEREO PLOTTED BY: [Name]  
CARTOGRAPHED BY: [Name]

LEGEND	
	Drilling point
	Drilling point on S/F stage
	Test pit point
	Test pit point on S/F stage

CHIEF ENGINEER: [Name] DATE: [Date]  
CHIEF SURVEY ENGINEER: [Name] DATE: [Date]  
CHECKED BY: [Name] DATE: [Date]  
SURVEY ENGINEER: [Name] DATE: [Date]  
PROJECT ENGINEER: [Name] DATE: [Date]

MINISTRY OF PUBLIC WORKS  
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OFFICE OF ORIGIN  
JICA TOKYO, JAPAN  
SHEET 42 OF 46



**LEGEND**

- GPS Point
- Traverse Point
- Bench Mark
- Direct Leveling Height
- Spot Height
- Contours (V.I. Int.)
- Outcrop (Rock)
- Building (Farmhouse)
- Building (Others)
- Unimproved Road
- Road
- Track
- Railway
- Bridge/Culvert
- River
- Stream
- Dam
- Pond
- Water Tank
- Power Line
- Telephone Line
- Fence/Gate
- Hedge
- Stone Wall
- Dump or Mound
- Quarry (In)
- Cutting
- Embankment
- Cultivated Lands
- Orchard or Plantation
- Plantation
- Grassland
- Bush
- Forest
- Swamp
- Vegetation Boundary
- Planting Partition

HORIZONTAL DATUM UTM ZONE 34  
 VERTICAL DATUM MEAN SEA LEVEL  
 AERIAL PHOTOGRAPHY BY  
 GROUND CONTROL SURVEYED BY  
 STEREO PLOTTED BY  
 CARTOGRAPHED BY

CHECKED BY  
 PROJECT ENGINEER  
 DATE

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**M.O.P.W.**  
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 JICA TOKYO, JAPAN  
 SHEET 43 OF 16

**LEGEND**

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

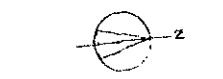
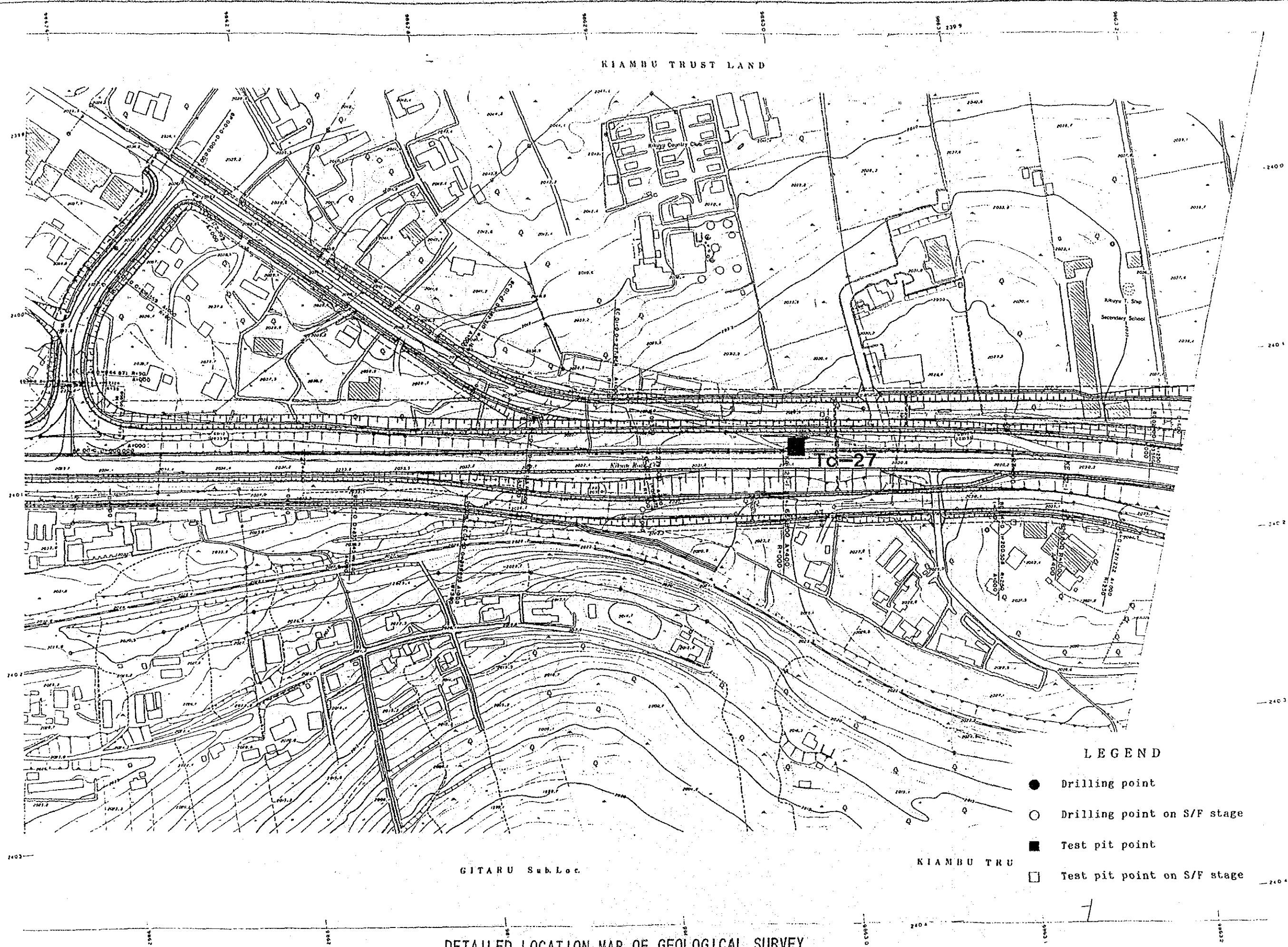
DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 44

43 44 45

INDEX TO ADJOINING SHEETS



Scale 1 : 2,000  
(DEBITS IN METERS)

- LEGEND**
- ⊙ GIS Point
  - ⊙ Traverse Point
  - ⊙ Bench Mark
  - 1224.5 Direct Leveling Height
  - 422.3 Spot Height
  - Contours of 1:10m
  - Ditch (Rock)
  - Building Footprint
  - Building Others
  - Bituminous Road
  - Road
  - Track
  - Railway
  - Bridge, Culvert
  - River
  - Stream
  - Dam
  - Pond
  - Water Tank
  - Power Line
  - Telephone Line
  - Fence, Gate
  - Hedge
  - Stone Wall
  - Dump or Mound
  - Quarry Pit
  - Culture
  - Embankment
  - Cultivated Lands
  - Orchard or Permanent Crop
  - Pastureland
  - Grassland
  - Bush
  - Forest
  - Swamp
  - Vegetation Boundary
  - Planning Partition

HORIZONTAL DATUM: UTM ZONE 37  
CLARK 1866 SPHEROID

VERTICAL DATUM: MEAN SEA LEVEL

AERIAL PHOTOGRAPHED BY: JICA International Cooperation Agency  
GROUND CONTROL SURVEYED BY: JICA  
STEREO PLOTTED BY: JICA  
CARTOGRAPHED BY: JICA

CHIEF ENGINEER: [Signature] DATE: [ ]

CHIEF SURVEYING ENGINEER: [Signature] DATE: [ ]

CHECKED BY: [Signature] DATE: [ ]

PROJECT ENGINEER: [Signature] DATE: [ ]

MINISTRY OF PUBLIC WORKS

**M.O.P.W.**

OFFICE OF ORIGIN  
JICA TOKYO, JAPAN

SHEET 44 OF 46

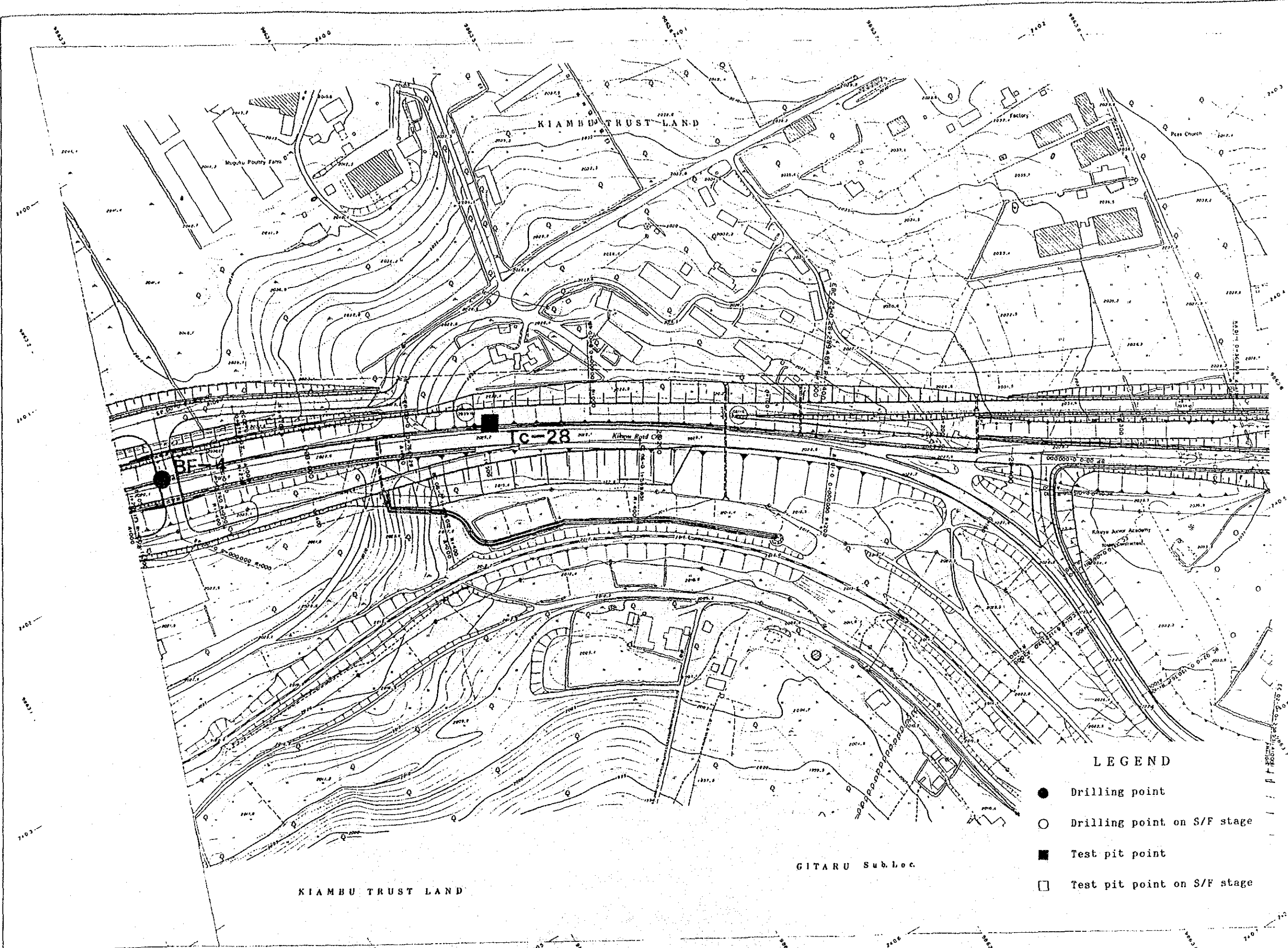
- LEGEND**
- Drilling point
  - Drilling point on S/F stage
  - Test pit point
  - Test pit point on S/F stage

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY

# THE DETAILED DESIGN STUDY ON THE NAIROBI BYPASS PROJECT

SHEET NO. 45

AA 45 46  
INDEX TO ADJOINING SHEETS



Scale 1 : 2,000  
HEIGHTS IN METERS

### LEGEND

- ▲ G.S. Point
- Traverse Point
- Bench Mark
- 1234.5 Direct Leveling Height
- 1234.5 Spot Height
- Contours (V.I. Line)
- ▨ Outcrop (Block)
- ▧ Building (Partition)
- ▧ Building (Chimney)
- ▧ Blimmed Road
- ▧ Road
- ▧ Track
- ▧ Railway
- ▧ Bridge, Culvert
- ▧ River
- ▧ Stream
- ▧ Dam
- ▧ Pond
- ▧ Water Tank
- ▧ Power Line
- ▧ Telephone Line
- ▧ Fence, Gate
- ▧ Hedge
- ▧ Stone Wall
- ▧ Dune or Mound
- ▧ Quarry, Pit
- ▧ Cutting
- ▧ Embankment
- ▧ Cultivated Land
- ▧ Orchard or Permanent C.
- ▧ Plantation
- ▧ Grassland
- ▧ Bush
- ▧ Swamp
- ▧ Vegetation Boundary
- ▧ Pasture Partition

### LEGEND

- Drilling point
- Drilling point on S/F stage
- Test pit point
- Test pit point on S/F stage

HORIZONTAL DATUM: U.T.M. ZONE 37  
SCALE: 1:20,000  
VERTICAL DATUM: MEAN SEA LEVEL  
AERIAL PHOTOGRAPHED BY: JICA  
GROUND CONTROL SURVEYED BY: JICA  
STEREO PLOTTED BY: JICA  
CARTOGRAPHED BY: JICA

CHIEF ENGINEER: [Name] DATE: [Date]  
CHIEF SURV. ENG.: [Name] DATE: [Date]  
CHECKED BY: [Name] DATE: [Date]  
SURV. ENGINEER: [Name] DATE: [Date]  
PROJECT ENGINEER: [Name] DATE: [Date]

MINISTRY OF PUBLIC WORKS  
**M.O.P.W.**  
OFFICE OF ORIGIN  
JICA TOKYO, JAPAN  
SHEET 15 OF 16

DETAILED LOCATION MAP OF GEOLOGICAL SURVEY