

GOVERNMENT OF MALAYA

STUDY

ON

KUALA KEMPAS RIVER BASIN WATER FLOOD PROTECTION

WATER WORKS

CONGRESS SERIALS SLIP(S)

1963/1964

DEPARTMENT OF WATER SUPPLY AND SEWERAGE

1963/1964
C.R. (6)
RE-130-1

113
61.7
SSS

GOVERNMENT OF MALAYSIA

**STUDY
ON
KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION**

DATA BOOK

(CROSS SECTIONAL SURVEY)

JICA LIBRARY



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NOVEMBER, 1989

JAPAN INTERNATIONAL COOPERATION AGENCY

国際協力事業団

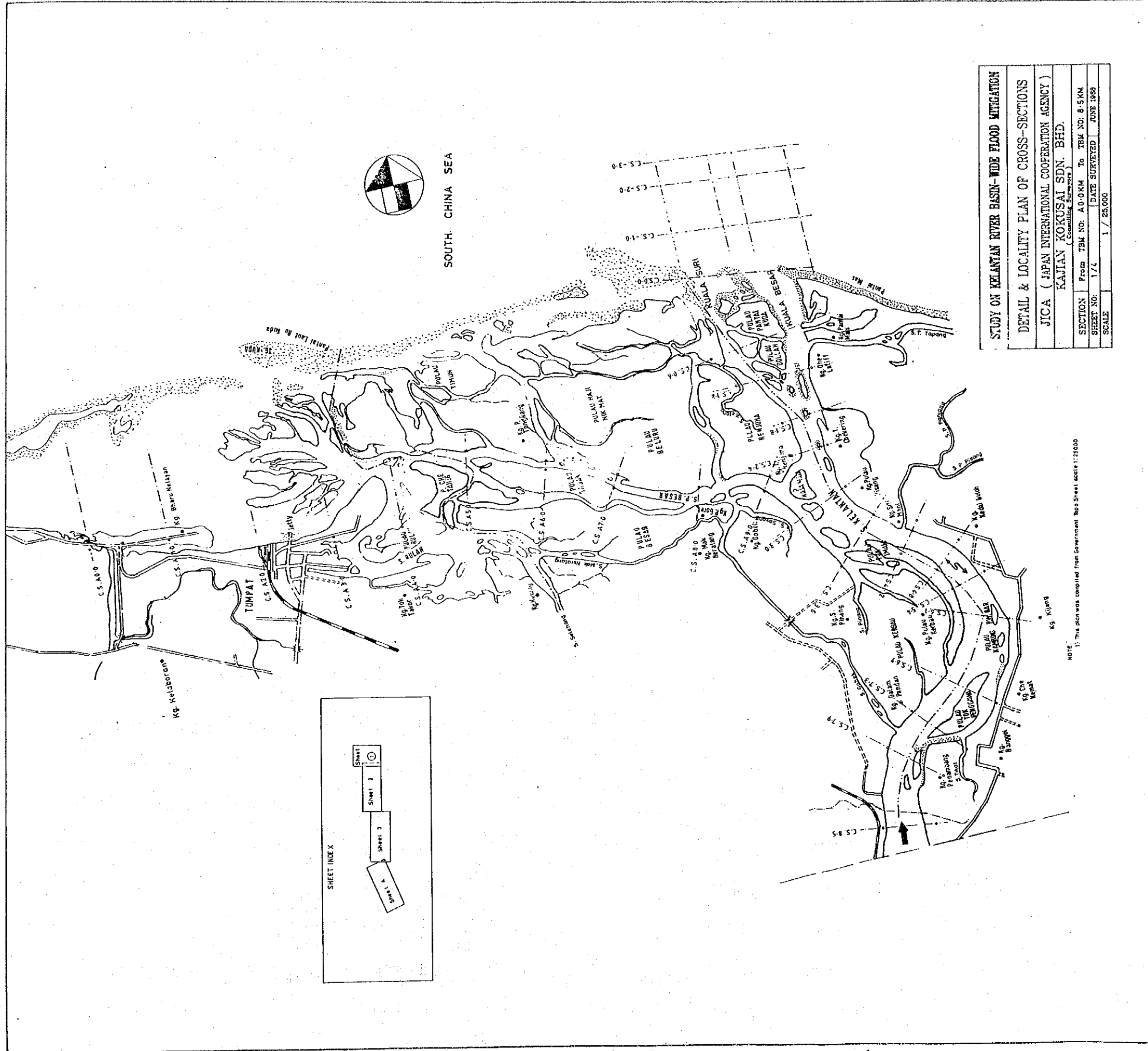
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CONTENTS

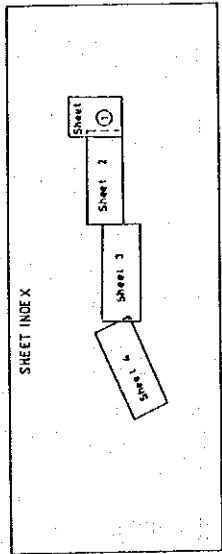
1. DETAILS & LOCALIYT PLANS OF CROSS-SECTIONS
2. LONGITUDINAL PROFILE
3. CROSS-SECTIONAL PROFILES
 - SUNGAI P. BESAR
 - SUNGAI KELANTAN
4. DETAILS & LOCALITY PLAN OF CROSS-SECTIONS
5. LONGITUDINAL PROFILE OF SUNGAI KELANTAN
6. CROSS-SECTIONL PROFILE OF SUNGAI KELANTAN

DETAILS & LOCALITY PLANS OF CROSS-SECTIONS

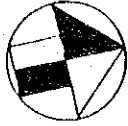
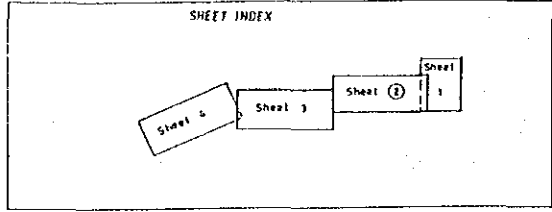
(4 SHEETS)



STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION
DETAIL & LOCALITY PLAN OF CROSS-SECTIONS
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)
KAJIAN KOKUSAI SDN. BHD.
(Konsultansi & Survei)
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SHEET NO: 1/4 **DATE SURVEYED:** JUNE 1989
SCALE: 1 / 25,000

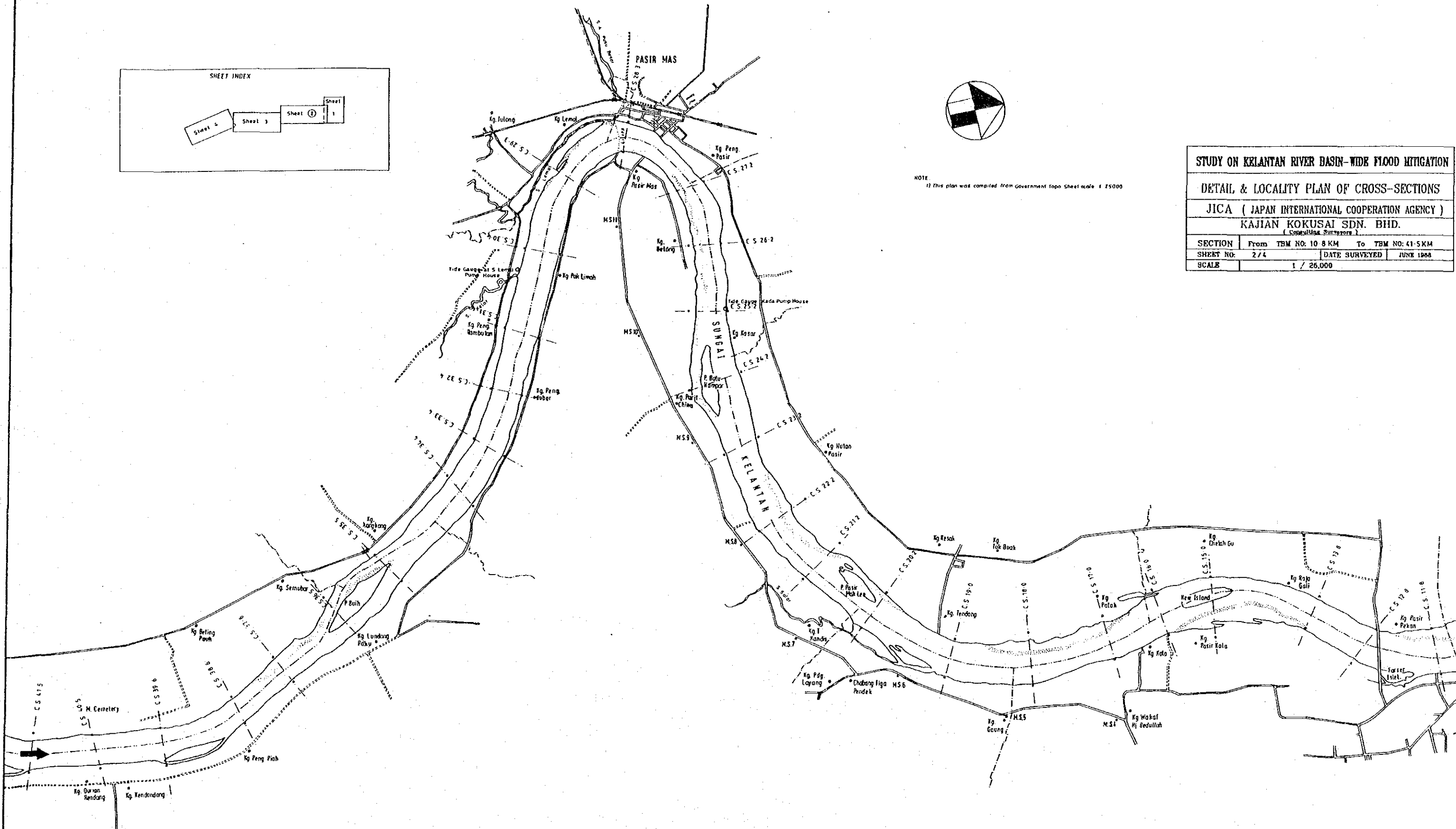


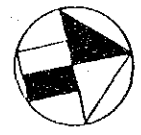
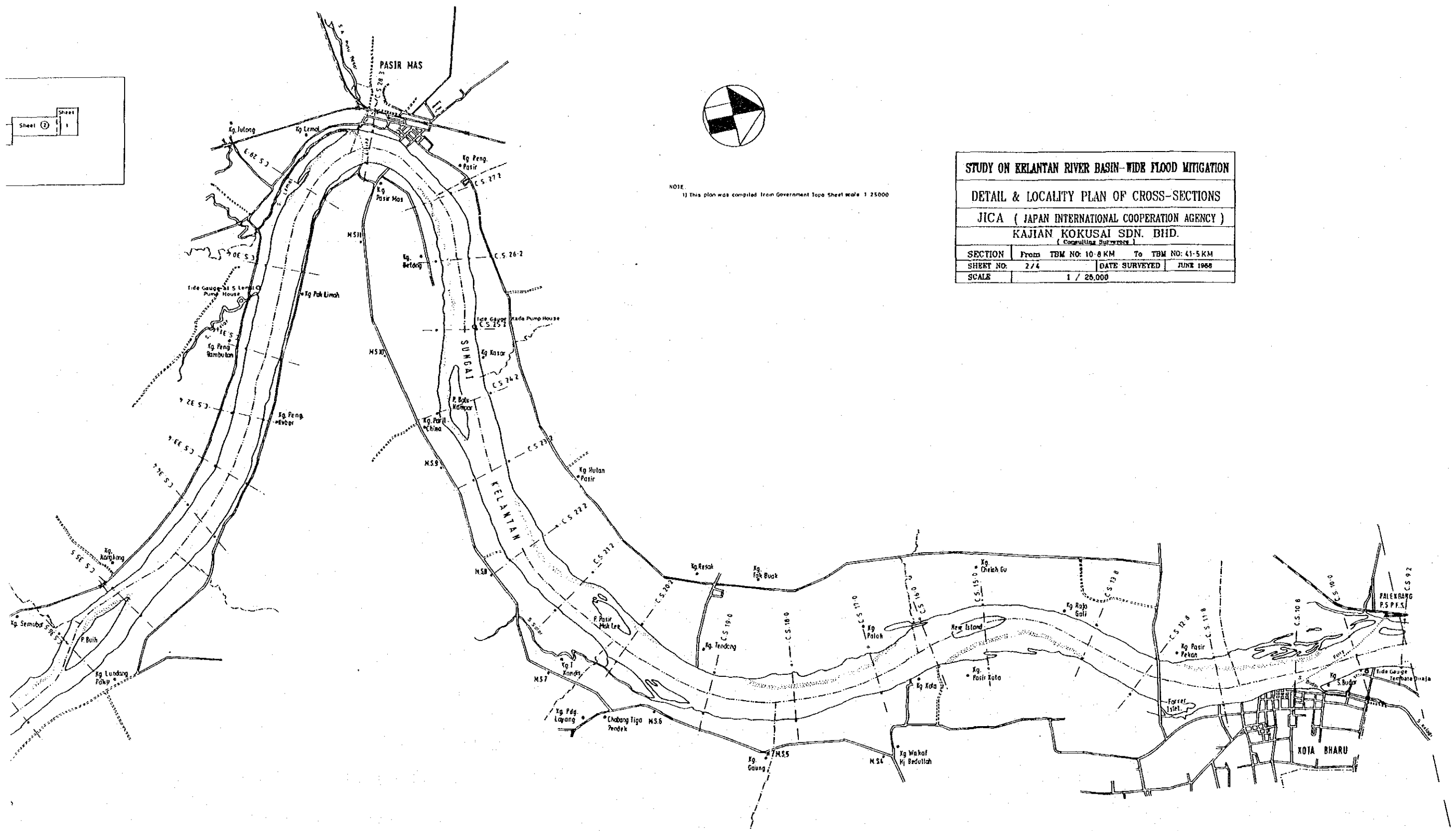
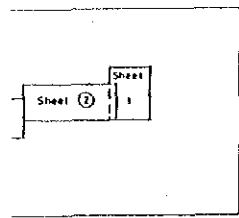
NOTE:
 1) This plan was compiled from government Topo Sheet scale 1:25000



NOTE:
1) This plan was compiled from Government Topo Sheet scale 1:25000

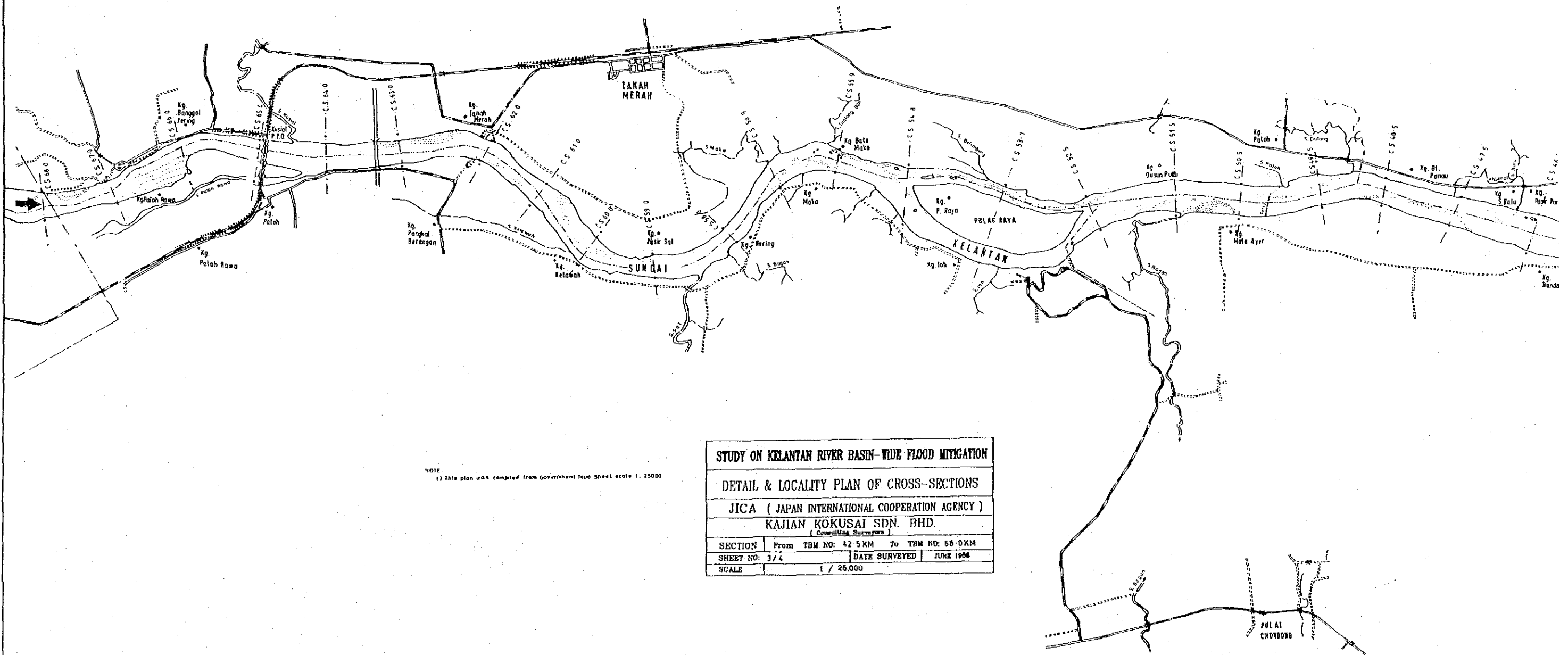
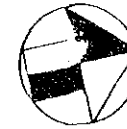
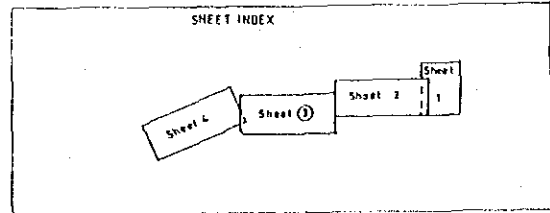
STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
DETAIL & LOCALITY PLAN OF CROSS-SECTIONS			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD.			
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SHEET NO:	2/4	DATE SURVEYED	JUNE 1968
SCALE	1 / 25,000		





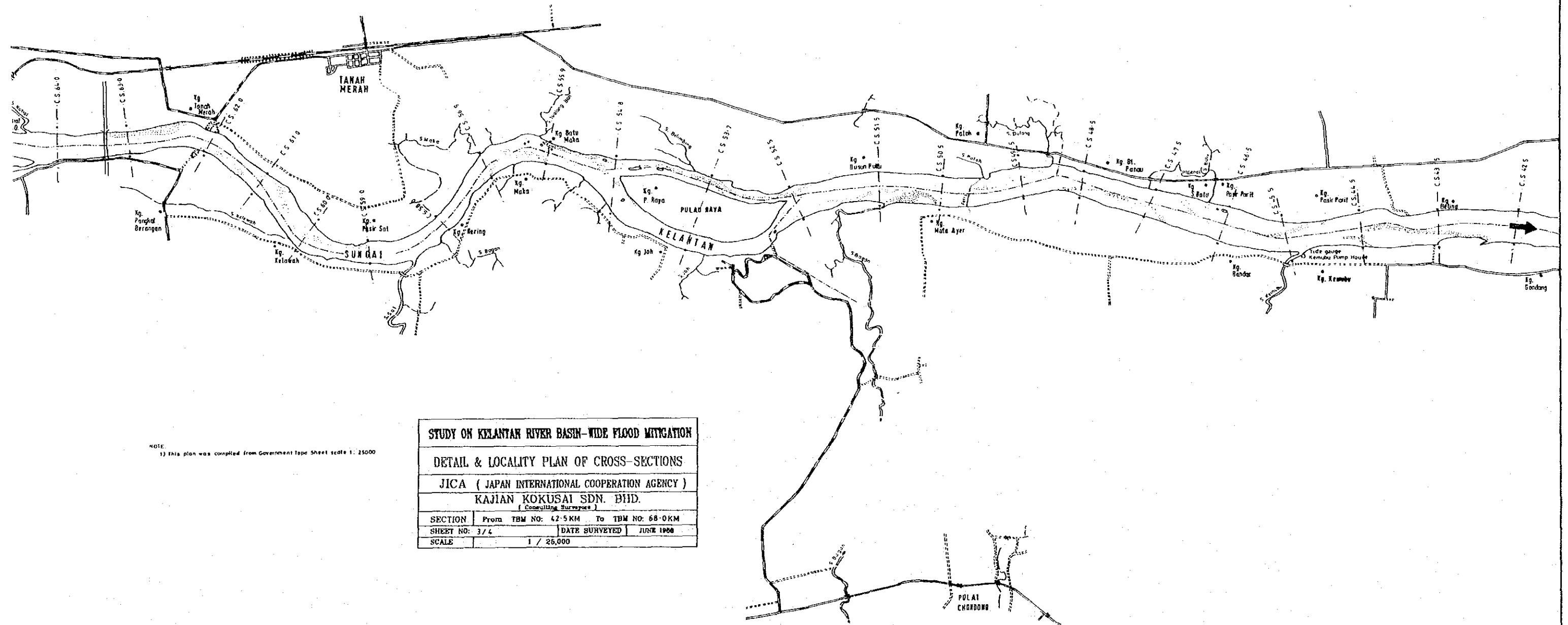
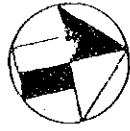
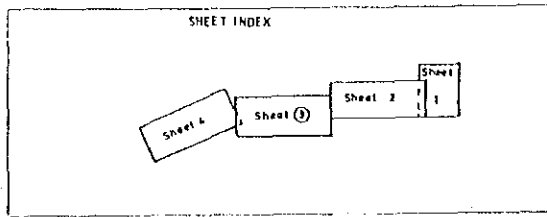
NOTE:
1) This plan was compiled from Government Topo Sheet scale 1:25,000

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
DETAIL & LOCALITY PLAN OF CROSS-SECTIONS			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD.			
(Consulting Engineers)			
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SCALE	1 / 25,000		



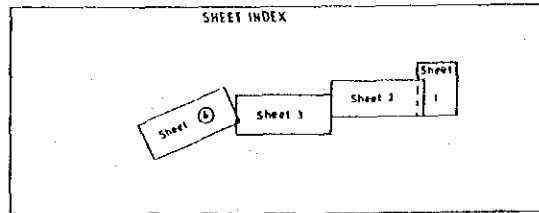
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 (1) This plan was compiled from Government Top Sheet scale 1:25000

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION	
DETAIL & LOCALITY PLAN OF CROSS-SECTIONS	
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)	
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)	
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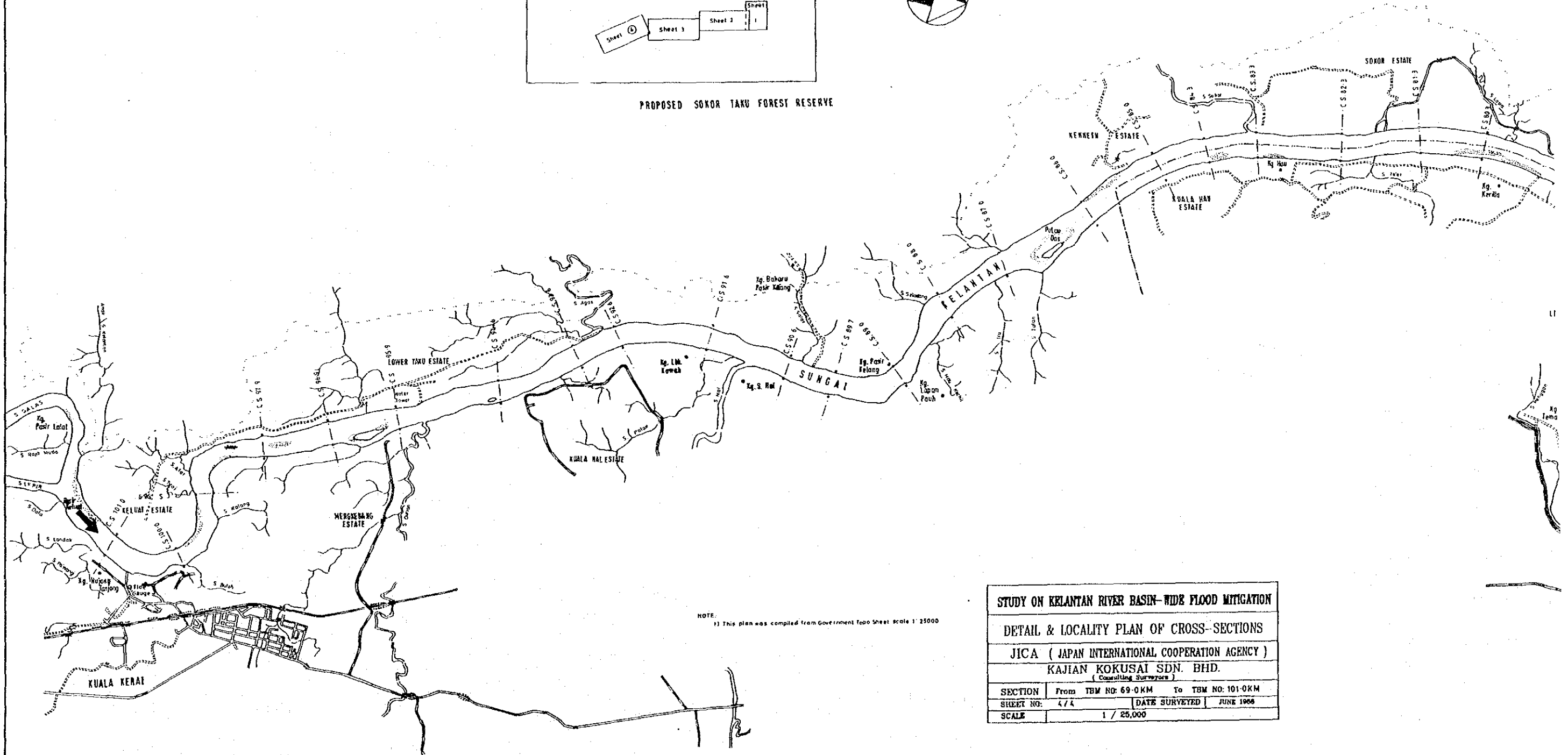


NOTE:
1) This plan was compiled from Government Topo Sheet scale 1:25000

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
DETAIL & LOCALITY PLAN OF CROSS-SECTIONS			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD.			
(Consulting Surveyors)			
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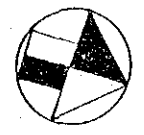
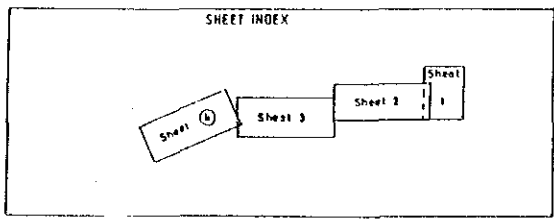


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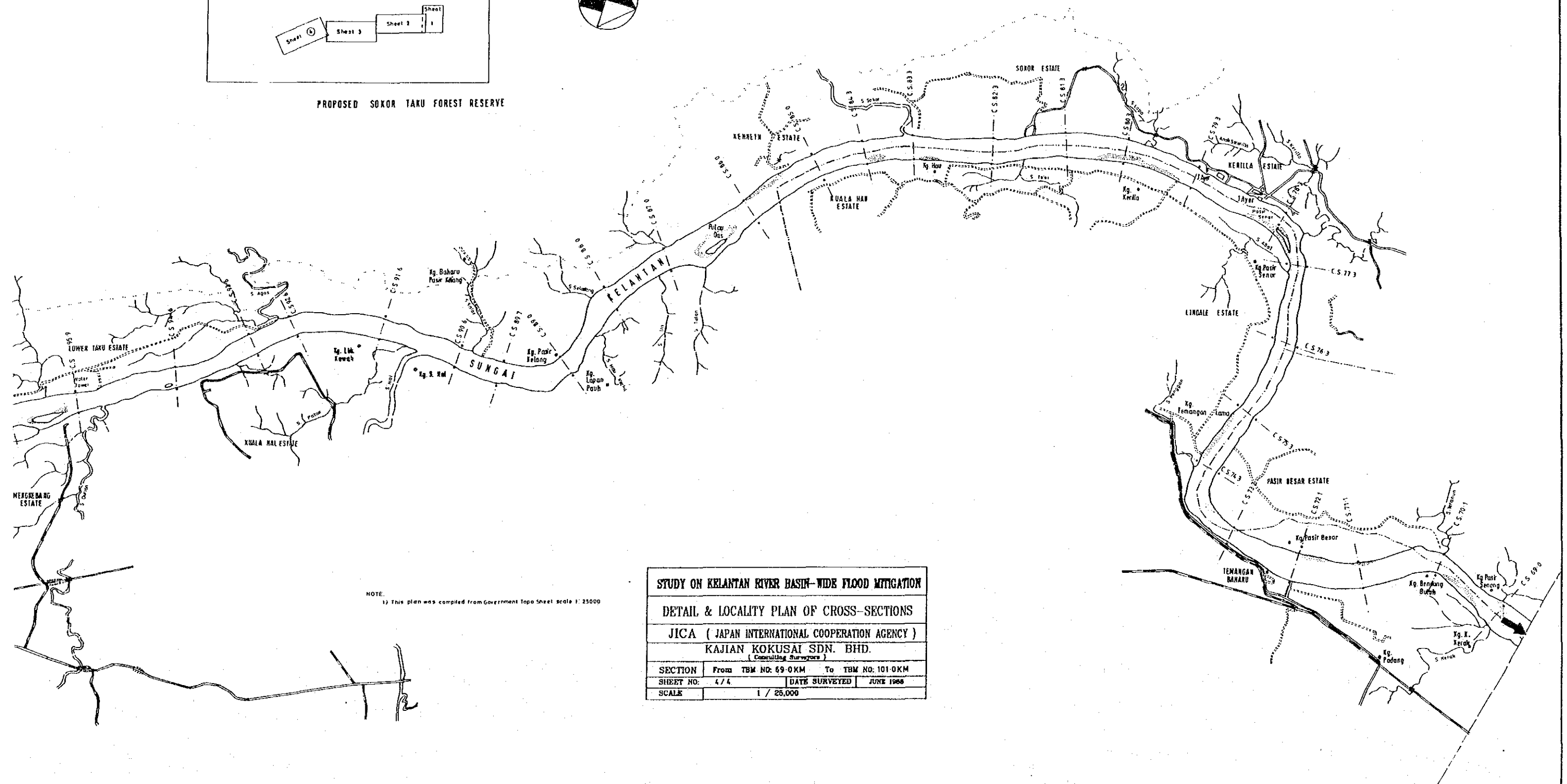


NOTE: 1) This plan was compiled from Government Topo Sheet scale 1:25000

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
DETAIL & LOCALITY PLAN OF CROSS-SECTIONS			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
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(Consulting Surveyors)			
SECTION	From TBM NO: 69-0KM	To TBM NO: 101-0KM	
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SCALE	1 / 25,000		



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NOTE:
1) This plan was compiled from Government Topo Sheet scale 1:25000

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
DETAIL & LOCALITY PLAN OF CROSS-SECTIONS			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD.			
(Consulting Surveyors)			
SECTION	From TBM NO. 69-0KM	To TBM NO. 101-0KM	
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SCALE	1 / 25,000		

LONGITUDINAL PROFILE

(1 SHEET)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION

JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)

KAJIAN KOKUSAI SDN. BHD.
(Consulting Surveyors)

DATE SURVEYED: JUNE 1988

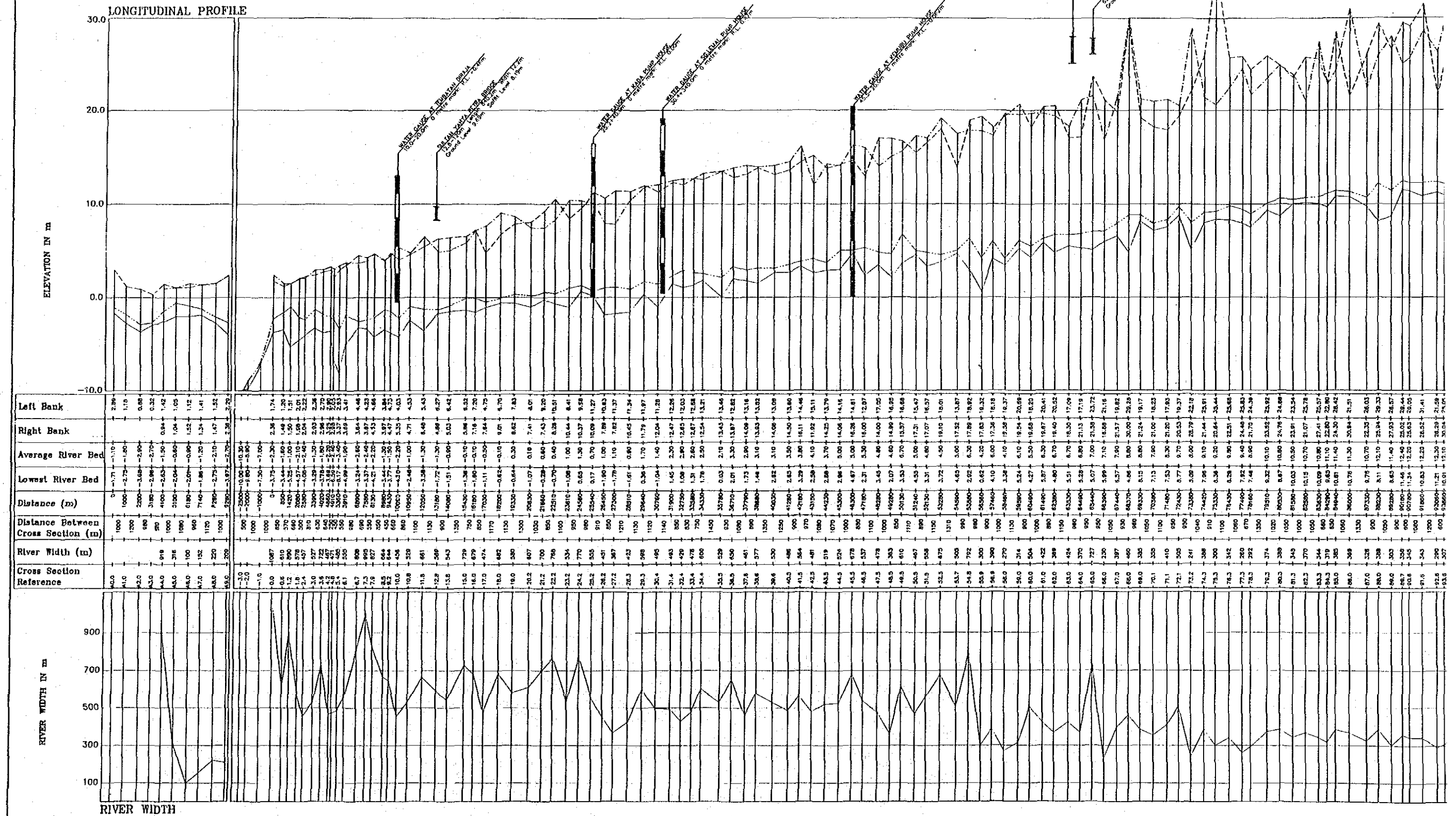
CHARACTERISTICS OF KELANTAN RIVER

SCALE
Horizontal : 1 / 160,000
Vertical : 1 / 200
Width : 1 / 10,000

LEGENDS

Right Bank
Left Bank
Average River Bed
Lowest River Bed

Note : All elevations are based on Land Survey Datum (LSD) in meter.



STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION

JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)

KAJIAN KOKUSAI SDN. BHD.

(Consulting Surveyors)

DATE SURVEYED JUNE 1988

CHARACTERISTICS OF KELANTAN RIVER

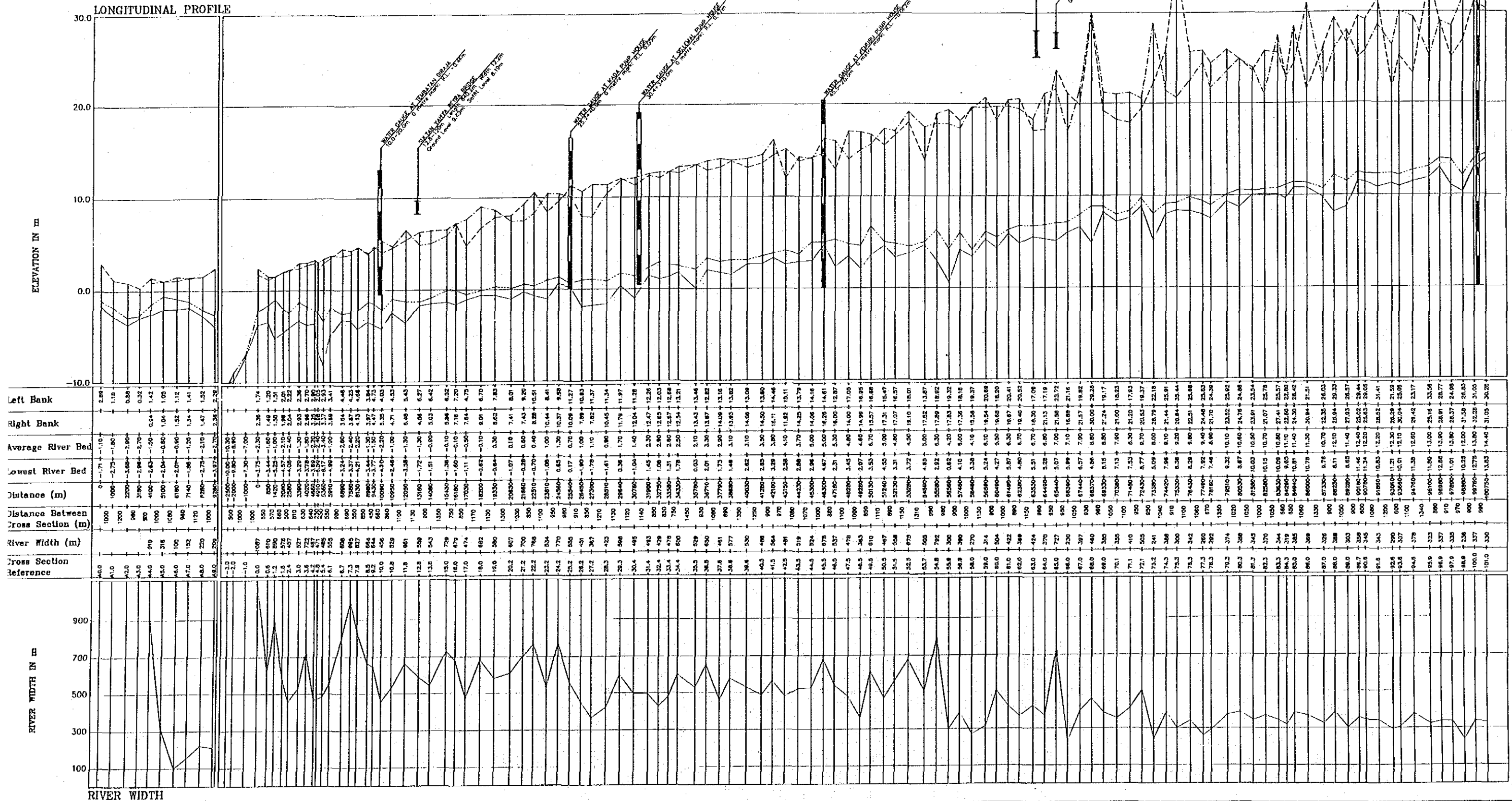
SCALE

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Vertical : 1 / 200
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LEGENDS

Right Bank
Left Bank
Average River Bed
Lowest River Bed

Note : All elevations are based on Land Survey Datum (LSD) in meter.

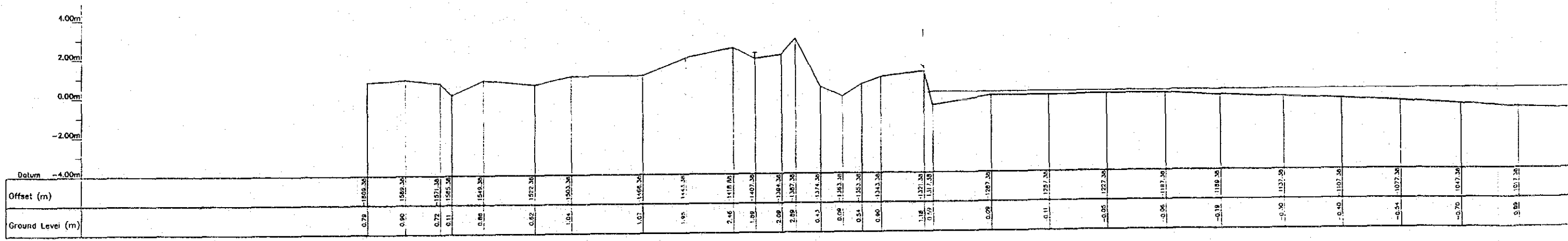


CROSS-SECTIONAL PROFILES

(118 SHEETS)

SUNGAI P.BESAR

(10 SHEETS)



W.L. 0.08

DATE : 9.7.1988

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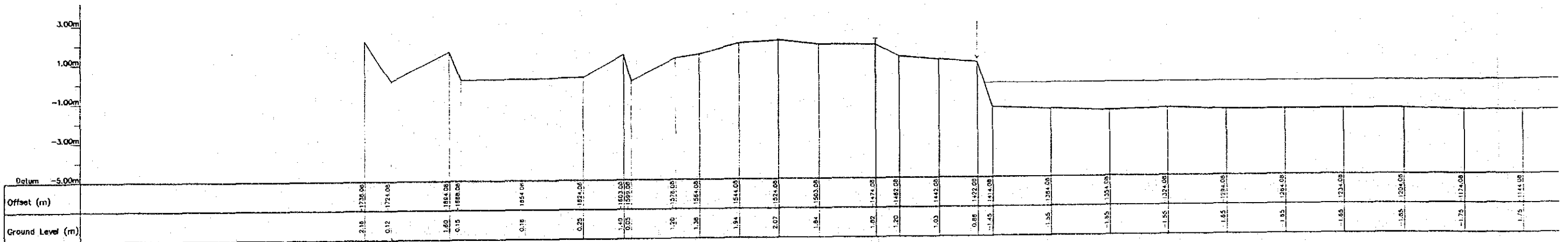
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No: A0.0

Legend :

T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
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SECTION	From TBM NO. A0.0 KM	To TBM NO. -	
SHEET NO:	1 / 10	DATE SURVEYED	JUNE 1988
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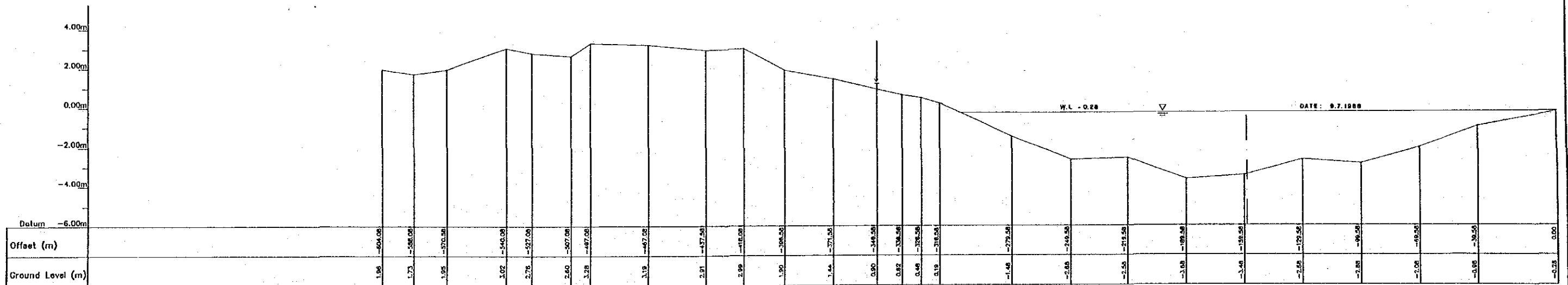


W.L. - 0.19

DATE : 9.7.1988

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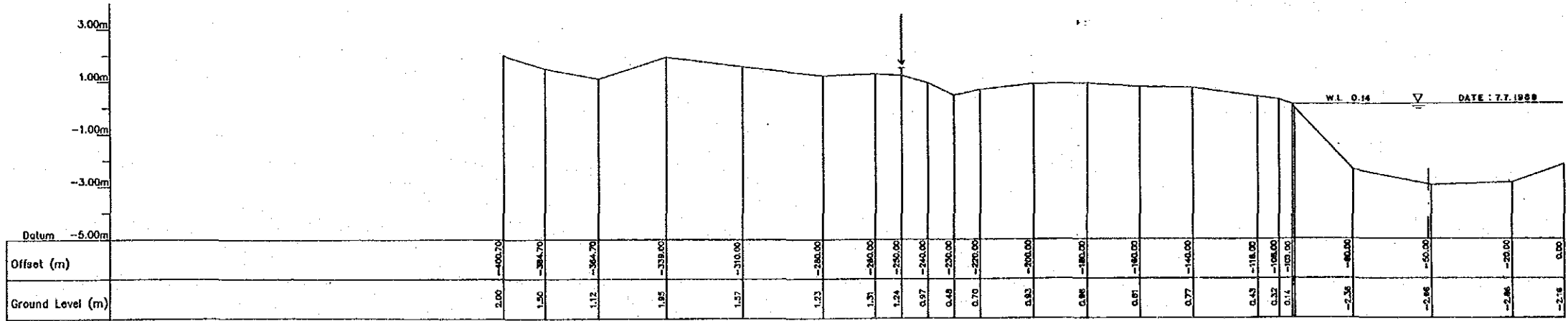
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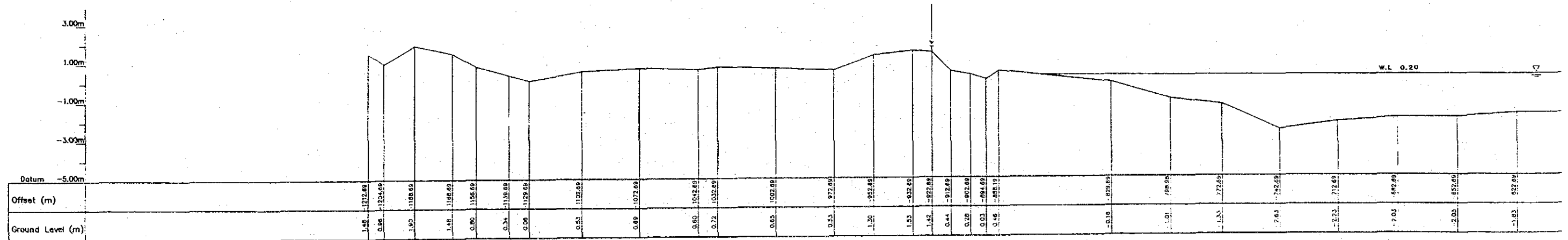
STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: A2.0 KM	To TBM NO: --	
SHEET NO:	3 / 10	DATE SURVEYED	JUNE 1988
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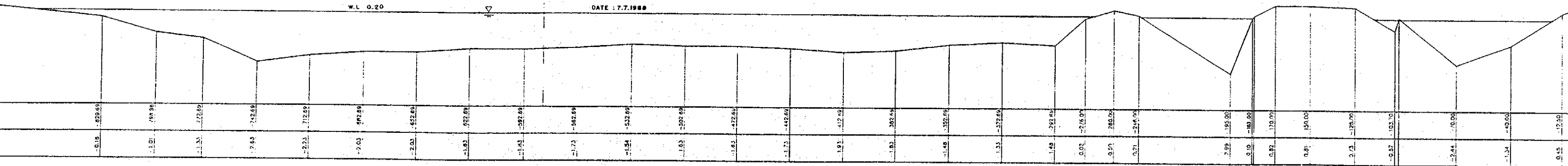
Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Engineer)			
SECTION	From TBM NO: A3.0 KM	To TBM NO: -	
SHEET NO:	4 / 10	DATE SURVEYED	JUNE 1988
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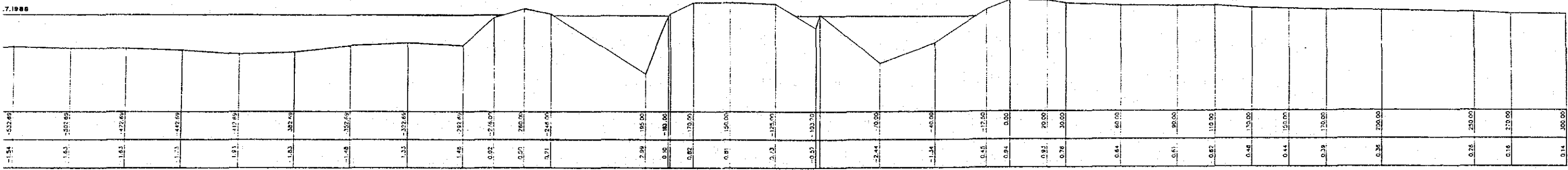


w.l. 0.20

DATE : 7.7.1988

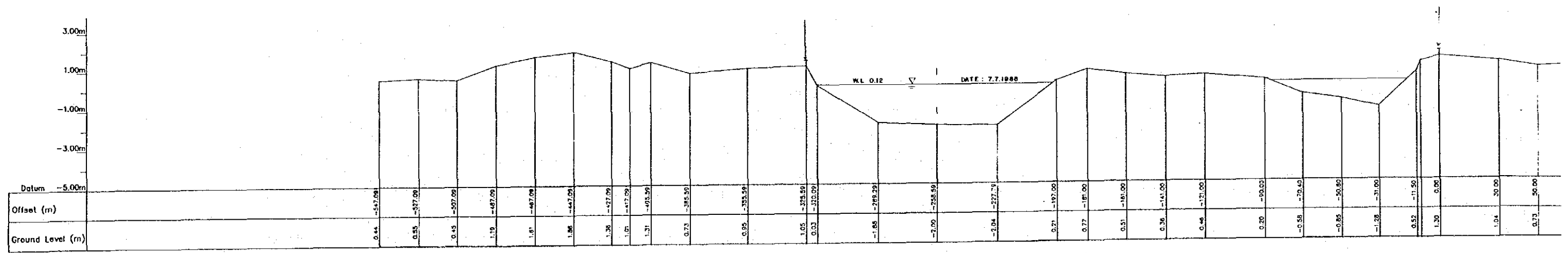


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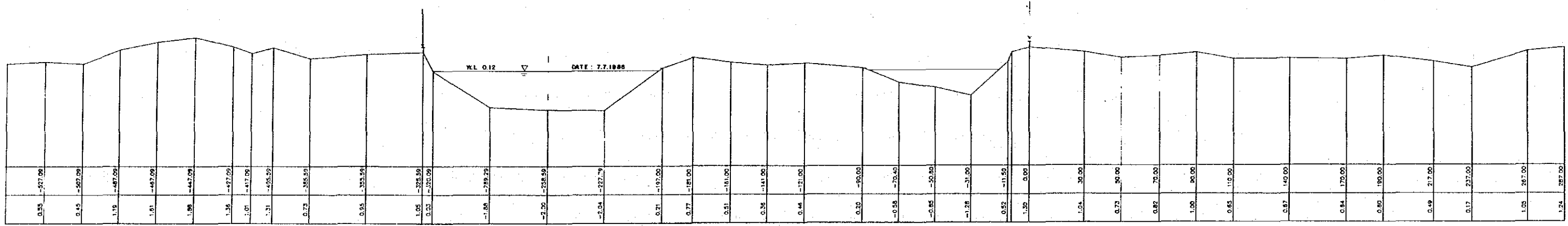
STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: A4.C KM	To TBM NO: -	
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SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



No: A5.0

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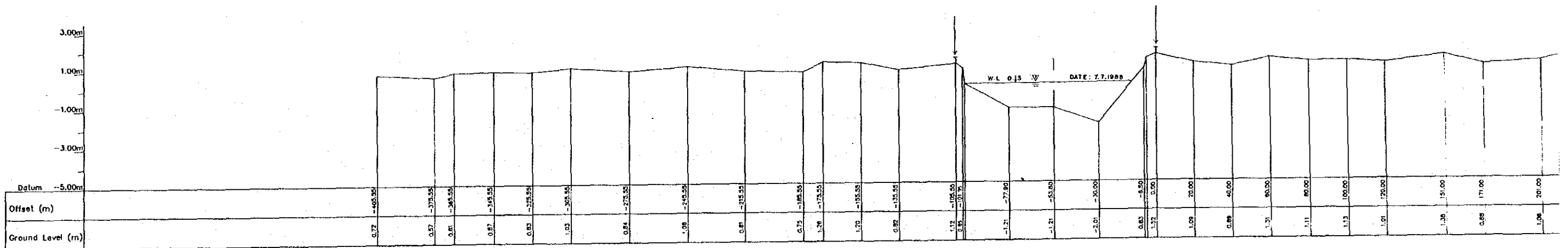
I II



No: A5.0

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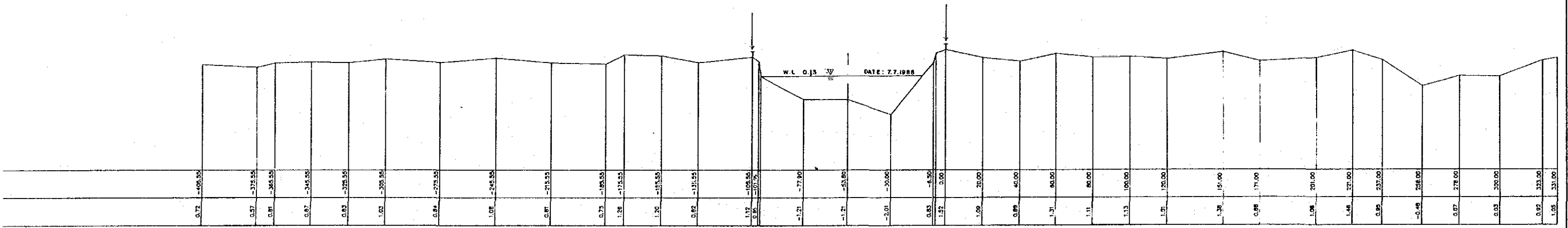
STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Engineers)			
SECTION	From TBM NO. A5.0 KM	To TBM NO. -	
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No: A6.0

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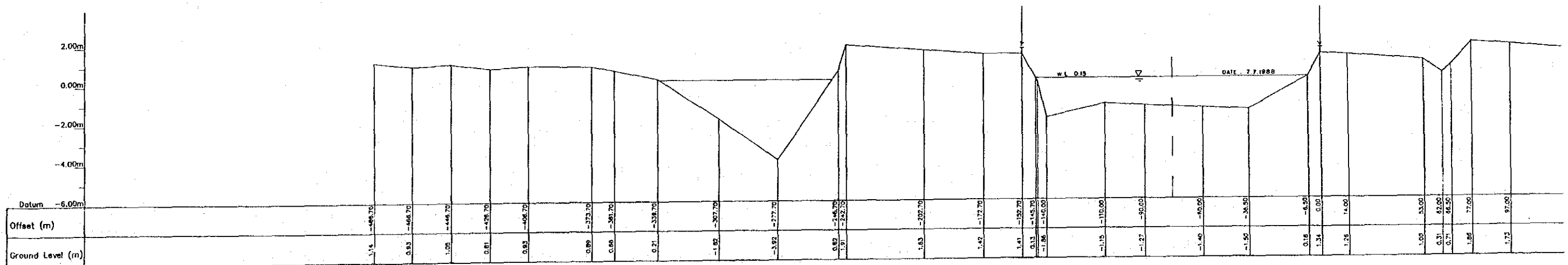
STUDY 0
CROSS
JICA
SECTION
SHEET NO
SCALE



No: A6.0

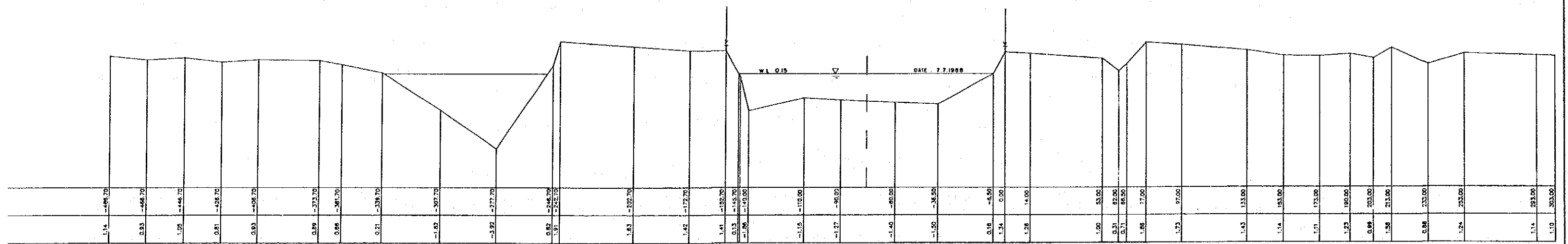
Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION	
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN	
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)	
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)	
SECTION	From TBM NO. A6.0 KM To TBM NO. -
SHEET NO:	7 / 10
DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000 Vertical : 1 / 100



No: A7.0

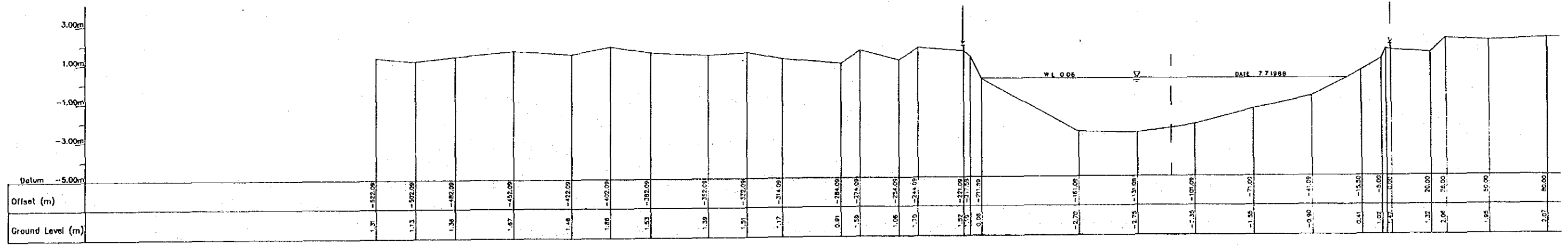
Legend :
T : TBM (Pipe In concrete



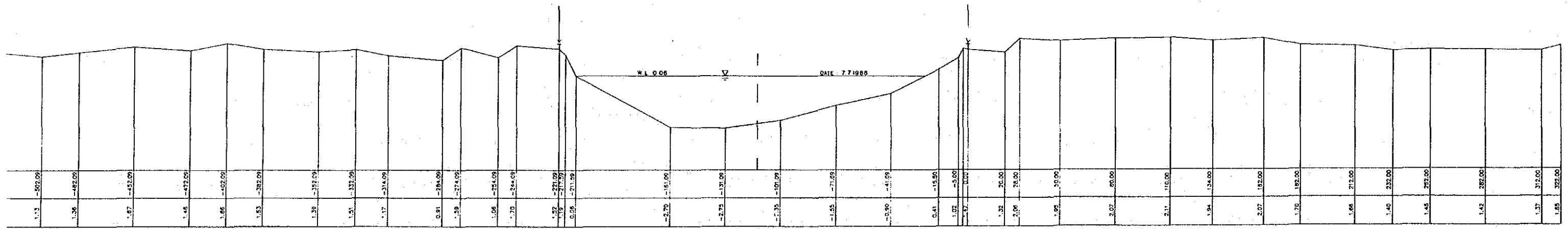
No: A7.0

Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: A7.0 KM	To TBM NO: -	
SHEET NO: 8 / 10	DATE SURVEYED	JUNE 1968	
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



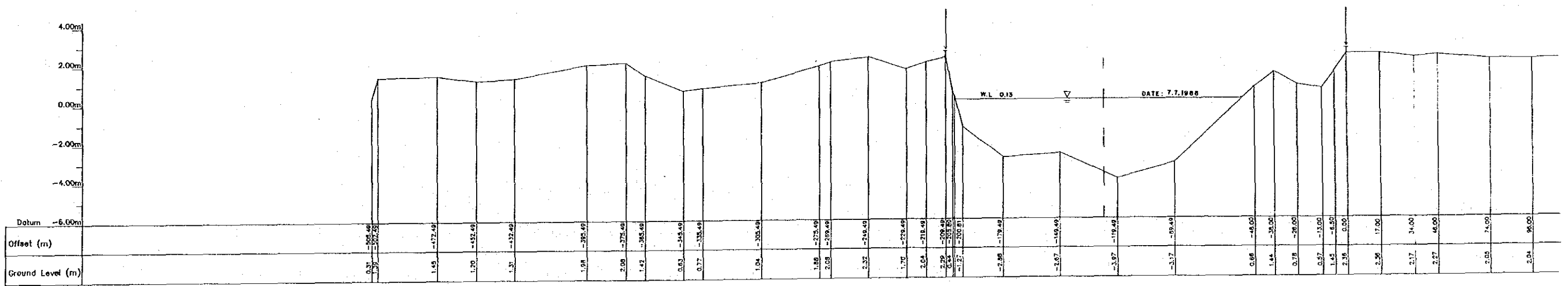
No: A8.0



No: A8.0

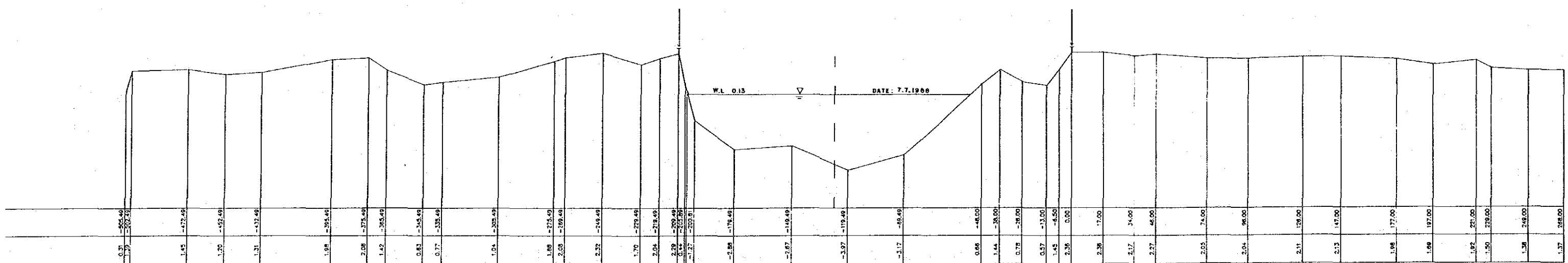
Legend :
 I : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: A8.0 KM	To TBM NO: -	
SHEET NO:	9 / 10	DATE SURVEYED	JUNE 1986
SCALE	Horizontal : 1 / 1000		Vertical : 1 / 100



No: A9.0

Legend :
 T : TBM (Pipe in concrete)



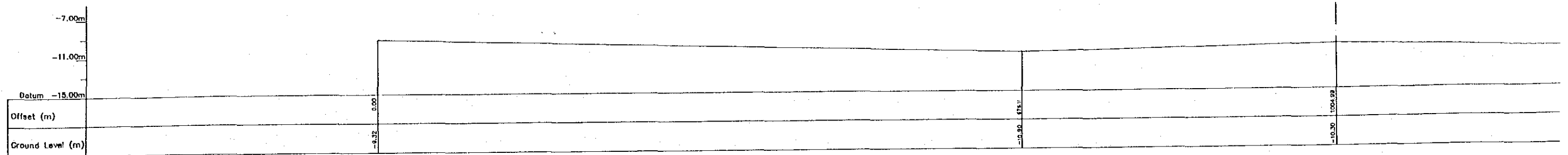
No: A9.0

Legend :
T : TBM (Pipe in concrete)

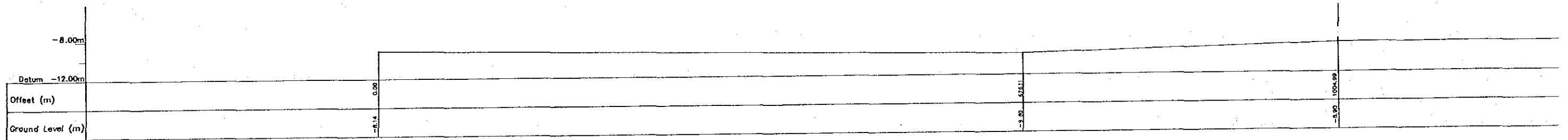
STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO. A9.0 KM.	To TBM NO. -	
SHEET NO:	10 / 10	DATE SURVEYED	JUNE 1966
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	

SUNGAI KELANTAN

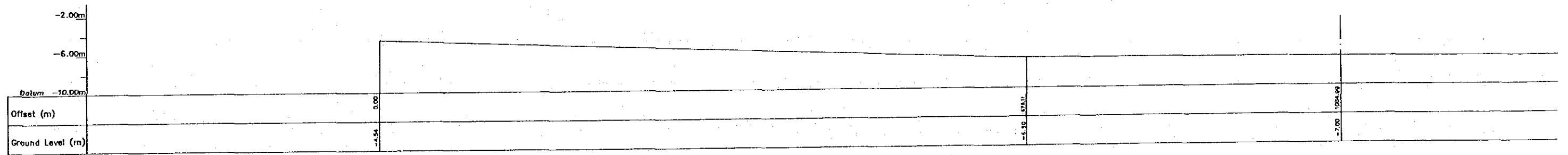
(108 SHEETS)



No: -3.0



No: -2.0



No: -1.0

No: -3.0

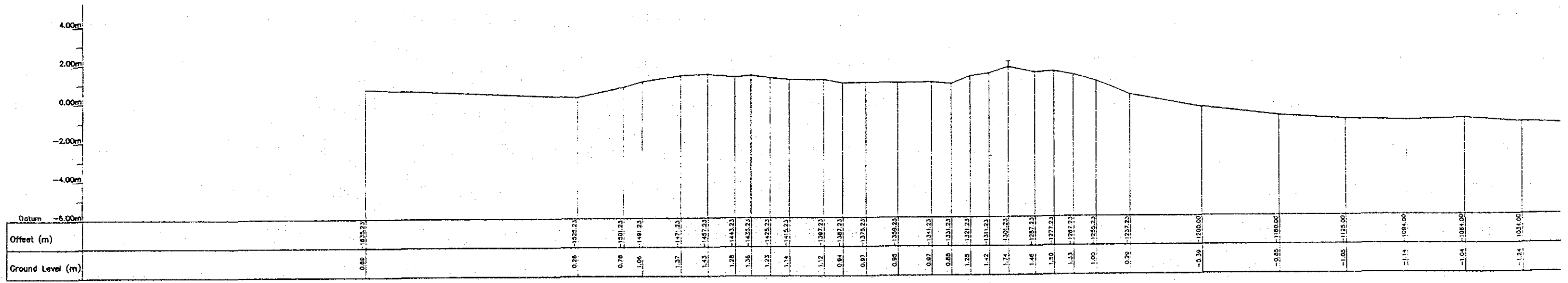
No: -2.0

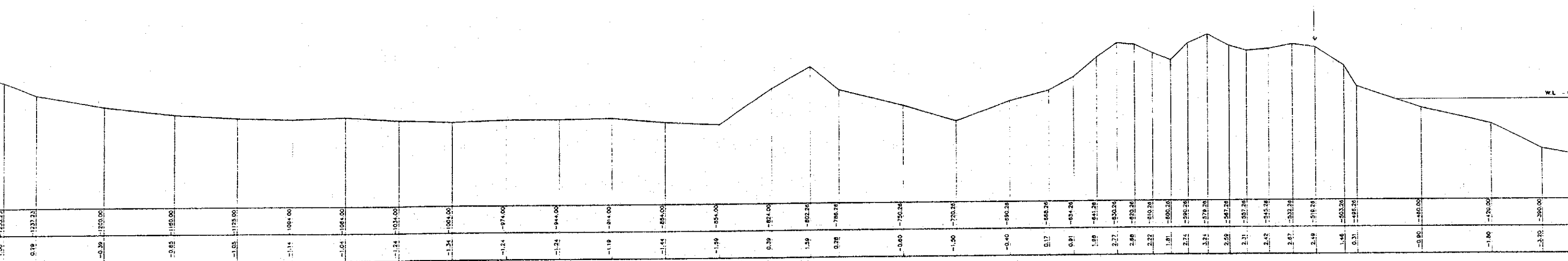
No: -1.0

Legend :

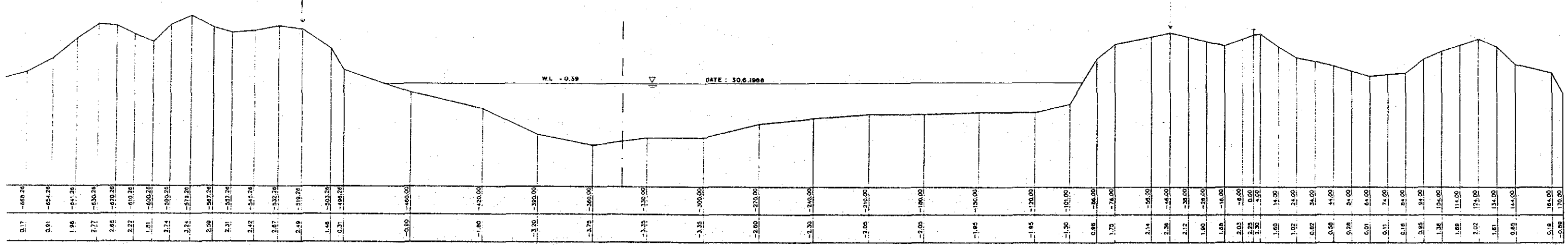
1 : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: -1.0 KM	To TBM NO: -3.0 KM	
SHEET NO:	1 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 2,000		Vertical : 1 / 200





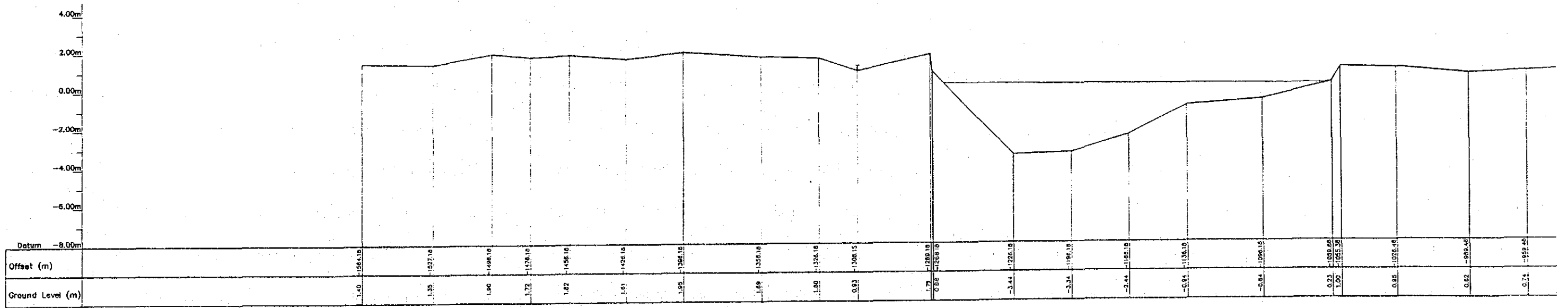
No: 0.0

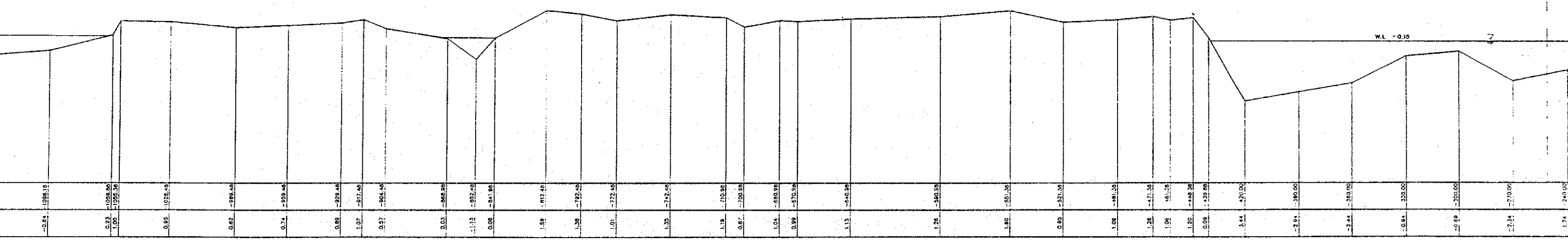


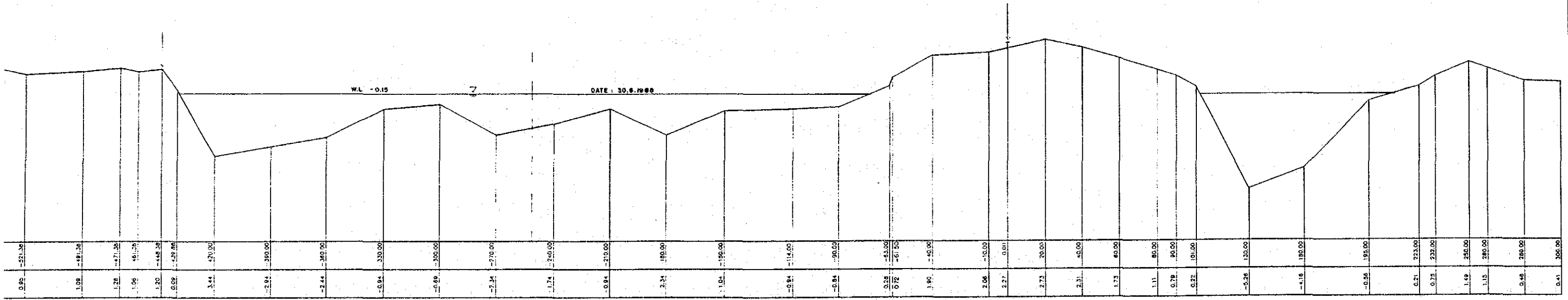
to: 0.0

Legend :
 ▽ : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 0.0 KM	To TBM NO: -	
SHEET NO:	2 / 108	DATE SURVEYED	JUNE 1966
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



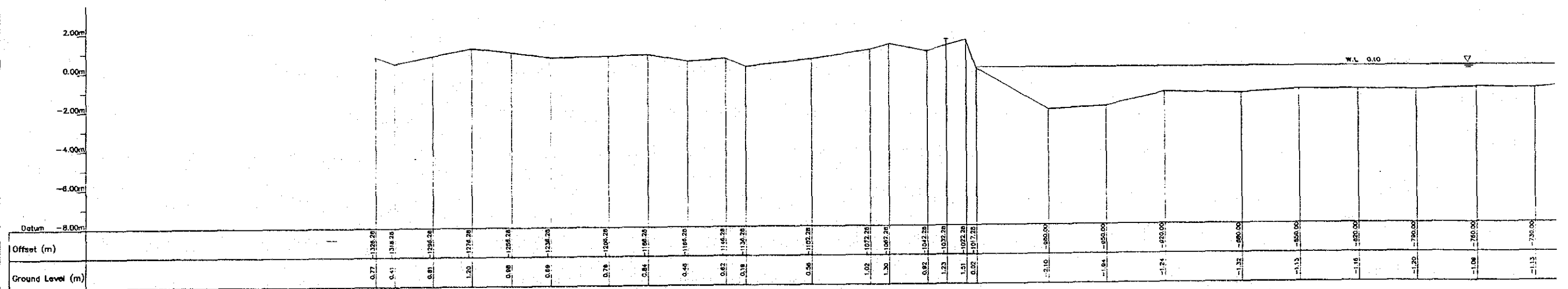


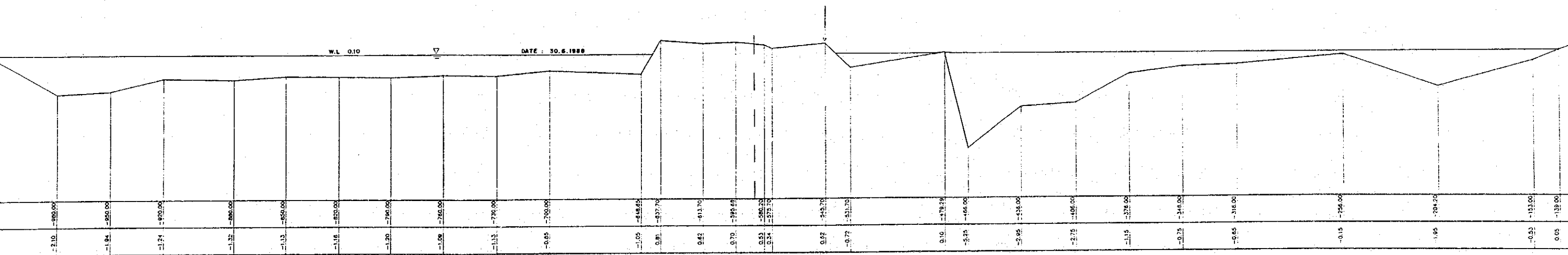


No: 0.6

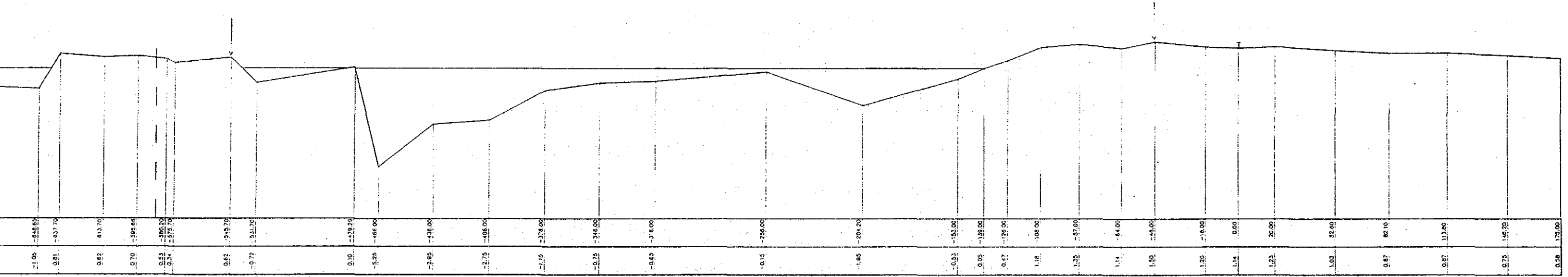
Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION	
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN	
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)	
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)	
SECTION	From TBM NO: 0.6 KM To TBM NO: -
SHEET NO: 3 / 108	DATE SURVEYED JUNE 1988
SCALE	Horizontal : 1 / 1,000 Vertical : 1 / 100





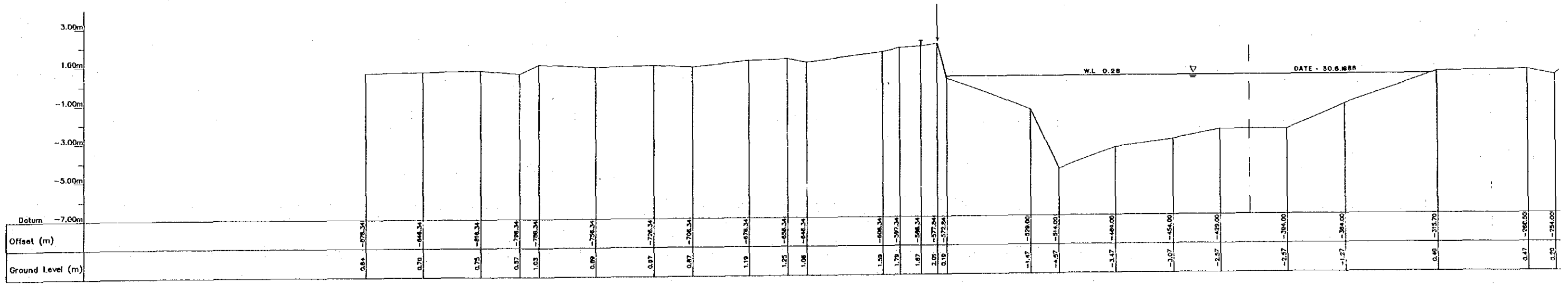
No:1.2



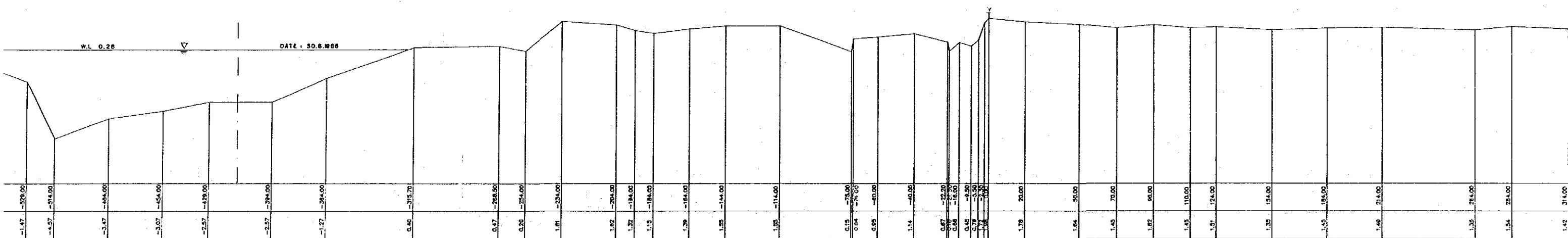
No:1.2

Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 1.2 KM	To TBM NO: -	
SHEET NO:	4 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal: 1 / 1,000	Vertical: 1 / 100	



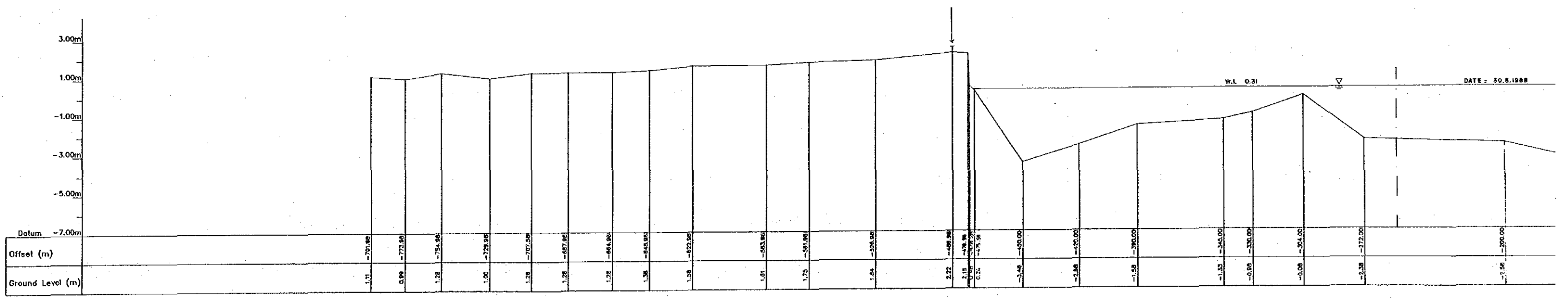
No:1.8



No: 1.8

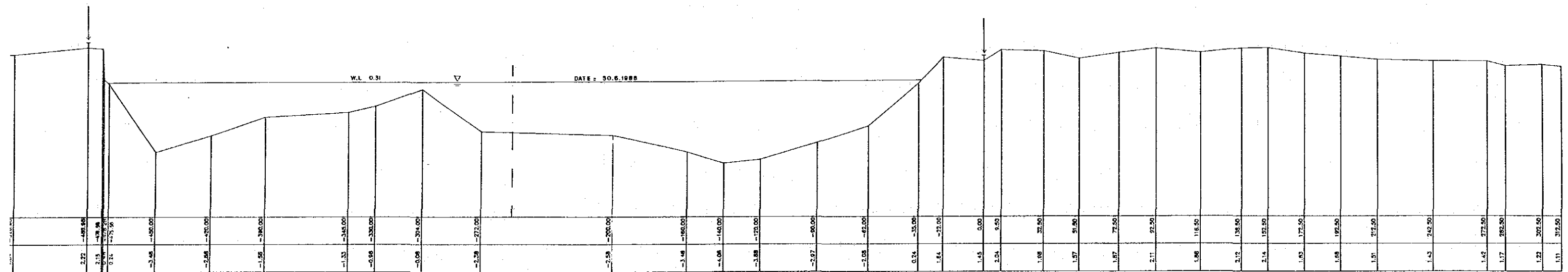
Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Engineers)			
SECTION	From TBM NO: 1.8 KM	To TBM NO: -	
SKET NO:	5 / 108	DATE SURVEYED	JUNE 1968
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100



No: 2.4

DATE: 30.6.1988

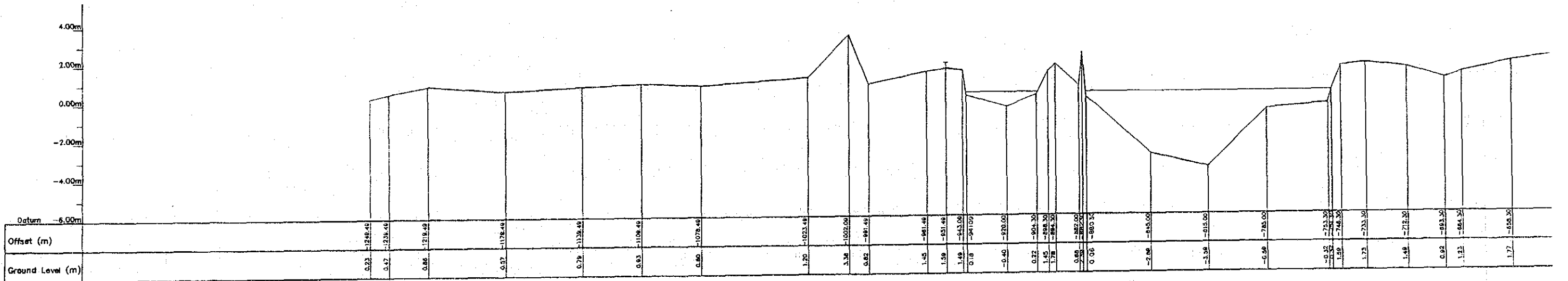


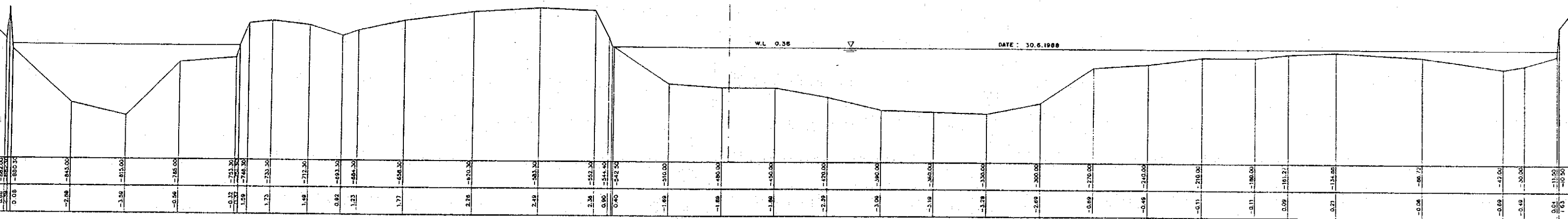
No: 2.4

Legend :

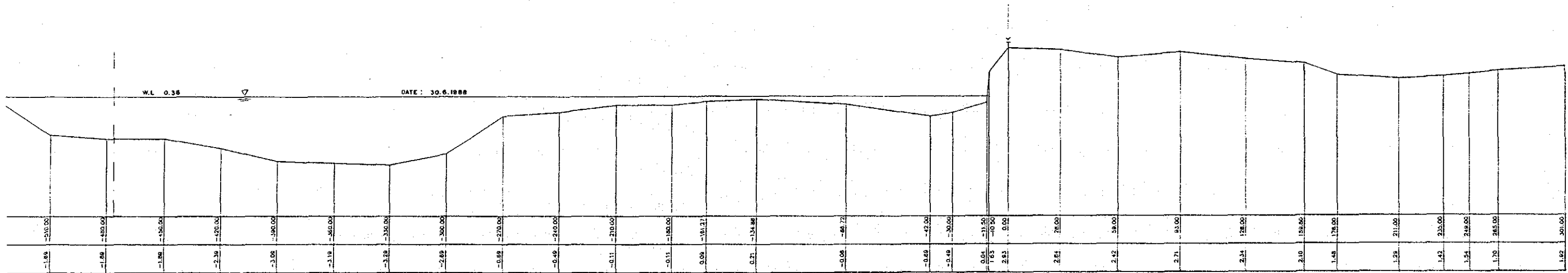
T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Engineers)			
SECTION	From TBM NO: 2.4 KM	To TBM NO: -	
SHEET NO:	6 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	





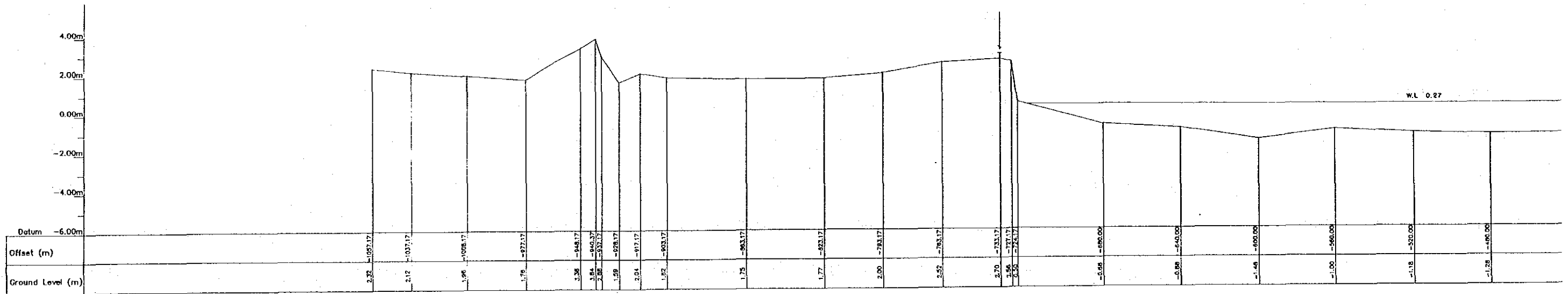
No: 3.0

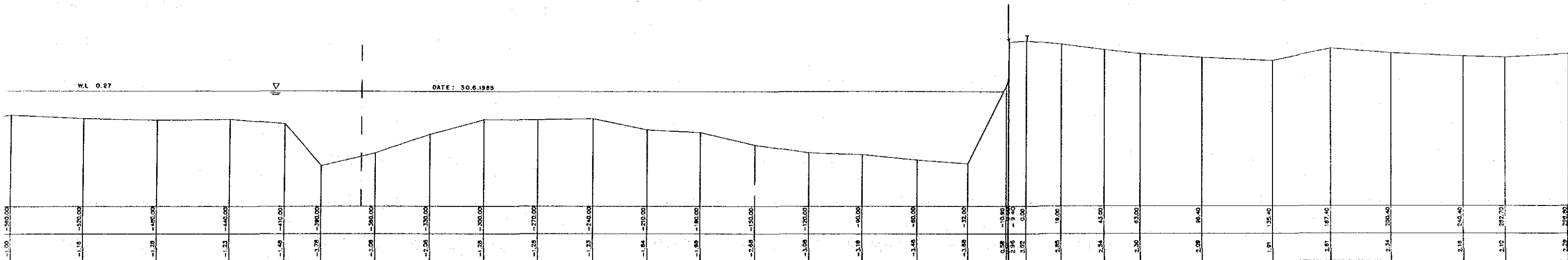


No: 3.0

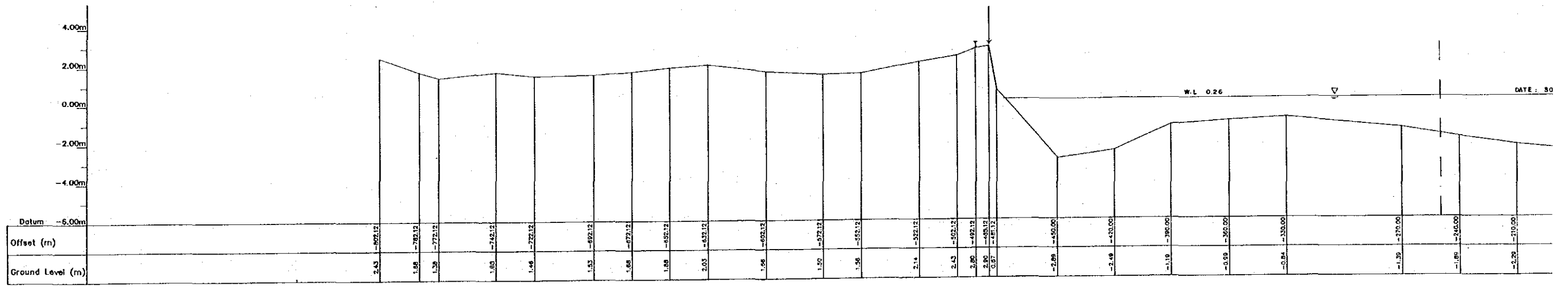
Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 3.0 KM	To TBM NO: -	
SHEET NO:	7 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	

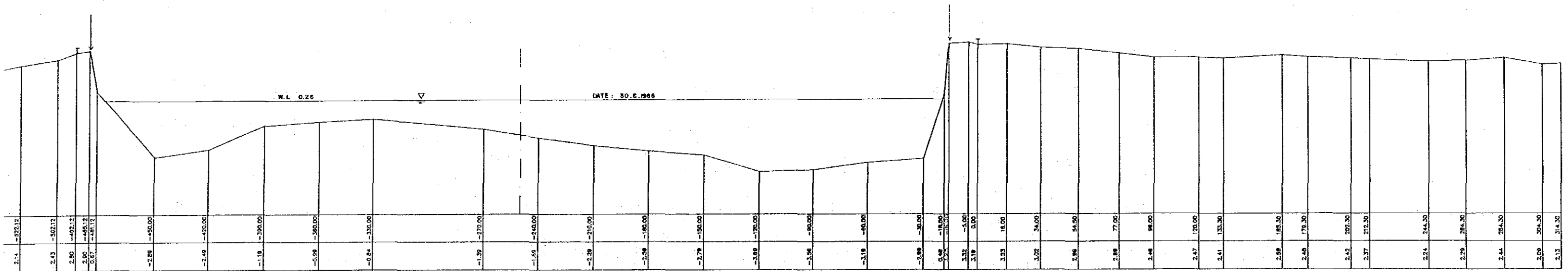




STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 3.6 KM	To TBM NO: -	
SHEET NO:	8 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100



W.L. 0.26 DATE : 80

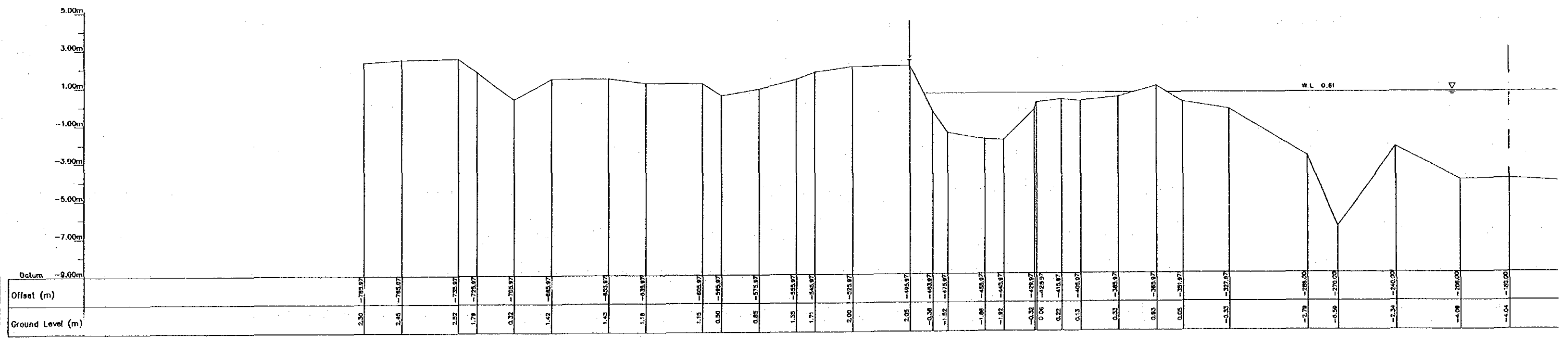


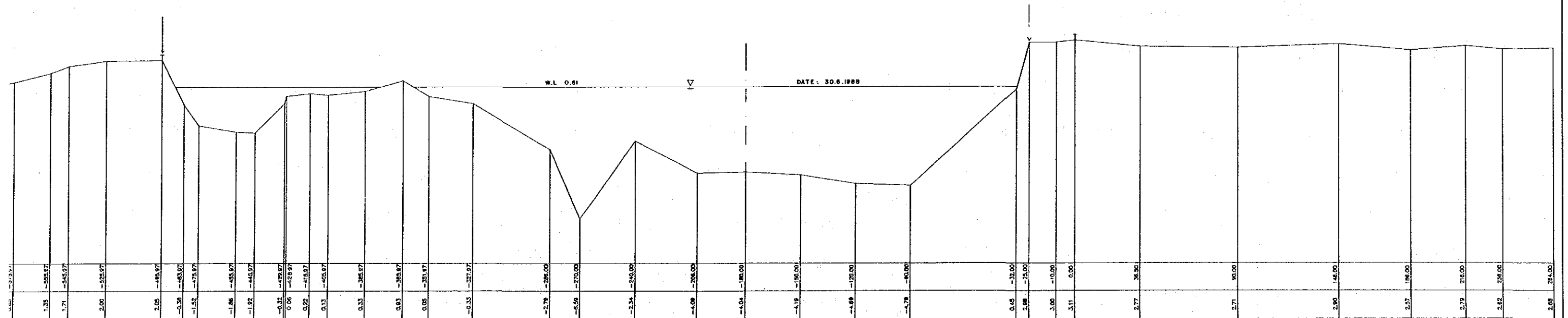
No: 4.2

Legend :

1 : IBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 4.2 KM	To TBM NO: -	
SHEET NO:	9 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100



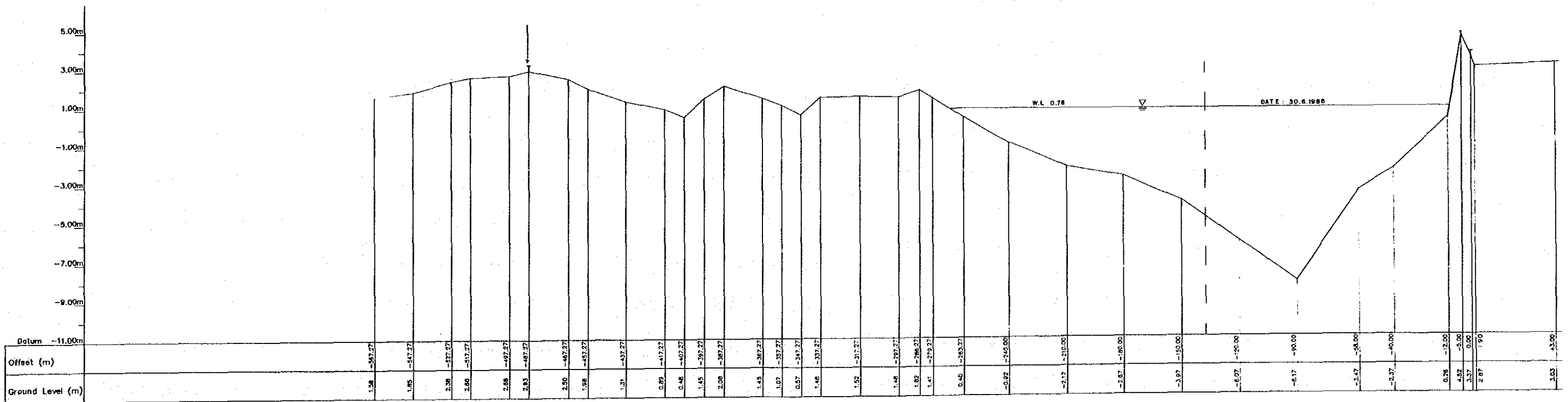


No: 4.8

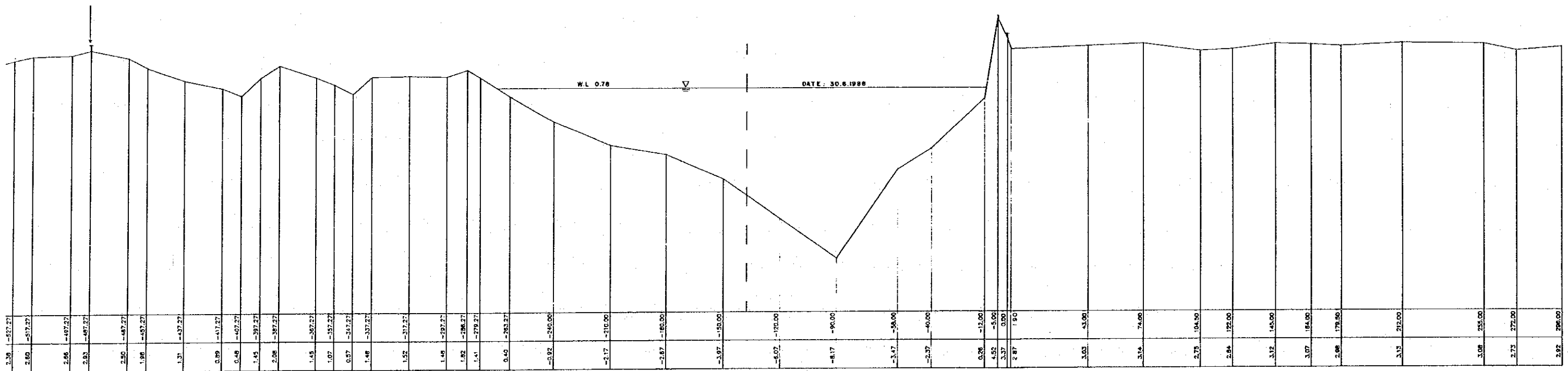
Legend :

∇ : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 4.8 KM	To TBM NO: -	
SHEET NO:	10 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



No: 5.4

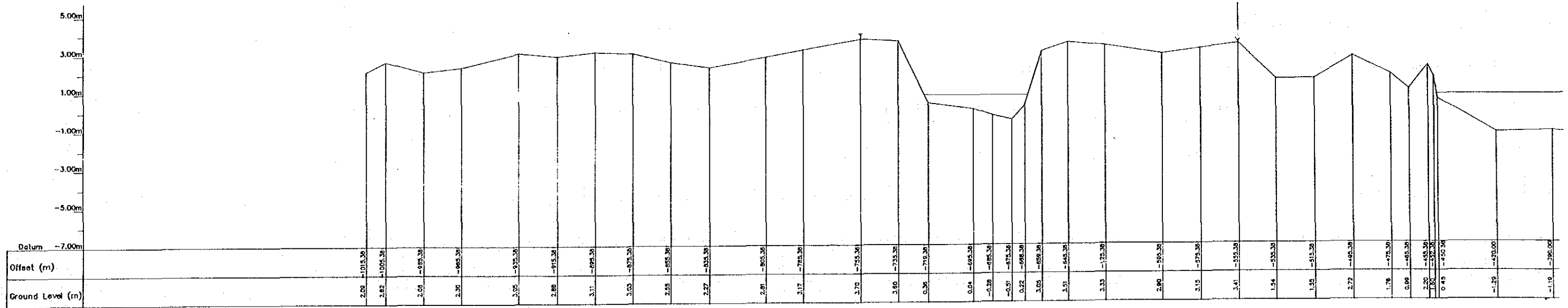


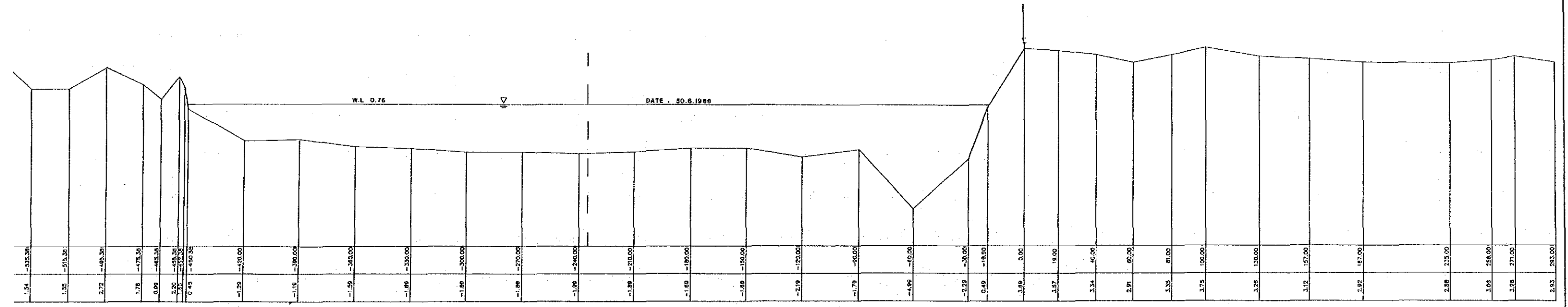
No: 5.4

Legend :

1 : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 5.4 KM	To TBM NO: --	
SHEET NO:	11 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100



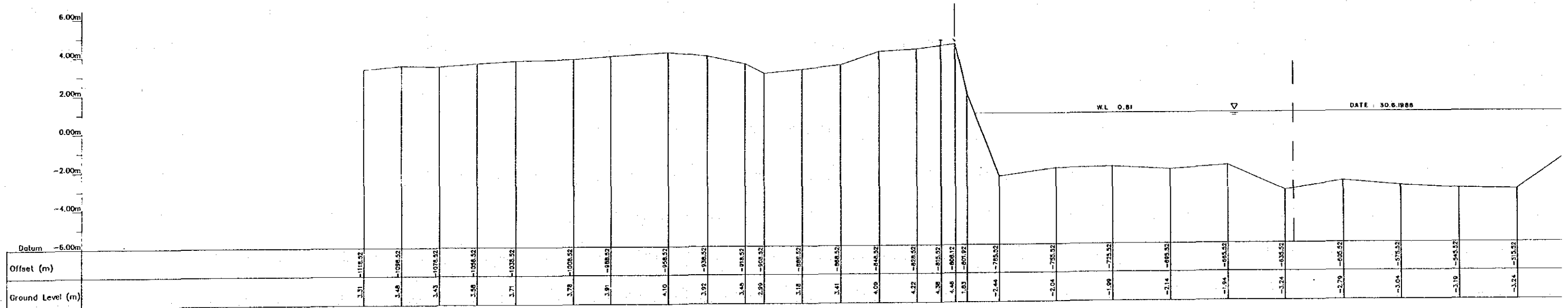


No: 6.1

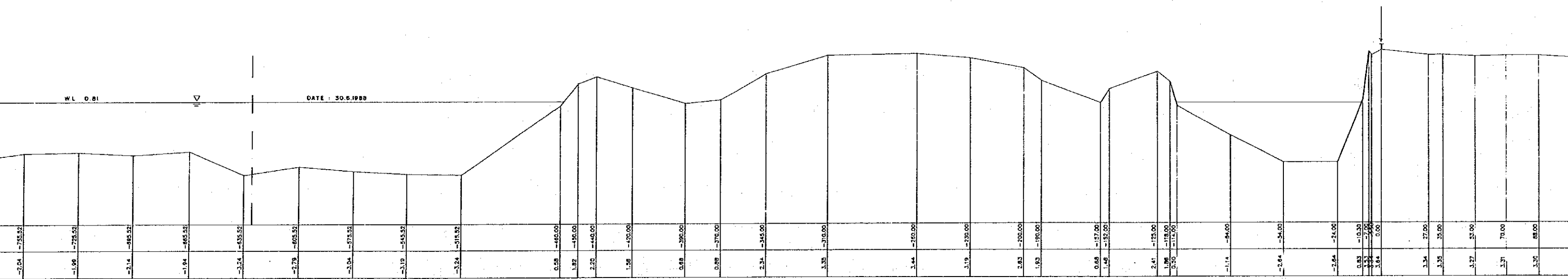
Legend :

1 : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD.			
(Consulting Surveyors)			
SECTION	From TBM NO. 6.1 KM	To TBM NO. -	
SHEET NO:	12 / 108	DATE SURVEYED	JUNE 1966
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



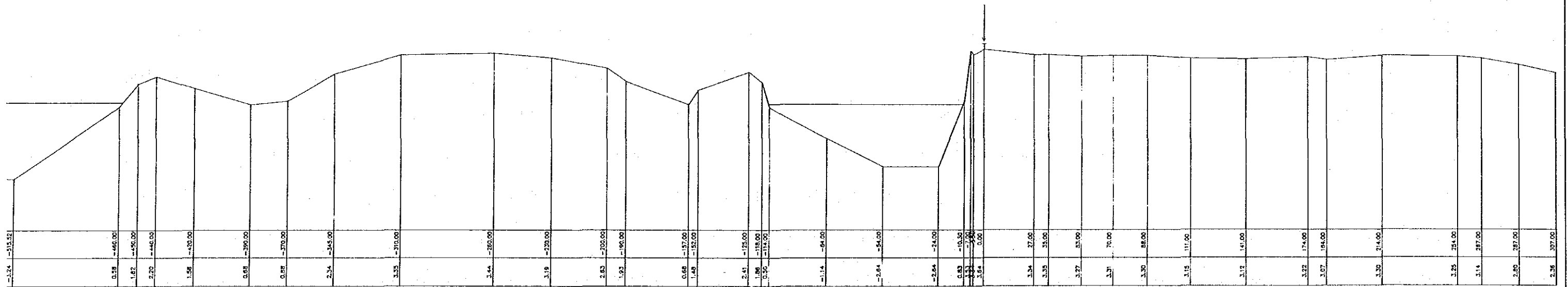
No: 6.7



No: 6.7

Legend :

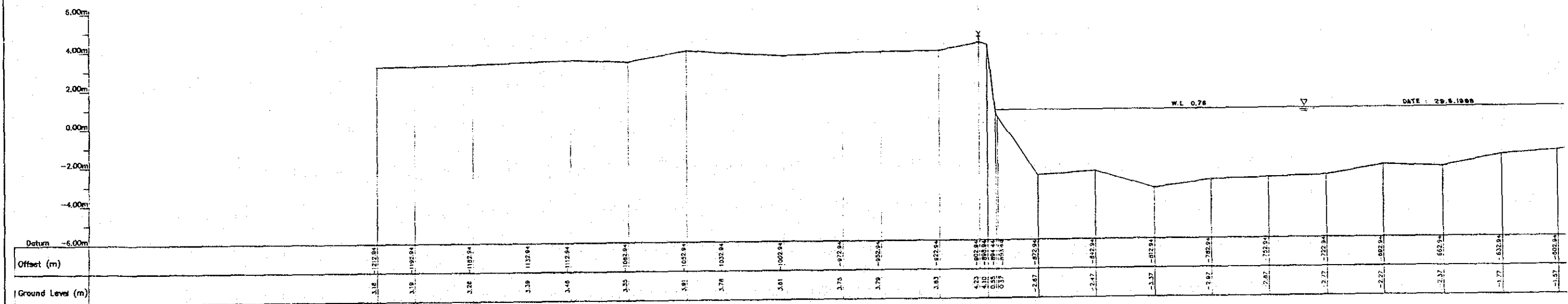
I : IBM (Pipe In

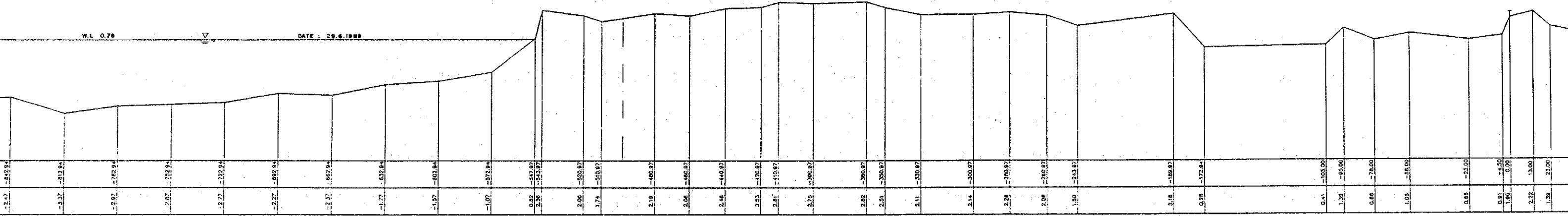


Legend :

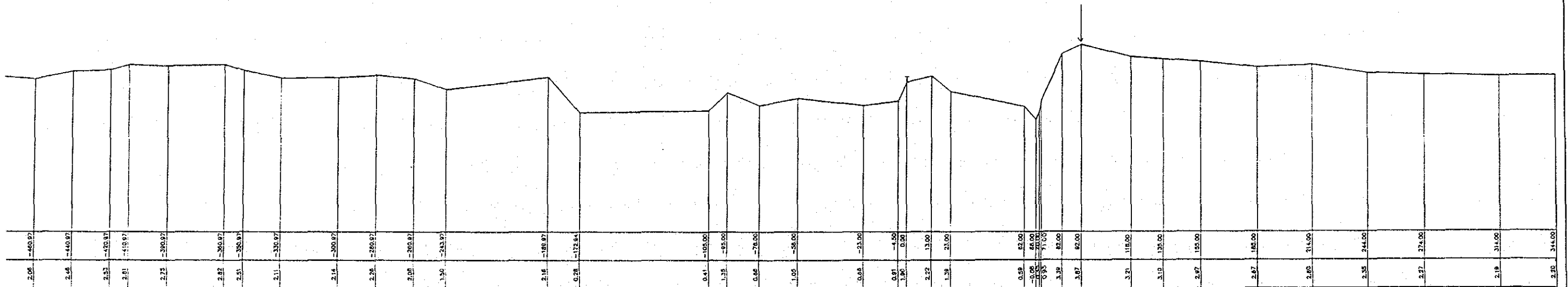
1 : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 6.7 KM	To TBM NO:	
SHEET NO.	13 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100



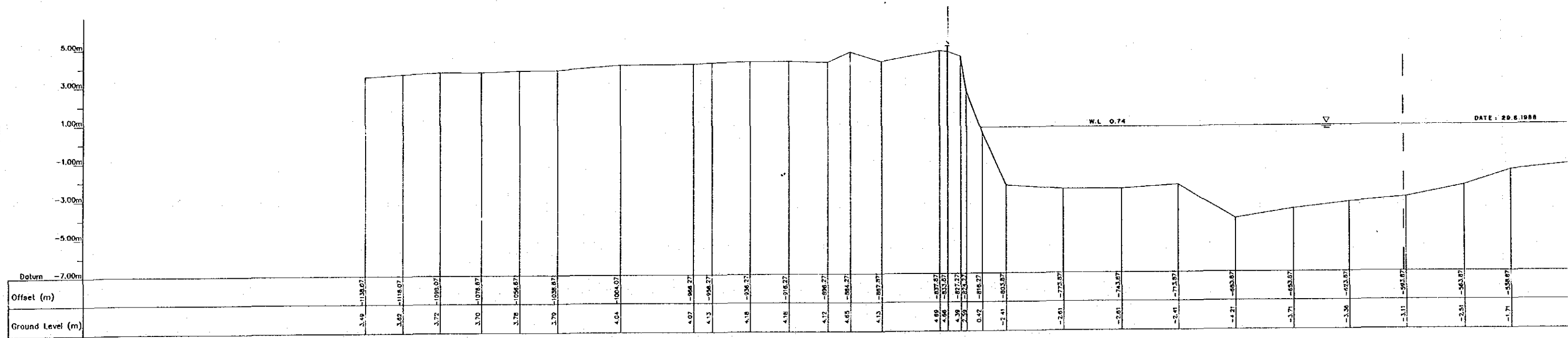


No: 7.3



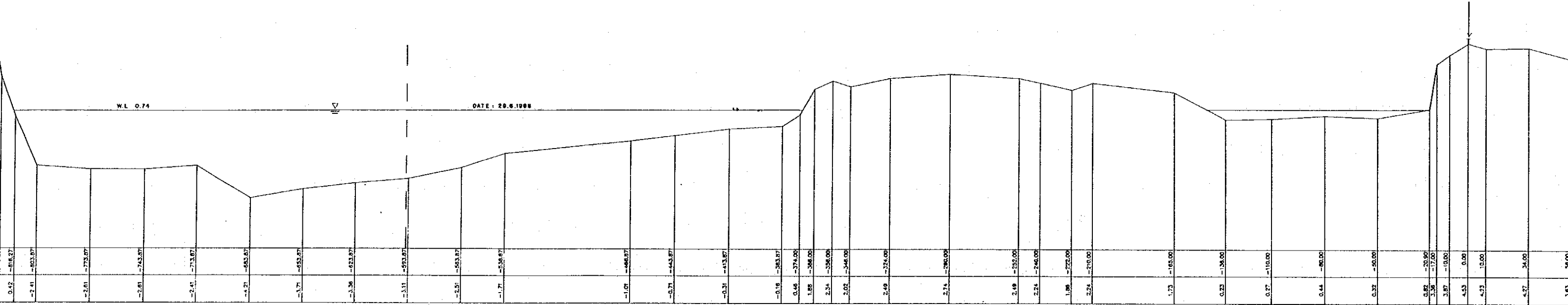
Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 7.3 KM	To TBM NO:	
SHEET NO:	14 / 108	DATE SURVEYED	JUNE 1968
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100

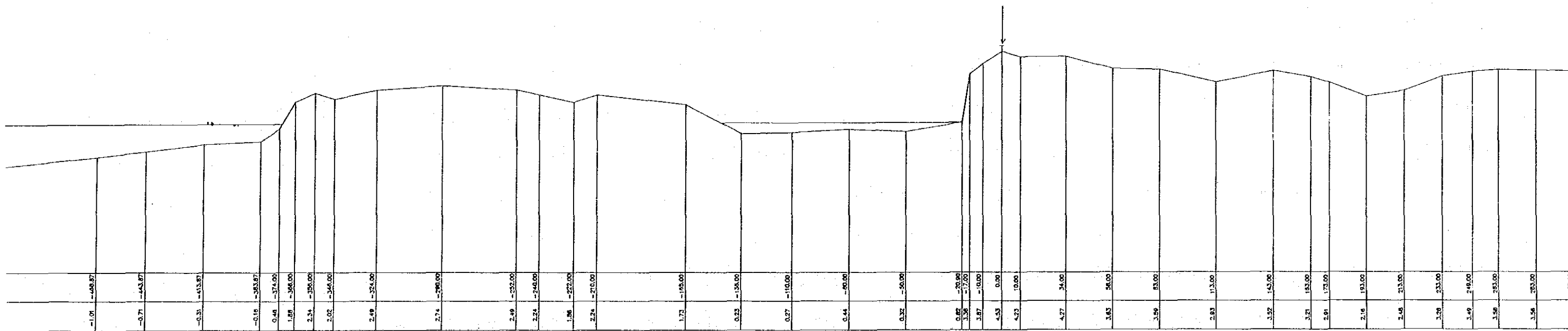


No: 7.9

DATE: 29.6.1988

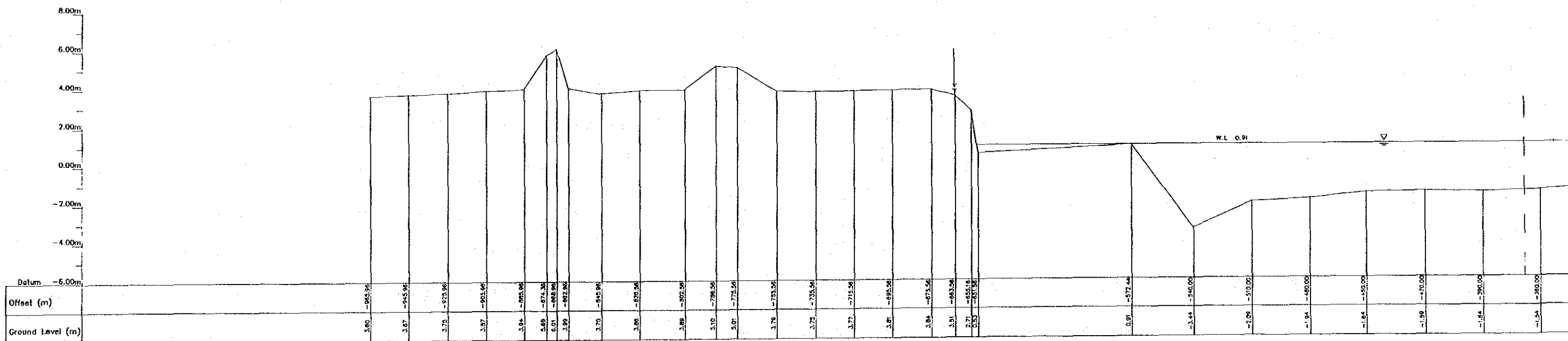


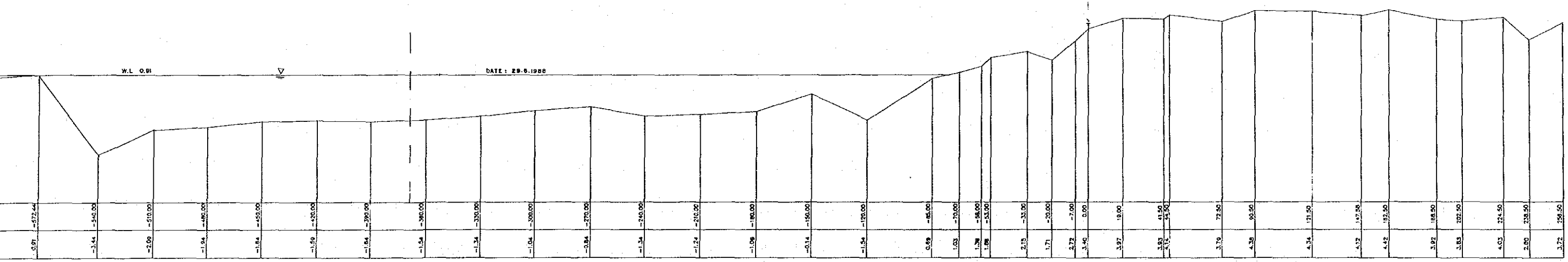
No: 7.9



Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Engineers)			
SECTION	From TBM NO. 7.9 KM	To TBM NO. -	
SHEET NO.	15 / 108	DATE SURVEYED	JUNE 1966
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100

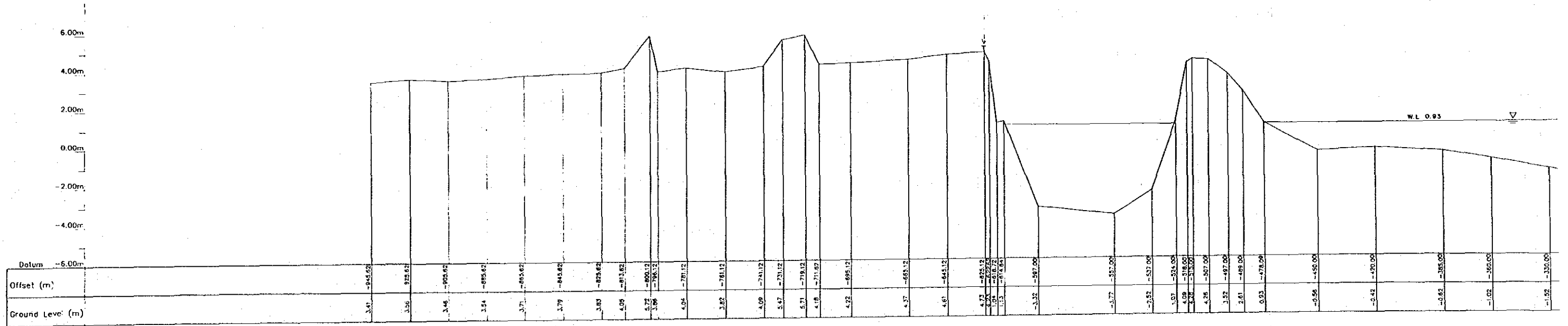




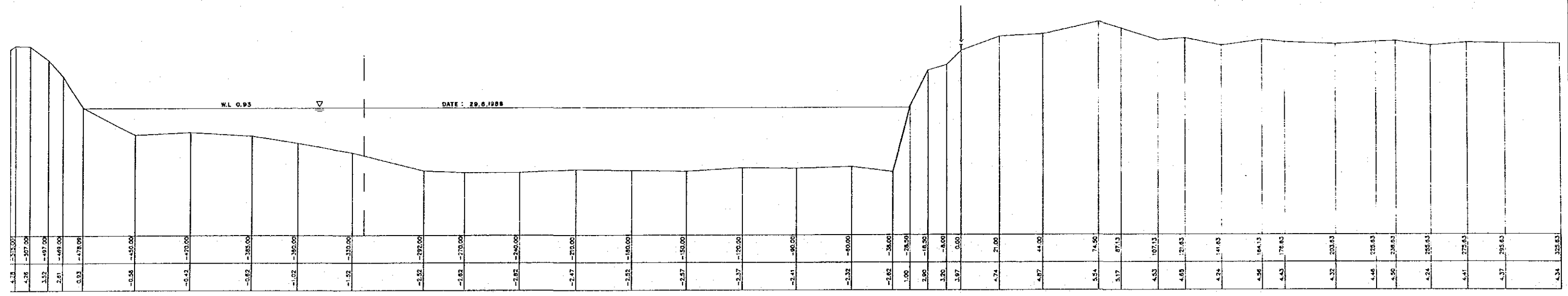
No: 8.5

Legend :
 1 : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 8.5 KM	To TBM NO: -	
SHEET NO:	16 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100



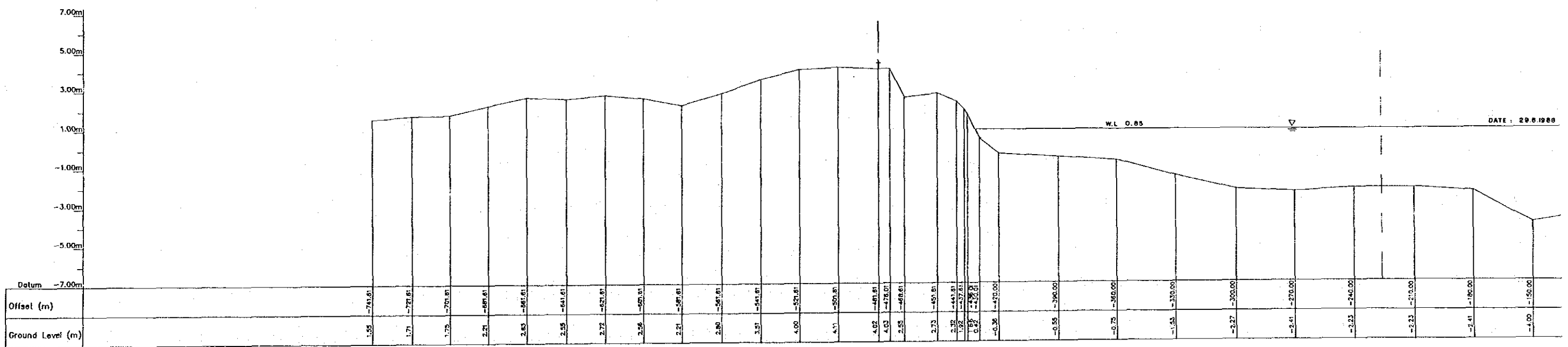
No:



No: 9.2

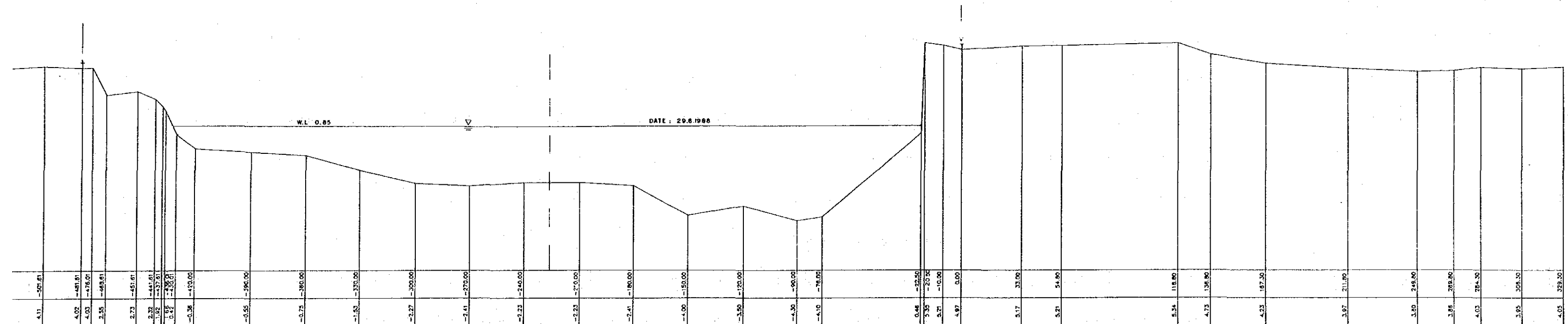
Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO. 9.2 KM	To TBM NO. -	
SHEET NO:	17 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100



DATE: 29.6.1988

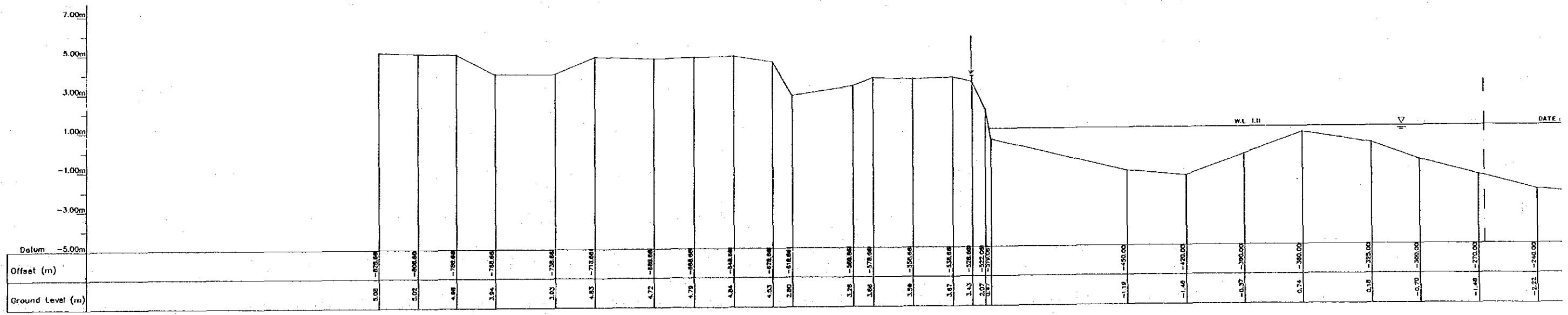
No:10.0



No: 10.0

Legend :
 T : TBM (Pipe in concrete)

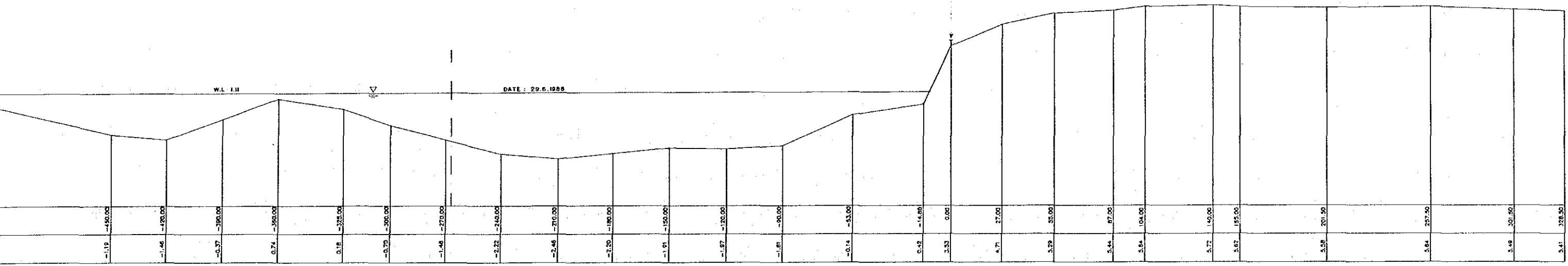
STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 10.0 KM	To TBM NO: -	
SHEET NO:	18 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



NO: 10.8

W.L. 1.11

DATE : 29.6.1988

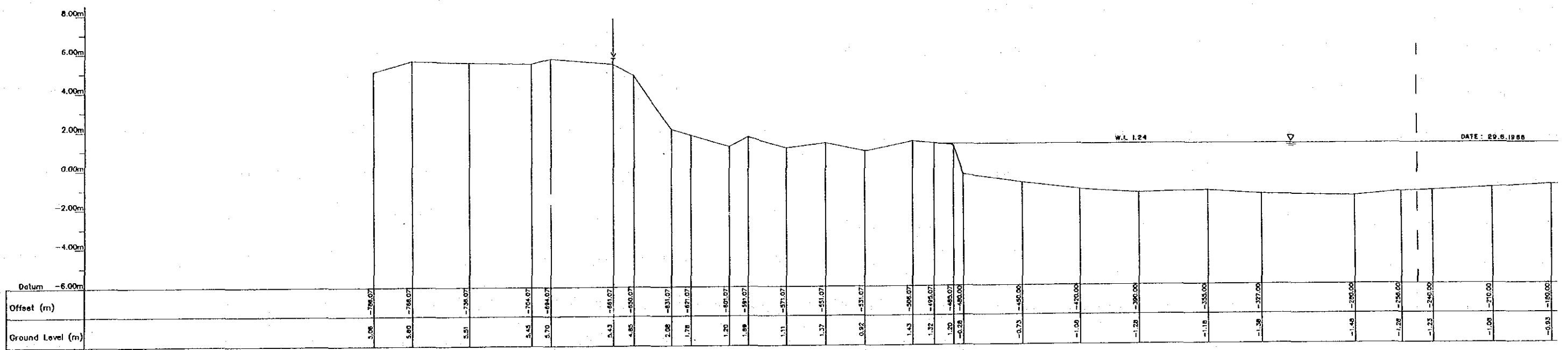


NO: 10.8

Legend :

I : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD.			
(Consulting Surveyors)			
SECTION	From TBM NO: 10.8 KM	To TBM NO: -	
SHEET NO:	19 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	

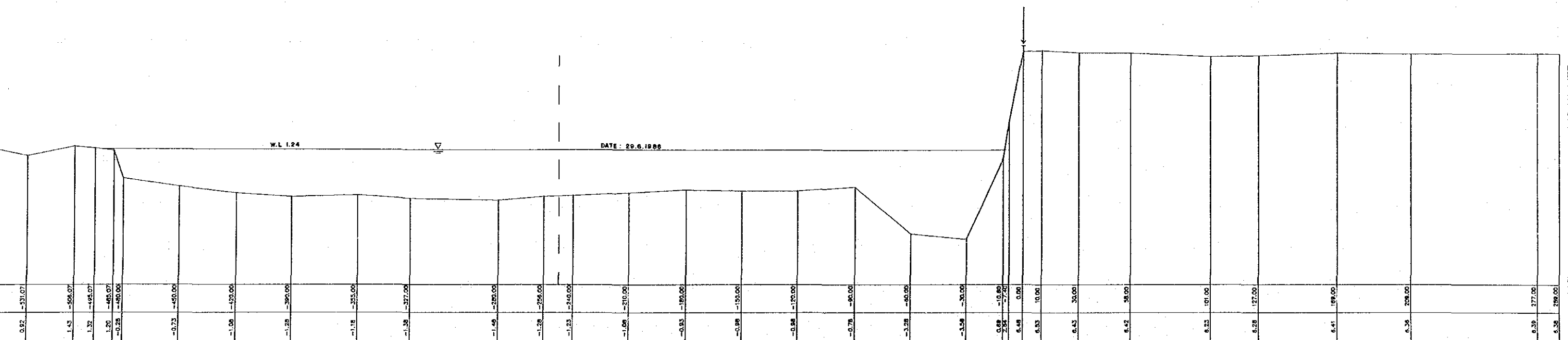


DATE: 29.6.1988

No: 11.8

W.L. 1.24

DATE : 29.6.1965

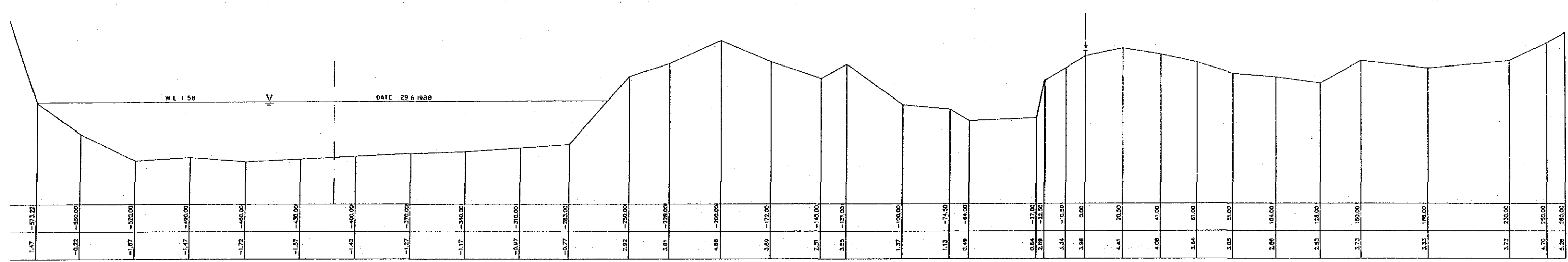


No: 11.8

Legend :

1 : TBM (Pipe in concrete)

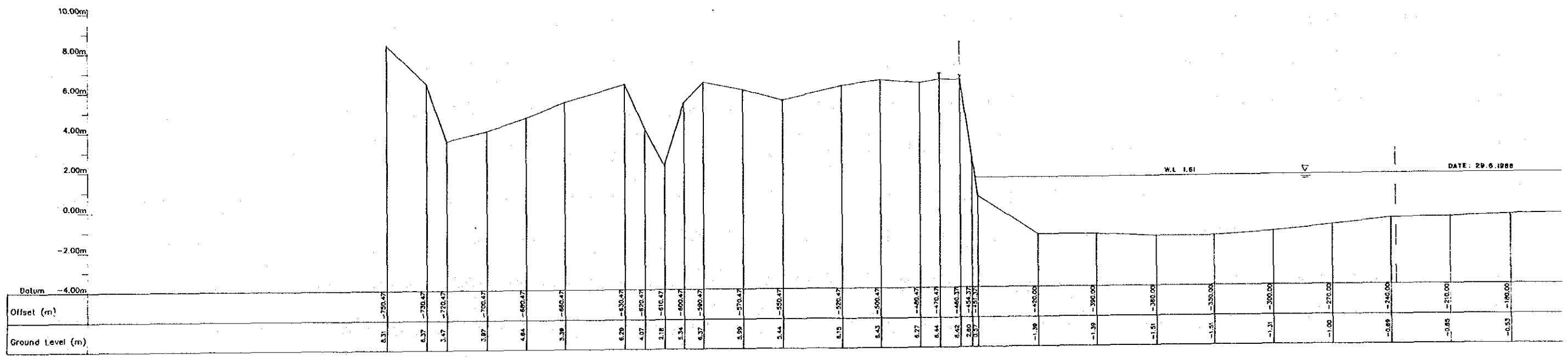
STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHID. (Konsulting Survei)			
SECTION	From TBM NO: 11.8 KM	To TBM NO: -	
SHEET NO:	20 / 108	DATE SURVEYED	JUNE 1965
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



No:12.8

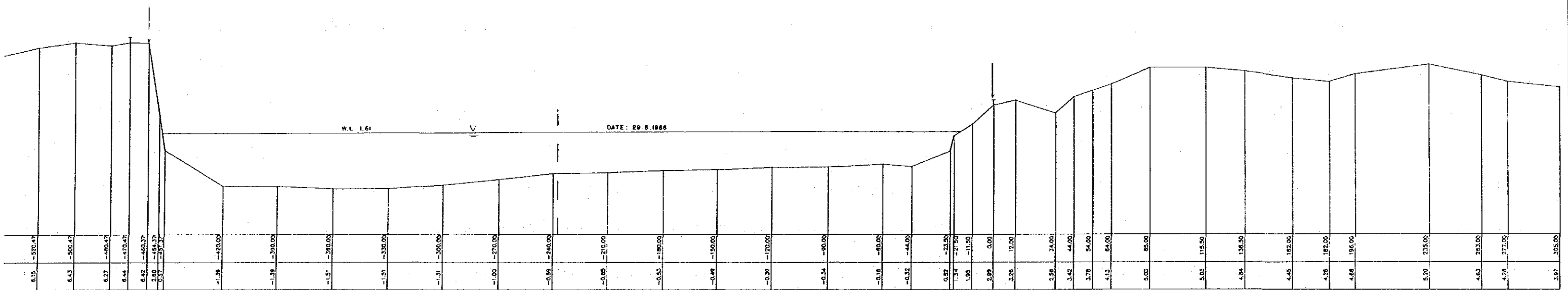
Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 12.8 KM	To TBM NO: -	
SHEET NO:	21 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



No:13.8

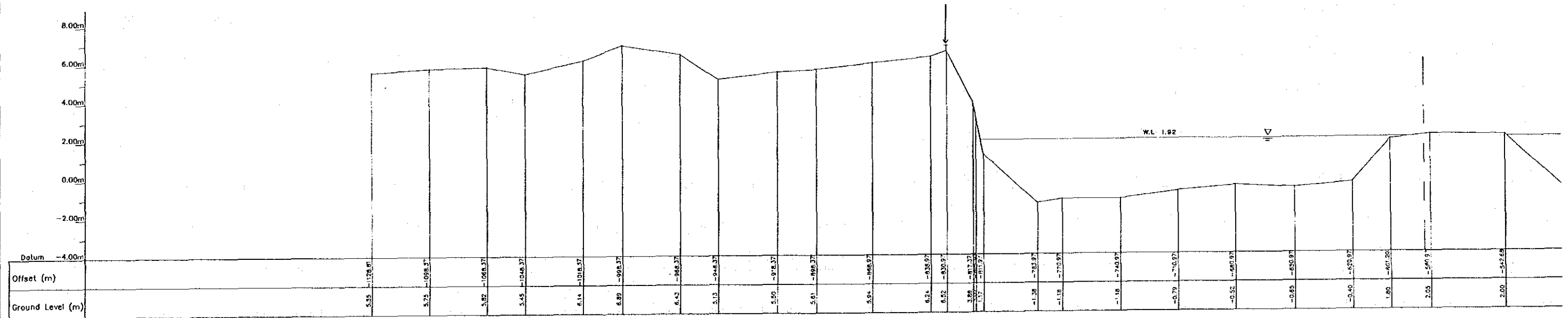
DATE: 29.6.1988



No:13.8

Legend :
 T : TBM (Pipe in concrete)

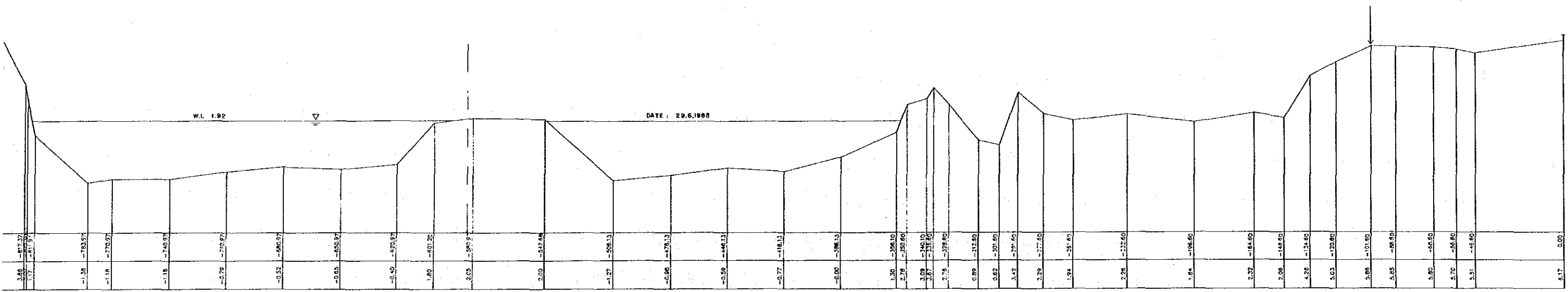
STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 13.8 KM	To TBM NO: -	
SHEET NO:	22 / 108	DATE SURVEYED	JUNE 1968
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100



No: 15.0

W.L. 1.92

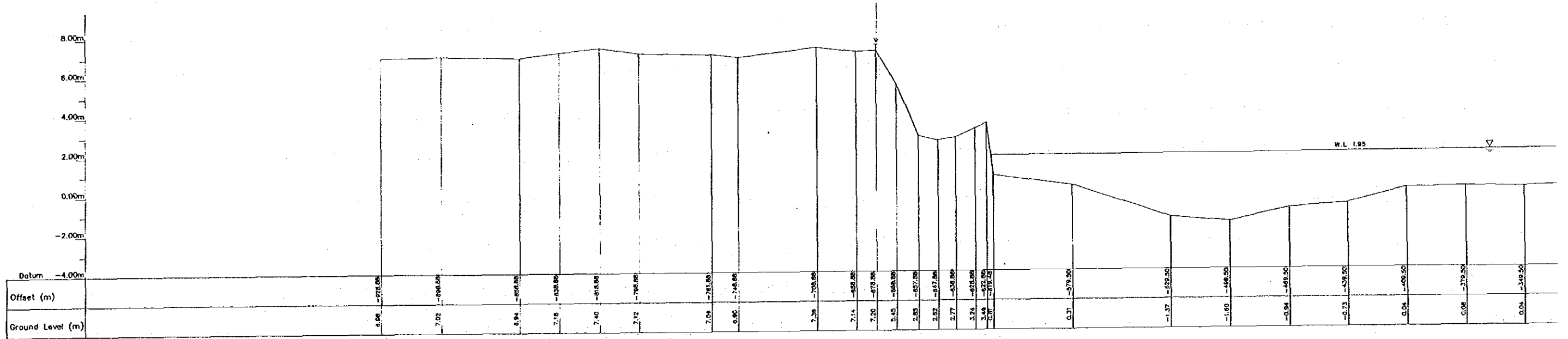
DATE: 29.6.1968



No: 15.0

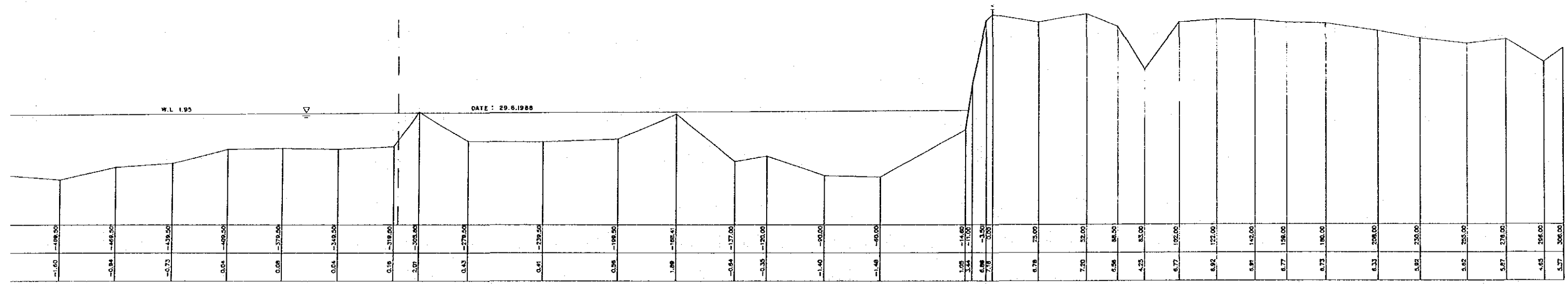
Legend :
! : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD.			
(Consulting Surveyors)			
SECTION	From TBM NO:	15.0 KM	To TBM NO: -
SHEET NO.	23 / 108	DATE SURVEYED	JUNE 1968
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



W.L. 1.95

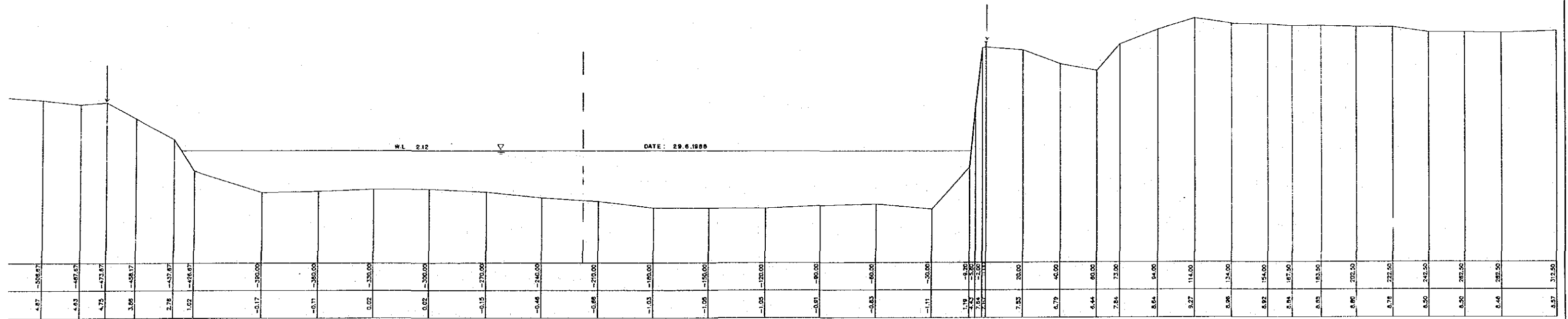




NO: 16.0

Legend :
 1 : TBM (Pipe in concrete)

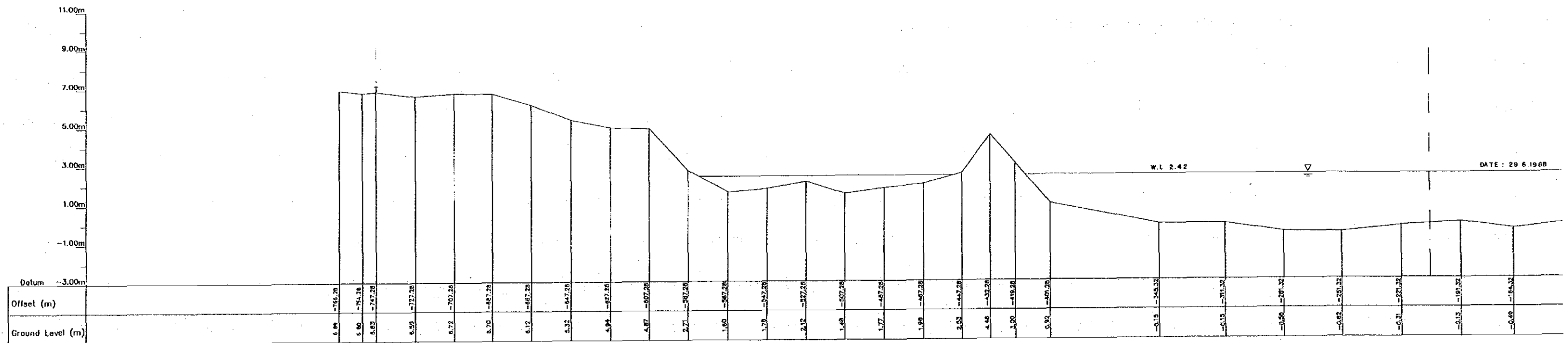
STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 16.0 KM	To TBM NO: -	
SHEET NO:	24 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000 Vertical : 1 / 100		



No: 17.0

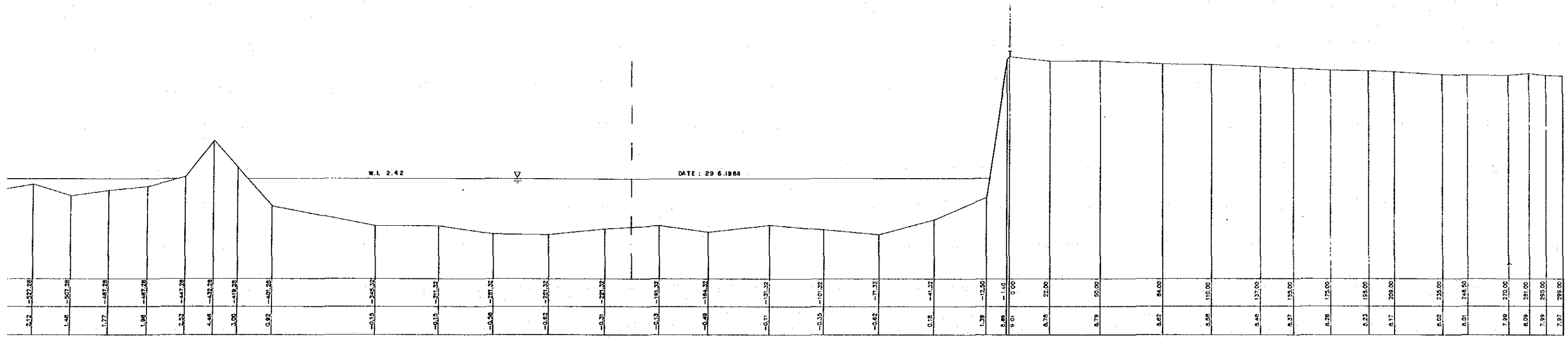
Legend:
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 17.0 KM	To TBM NO: -	
SHEET NO:	25 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100



DATE : 29 6 1968

No: 18.0

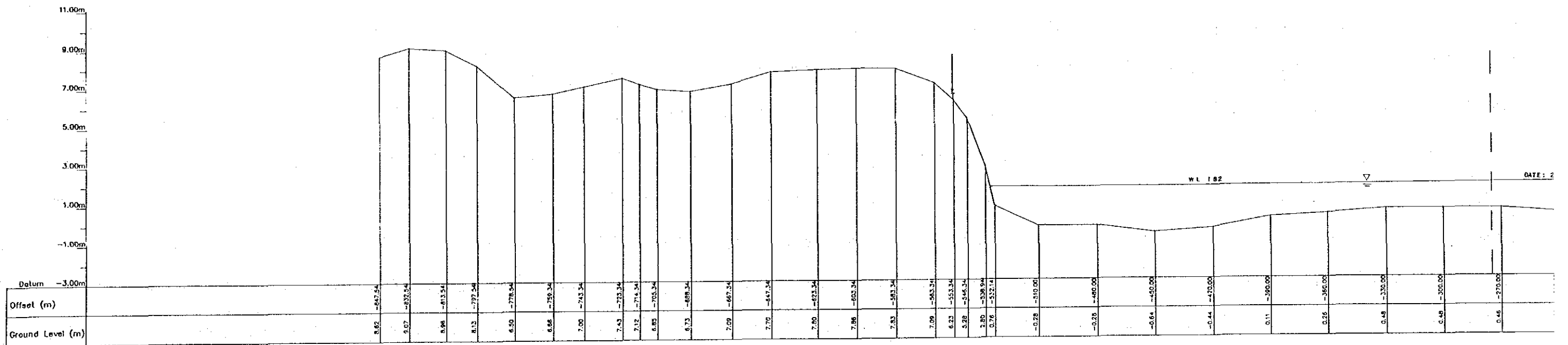


No:18.0

Legend :

I : TBM (Pipe in concrete)

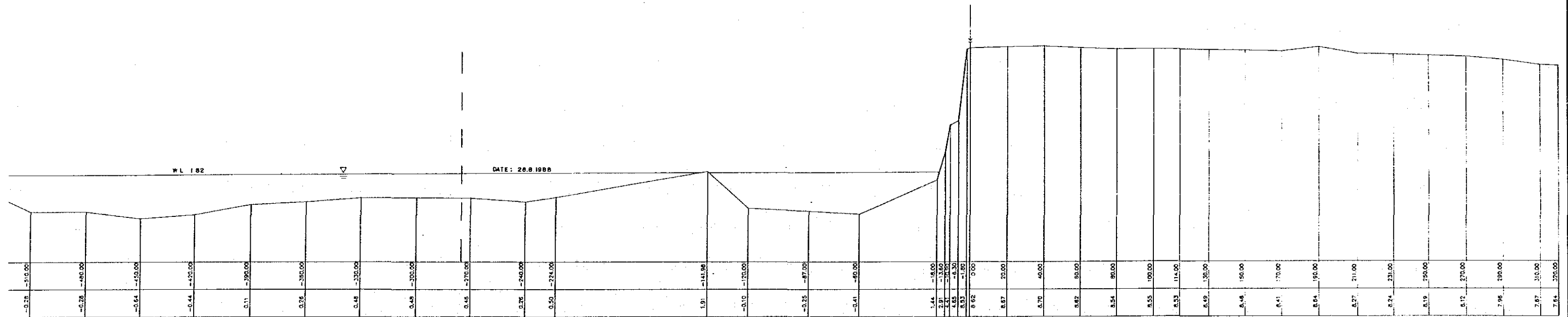
STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Engineers)			
SECTION	From TBM NO: 18.0 KM	To TBM NO: -	
SHEET NO:	26 / 106	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



W.L. 182

114

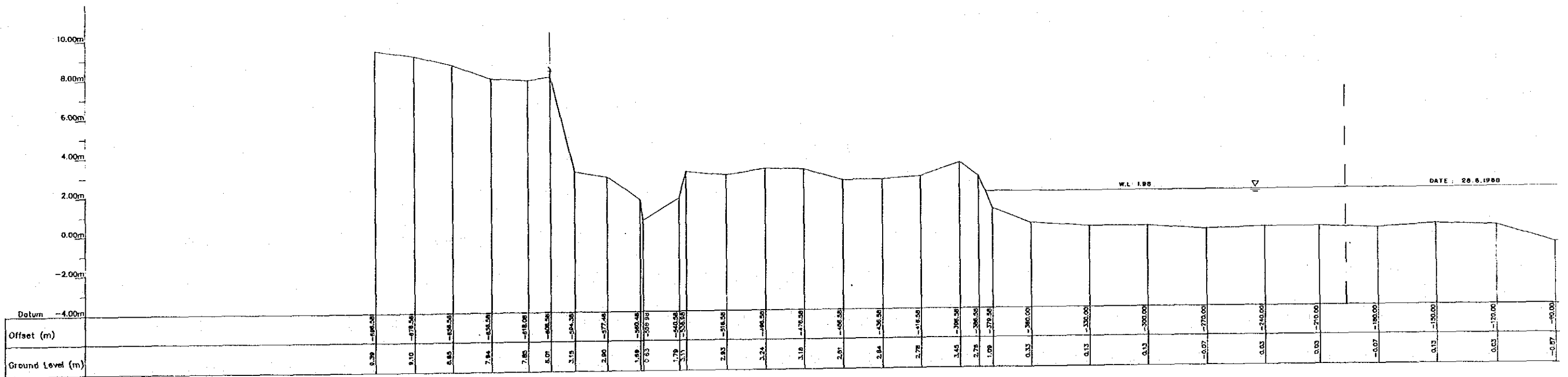
DATE: 26.8.1988



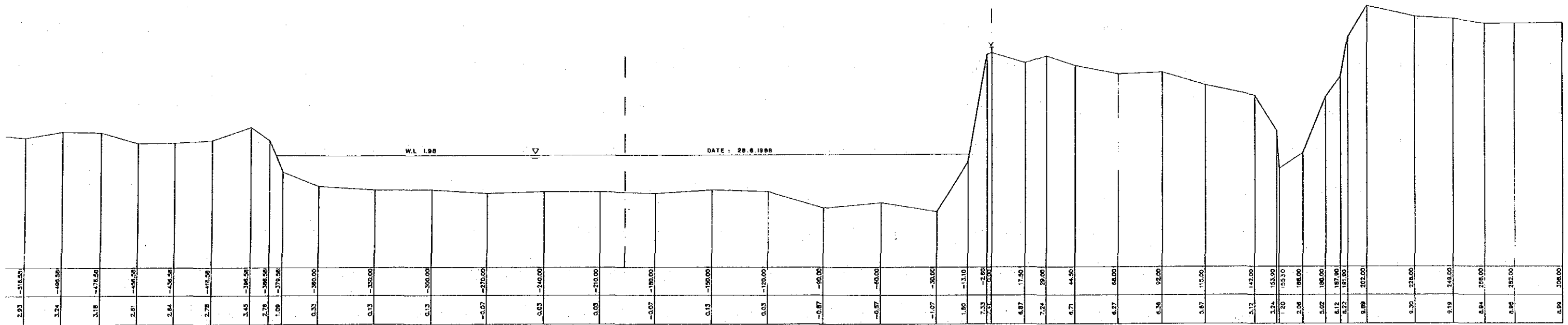
No: 19.0

Legend :
T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 19.0 KM	To TBM NO: -	
SHEET NO:	27 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



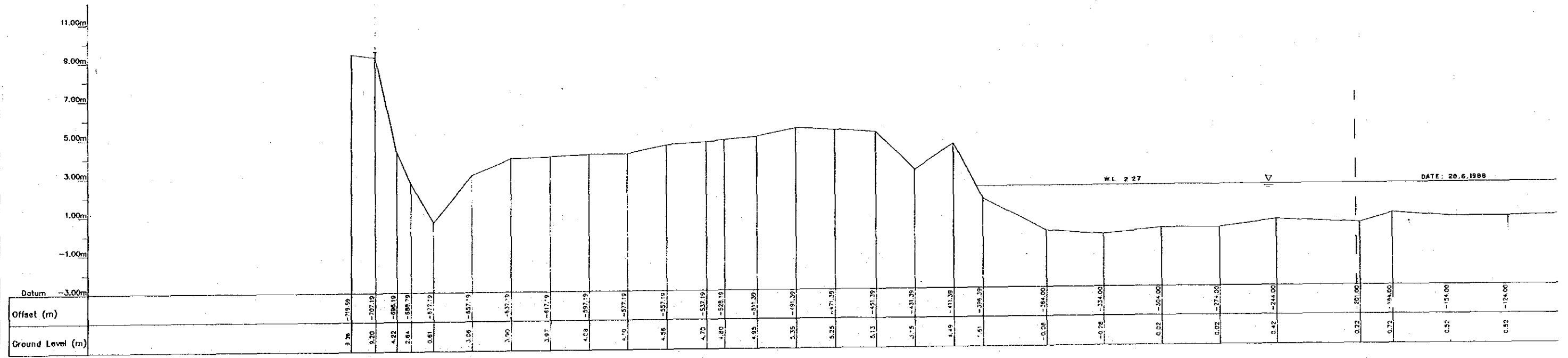
No: 20.2



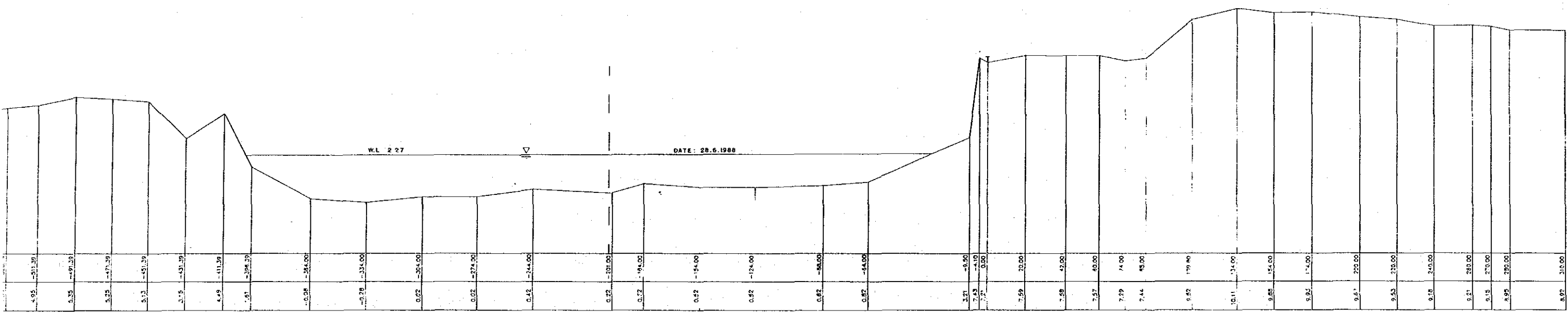
No: 20.2

Legend :
T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 20.2 KM	To TBM NO: -	
SHEET NO:	28 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100



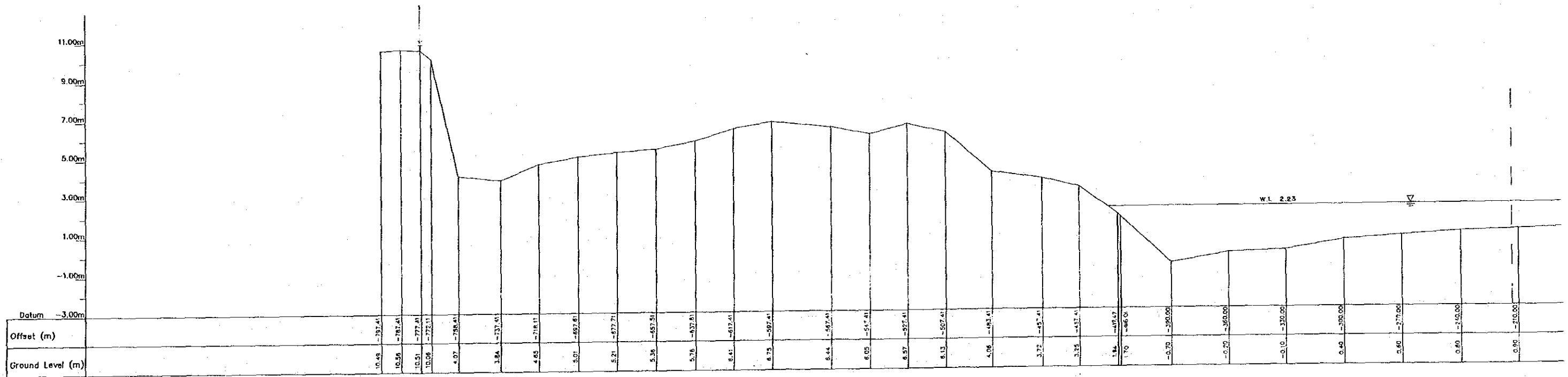
No: 21.2

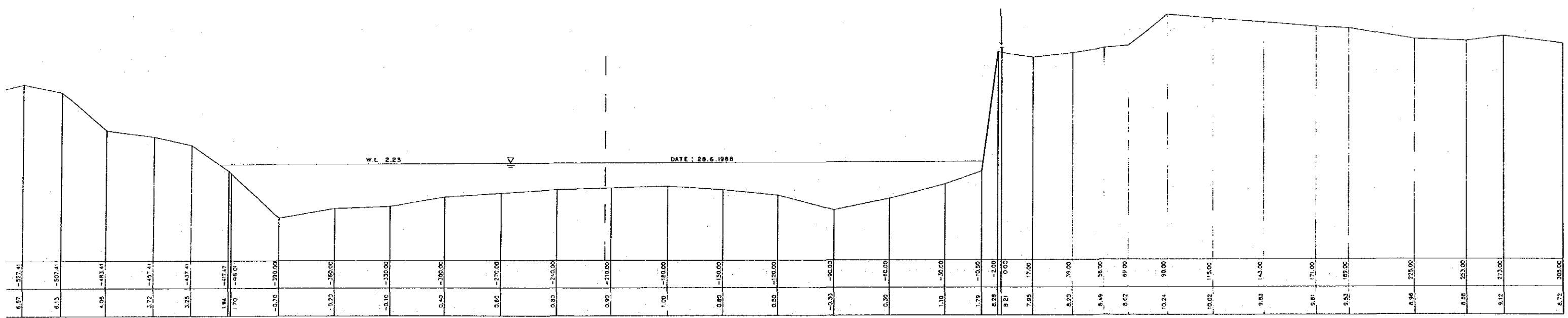


No: 21.2

Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 21.2 KM	To TBM NO: -	
SHEET NO:	29 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100

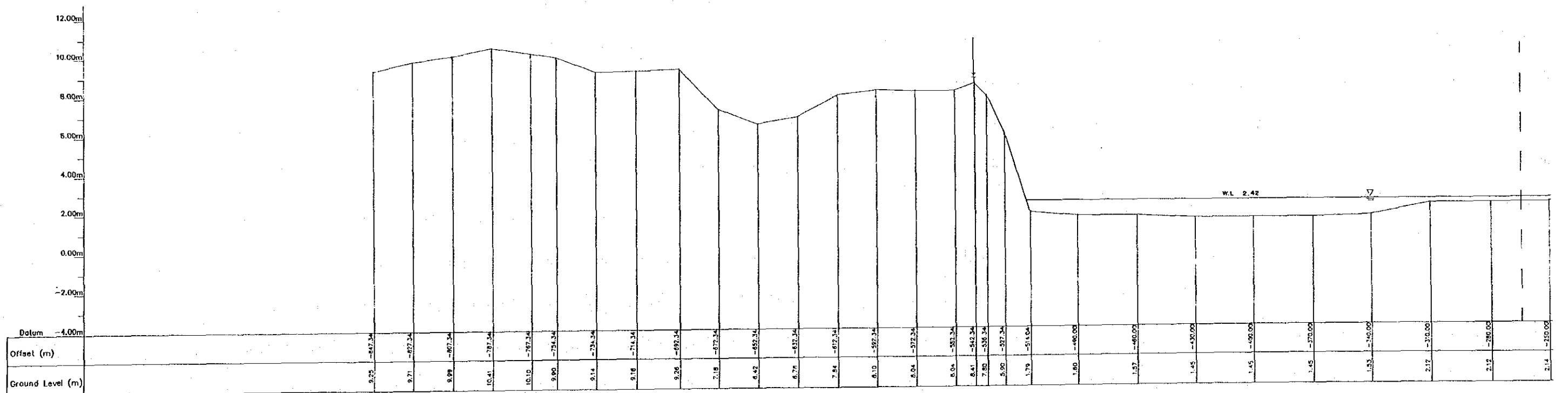


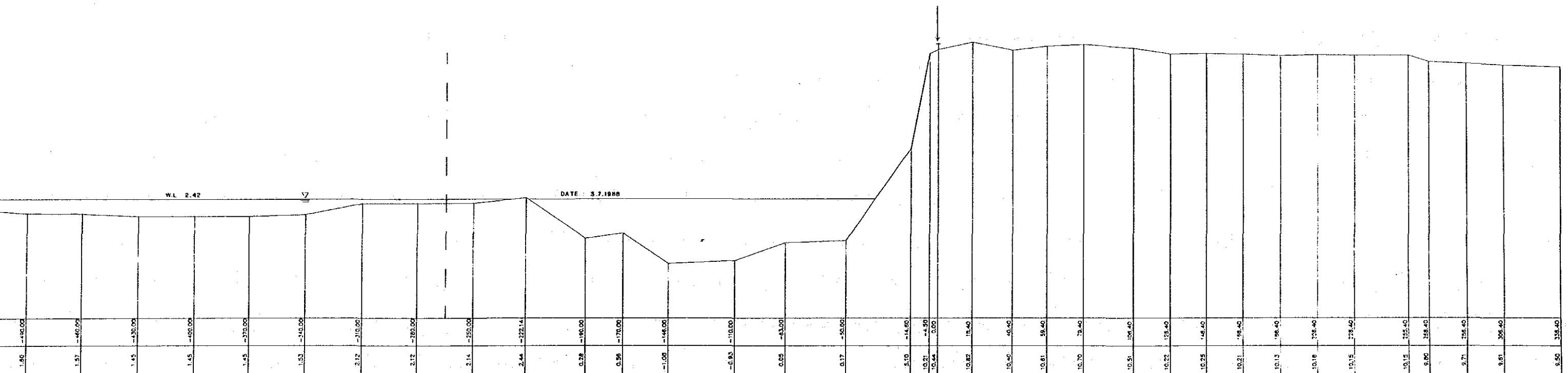


No: 22.2

Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD.			
(Consulting Surveyors)			
SECTION	From TBM NO: 22.2 KM	To TBM NO. -	
SHEET NO:	30 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100

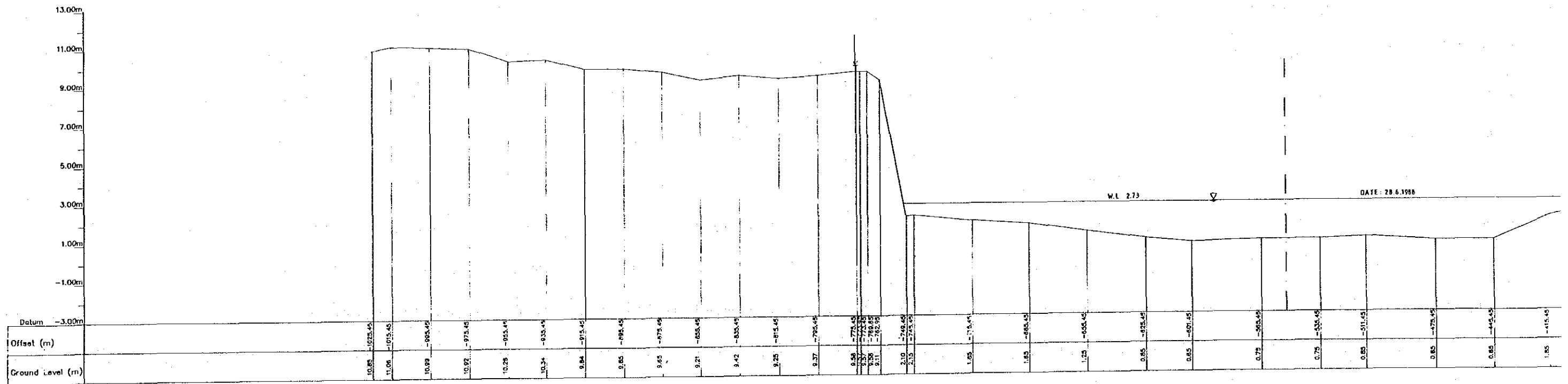




No: 23.2

Legend :
I : TBM (Pipe in concrete)

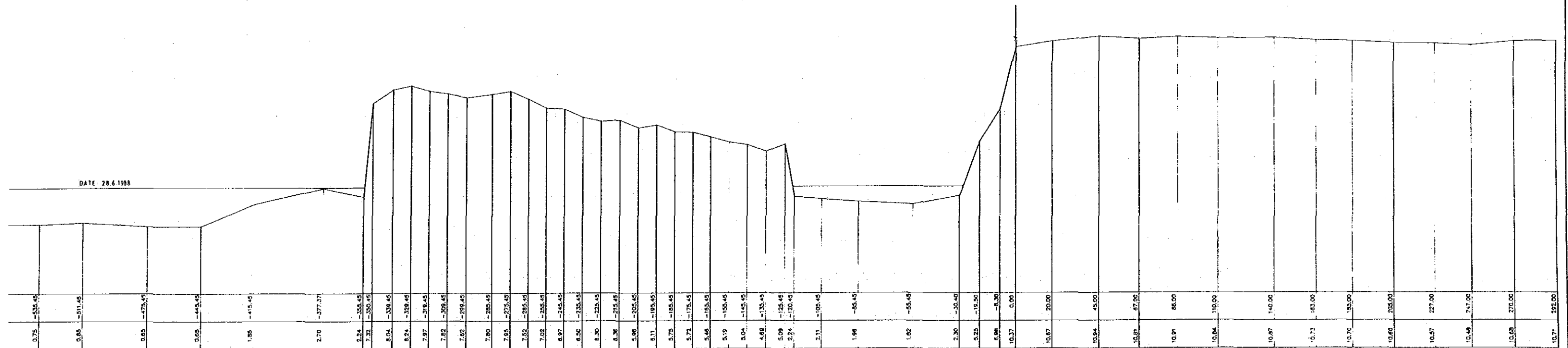
STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 23.2 KM	To TBM NO: -	
SHEET NO:	31 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000	Vertical : 1 / 100	



DATE: 28.6.1988

W.L. 2.73

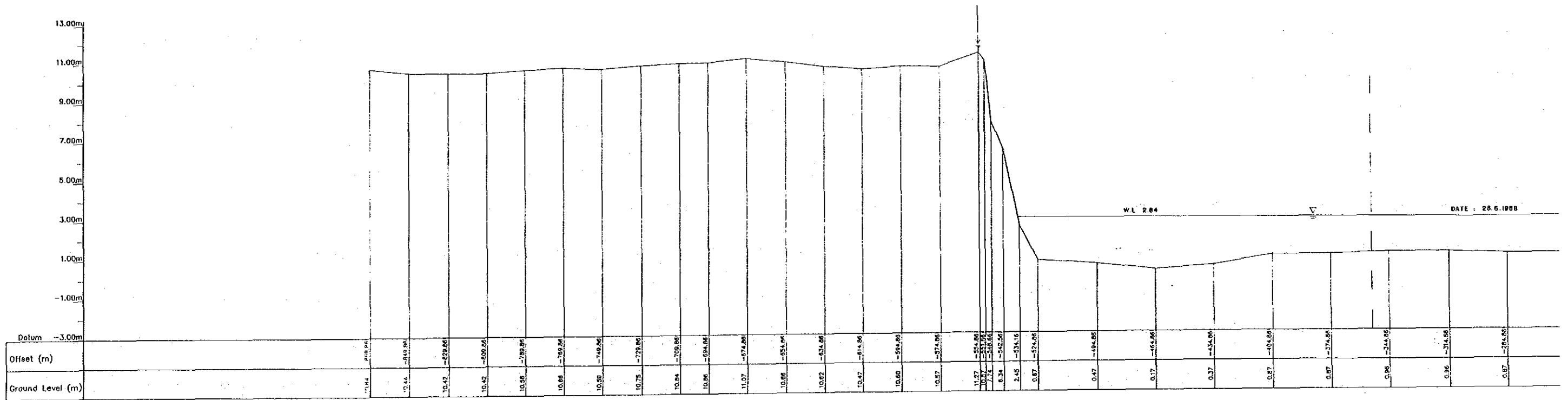
DATE : 28.6.1988



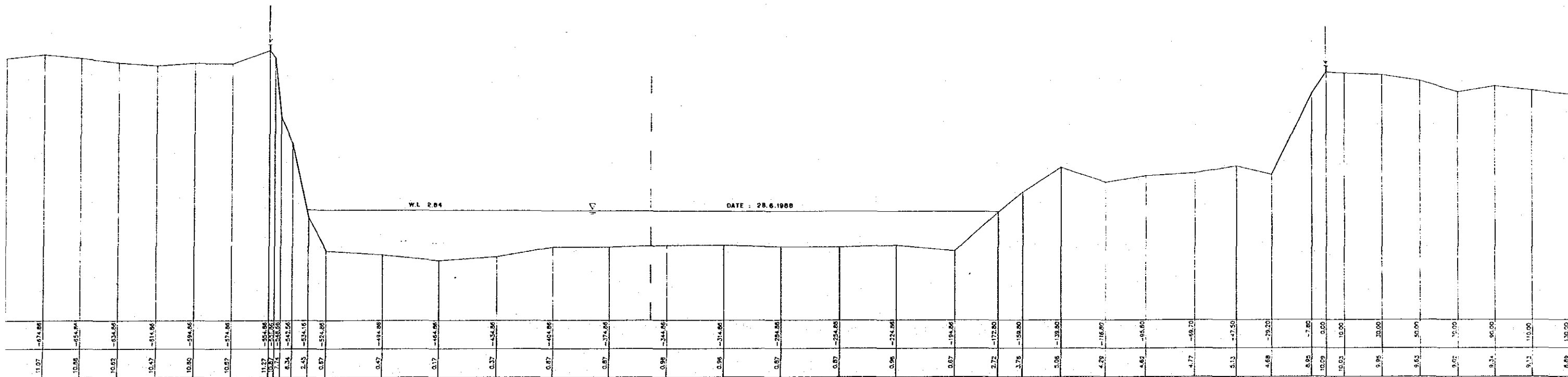
No: 24.2

Legend :
 T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 24.2 KM	To TBM NO: --	
SHEET NO:	32 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100



No: 25.2



No: 25.2

Legend :

T : TBM (Pipe in concrete)

STUDY ON KELANTAN RIVER BASIN-WIDE FLOOD MITIGATION			
CROSS-SECTIONAL PROFILE OF SUNGAI KELANTAN			
JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)			
KAJIAN KOKUSAI SDN. BHD. (Consulting Surveyors)			
SECTION	From TBM NO: 25.2 KM	To TBM NO: -	
SHEET NO:	33 / 108	DATE SURVEYED	JUNE 1988
SCALE	Horizontal : 1 / 1,000		Vertical : 1 / 100