

JAPAN INTERNATIONAL COOPERATION AGENCY

**MINISTRY OF ROADS AND HIGHWAYS
THE REPUBLIC OF GHANA**

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT
FOR
SMALL STREAM BRIDGES REHABILITATION
IN
THE REPUBLIC OF GHANA
(DRAWINGS)**

MARCH 1995

**KATAHIRA & ENGINEERS INTERNATIONAL
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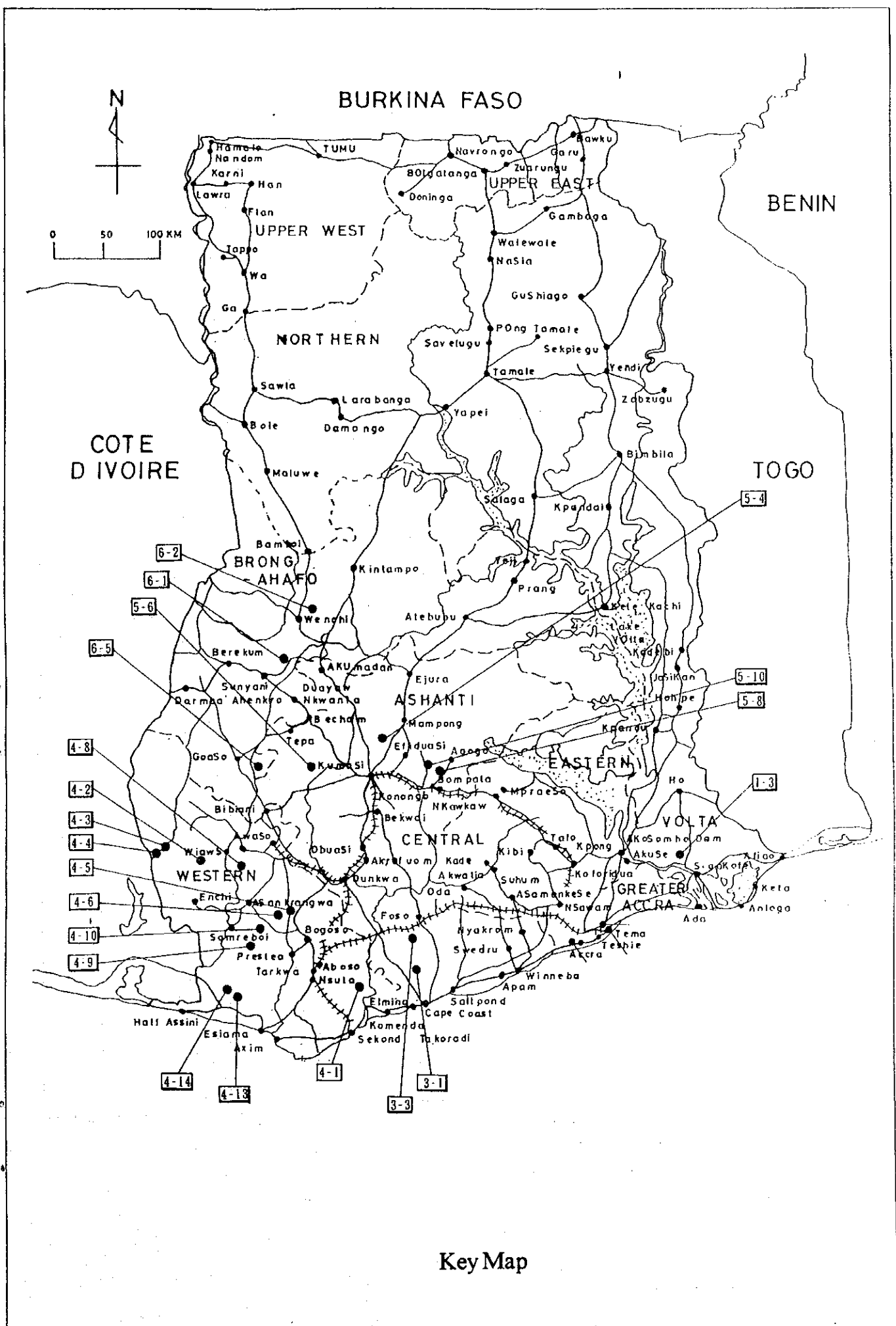
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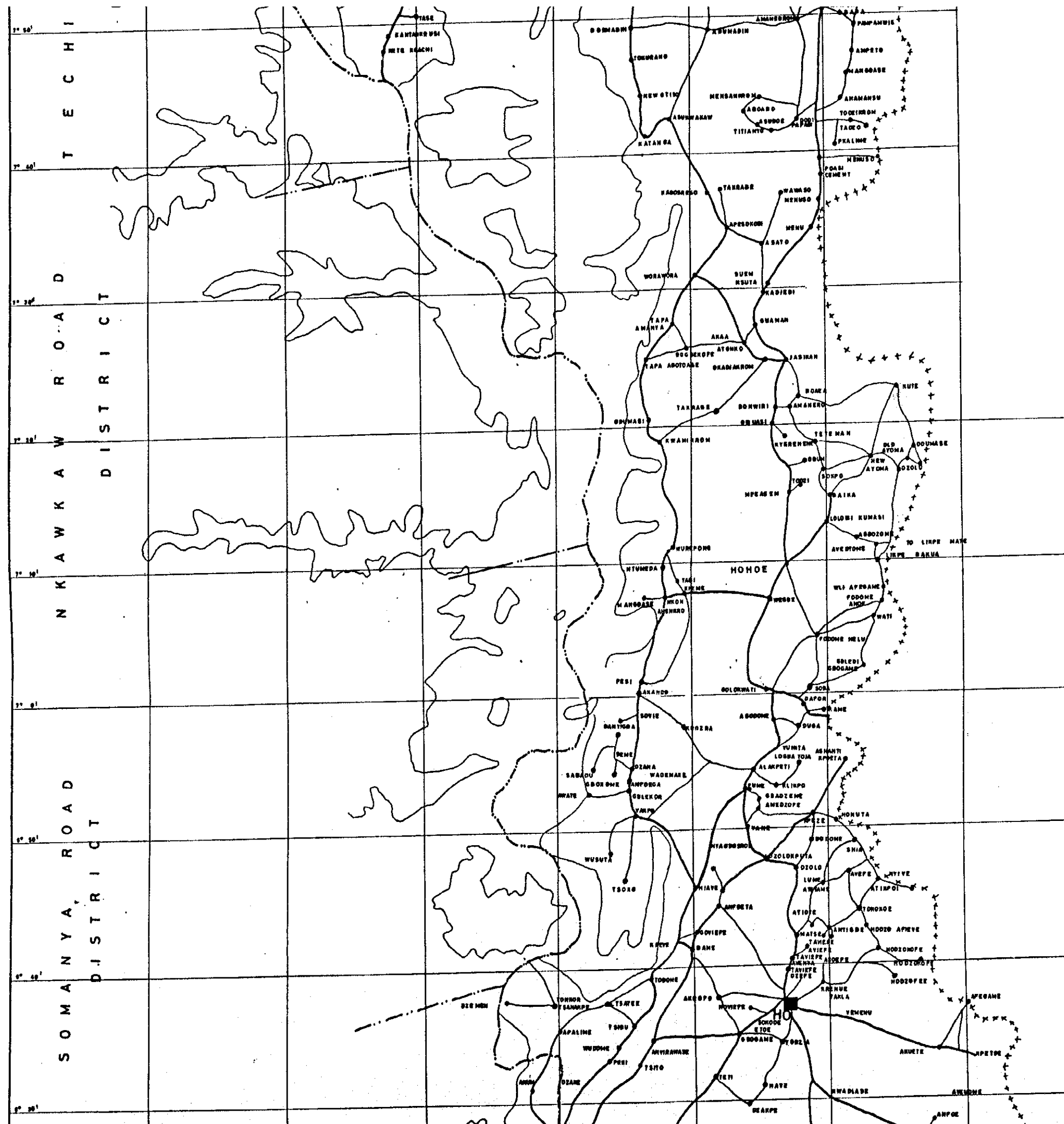
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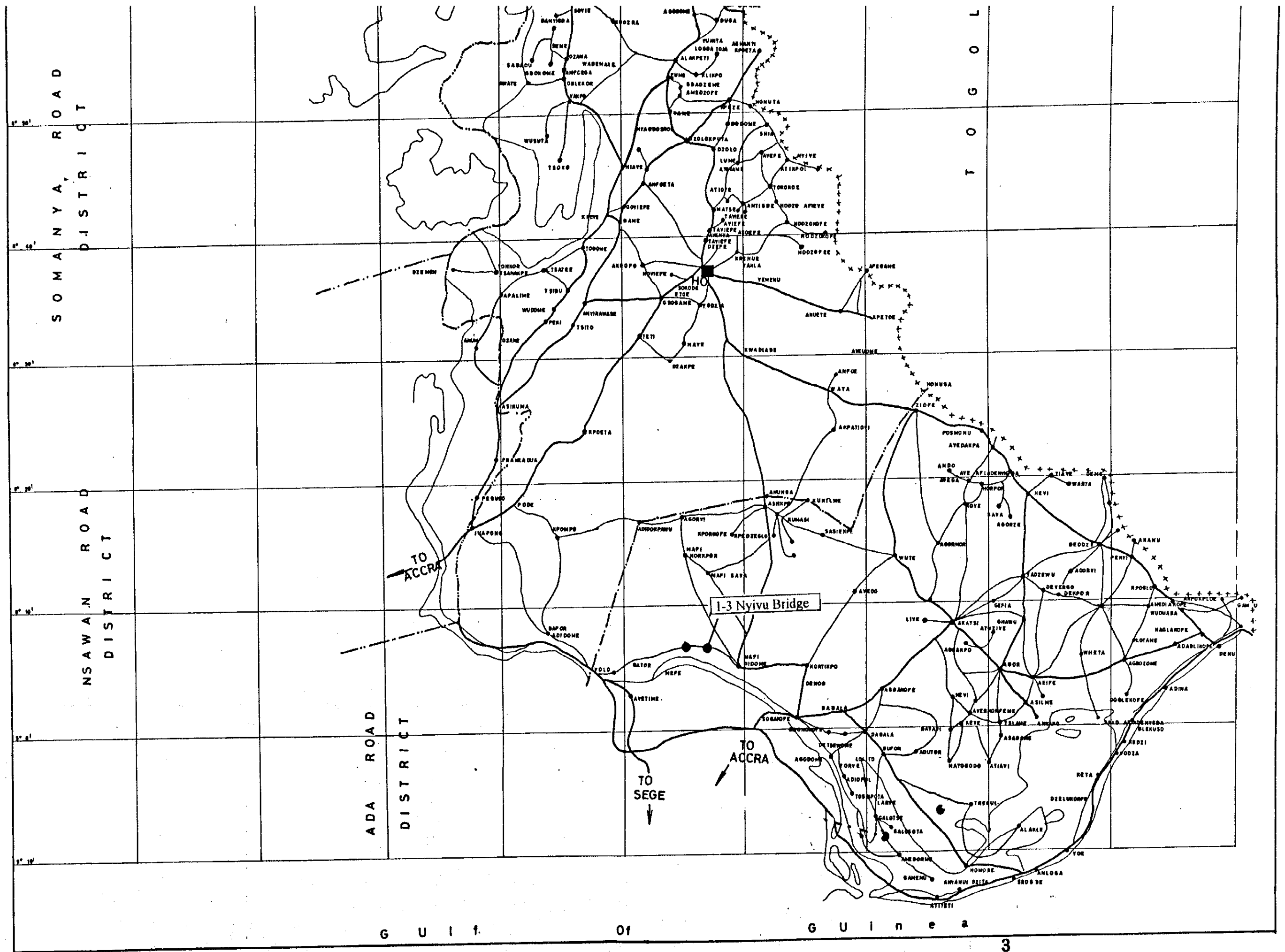


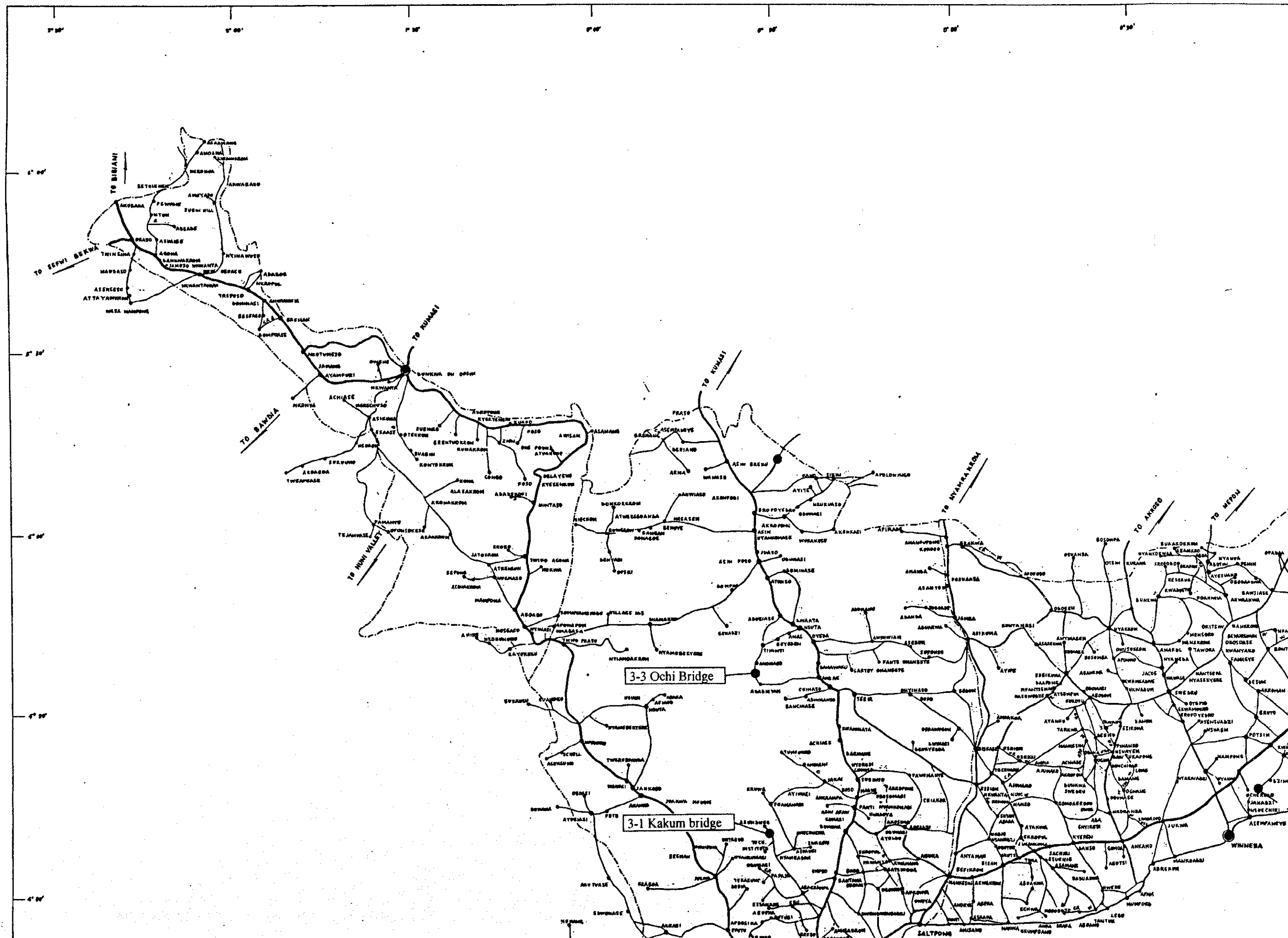
PROJECT BRIDGE LIST

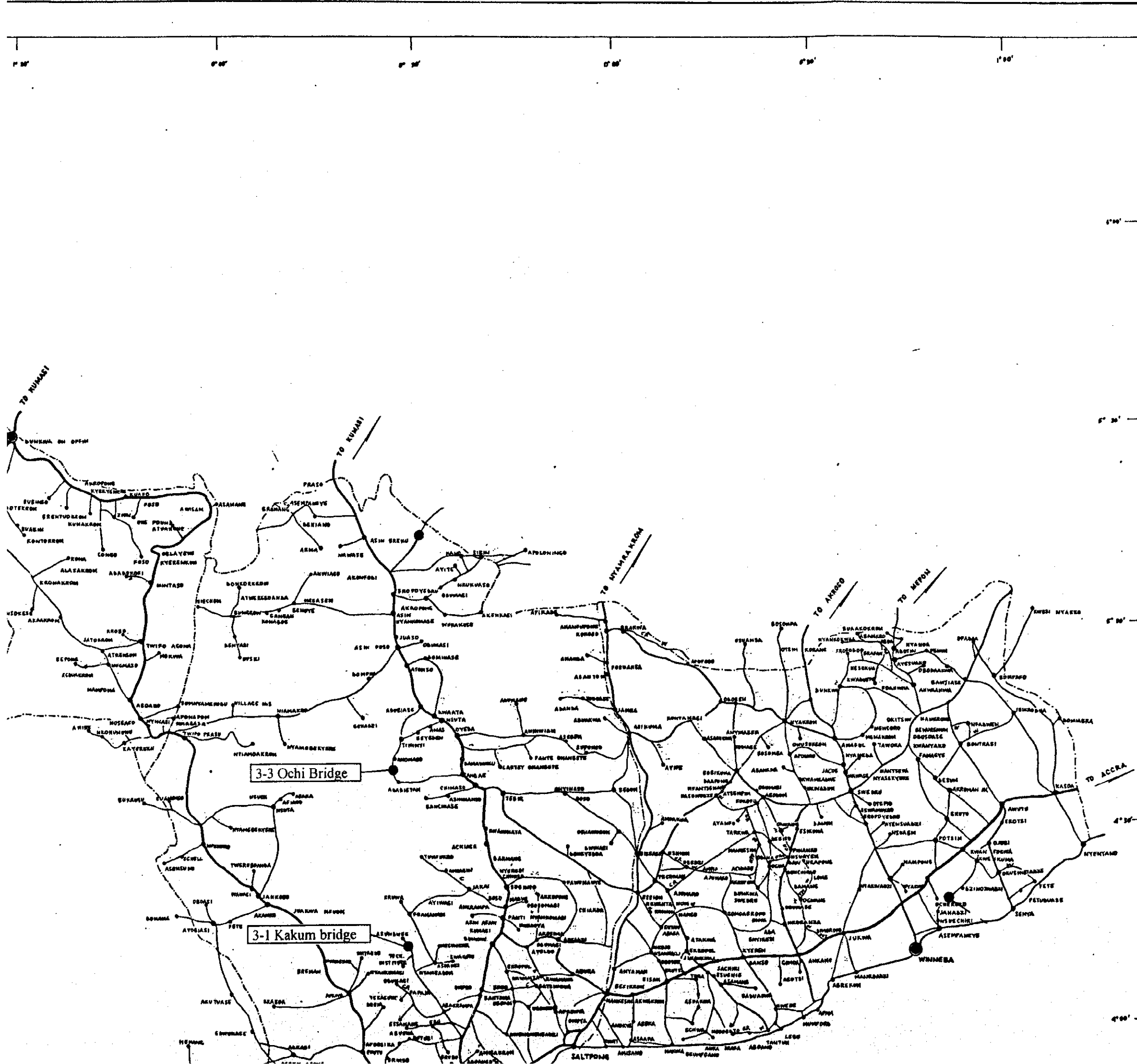
No.	Br. No.	Br. Name	Region	Road Name	River Name	Span (m)
1	1-3	Nyivu	Volta	Adidome-Juapong	Nyivu	25
2	3-1	Kakum	Central	Nyamedon-Asomdwee	Kakum	20
3	3-3	Ochi	"	Akrofuom-Nsuakyir	Ochi	25
4	4-1	Hiwini	Western	Shama Jn.-Mampong-Adansi	Hiwini	25
5	4-2	Pru	"	Agyeman Camp-Kramokrom	Pru	25
6	4-3	Susan	"	Adonikrom-Jn.-Adonikrom	Susan	20
7	4-4	Adoni	"	Adonikrom-Jn.-Adonikrom	Adoni	25
8	4-5	Bura	"	Wasa-Akropong-Anyinabrim	Bura	25
9	4-6	Yurunsu	"	Wasa-Akropong-Anyinabrim	Yurunsu	20
10	4-8	Peburu	"	Bopa-Fordjourkrom	Peburu	25
11	4-9	Samere	"	Pensanum-Amuni	Samere	20
12	4-10	Botente	"	Pensanum-Amuni	Botente	20
13	4-13	Djaba	"	Adubrim Jn.-Adubrim	Djaba	20
14	4-14	Ayawora	"	Adubrim Jn.-Adubrim	Ayawora	25
15	5-4	Ofin	Ashanti	Agona-Afamanaso	Ofin	20
16	5-6	Owabi	"	Hiawu-Besease-Ntensere	Owabi	25
17	5-8	Anunuso	"	Effiduase-Nkwankwanna-Juansa	Anunu	25
18	5-10	Anuru	"	Kwakuwama-Nobekan	Anuru	20
19	6-1	Tano	Brong-Ahafo	Chiraa-Asuokwa	Tano	25
20	6-2	Subin	"	Wenchi-Ofuman	Subin	20
21	6-5	Aboabo	"	Sienchem-Goaso	Aboabo	20

VOLTA REGION

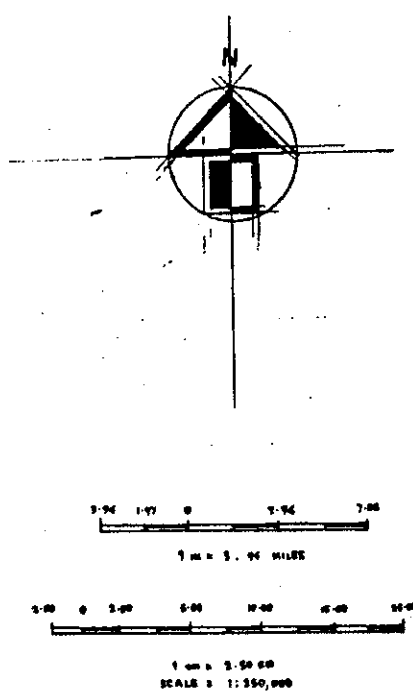
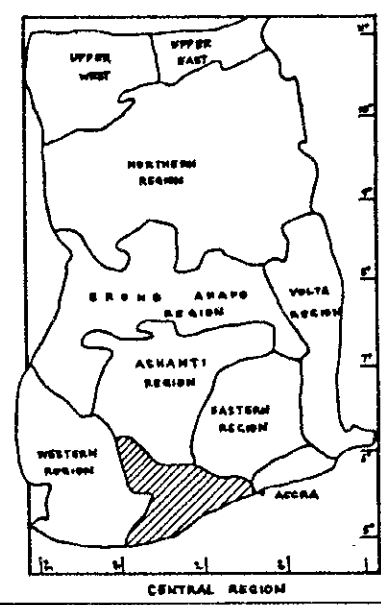


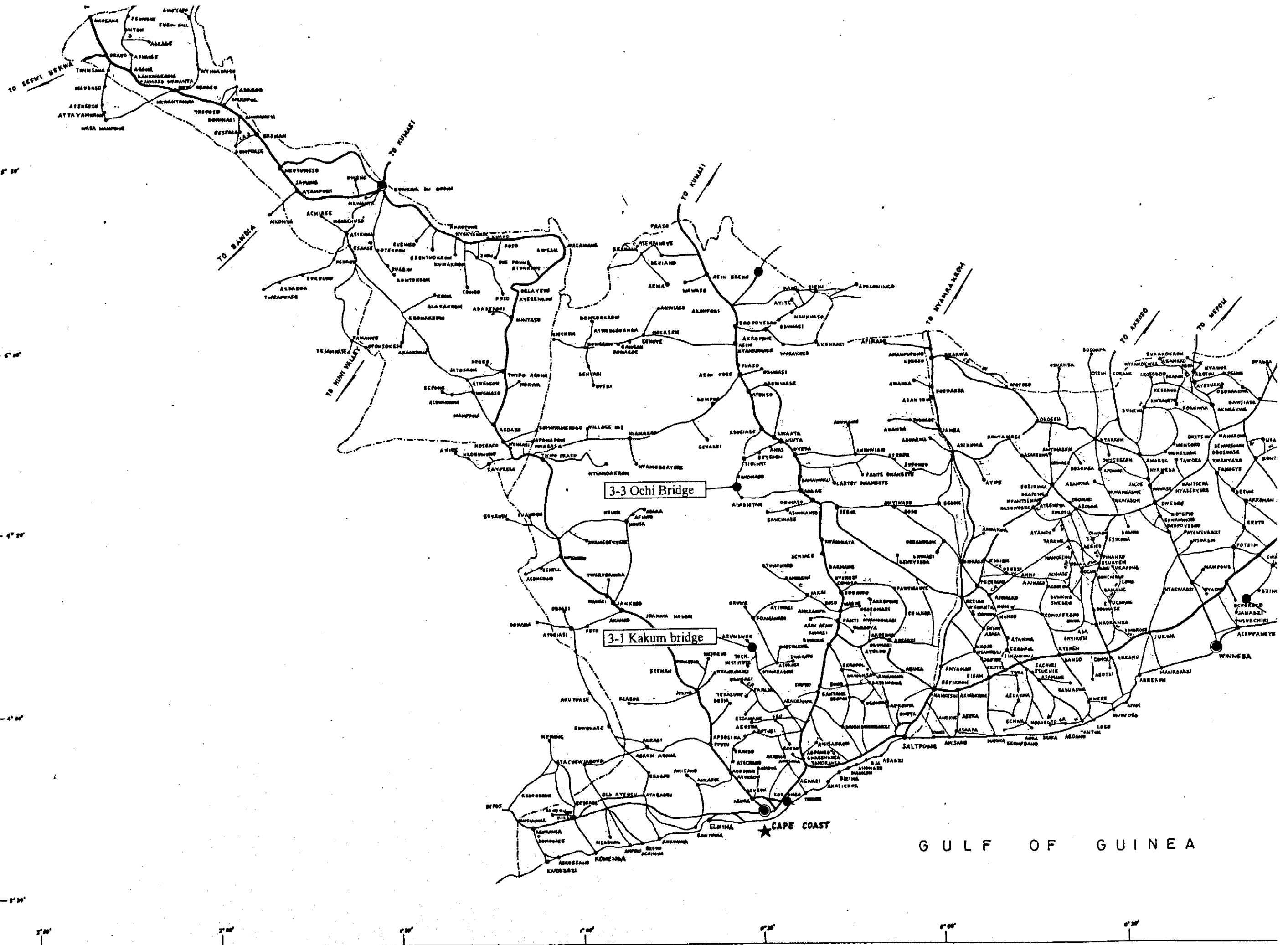


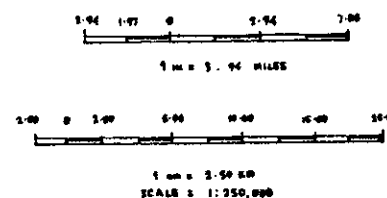
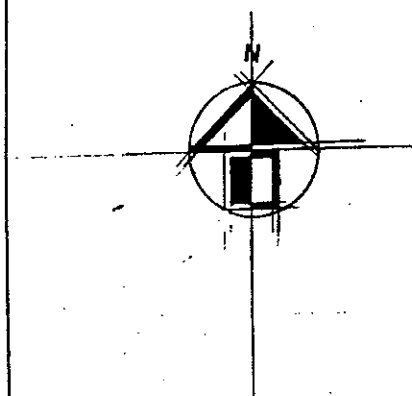
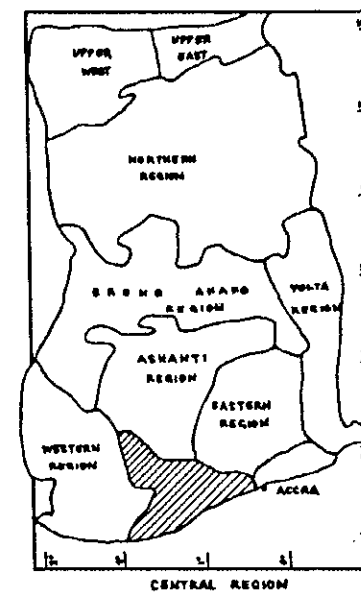
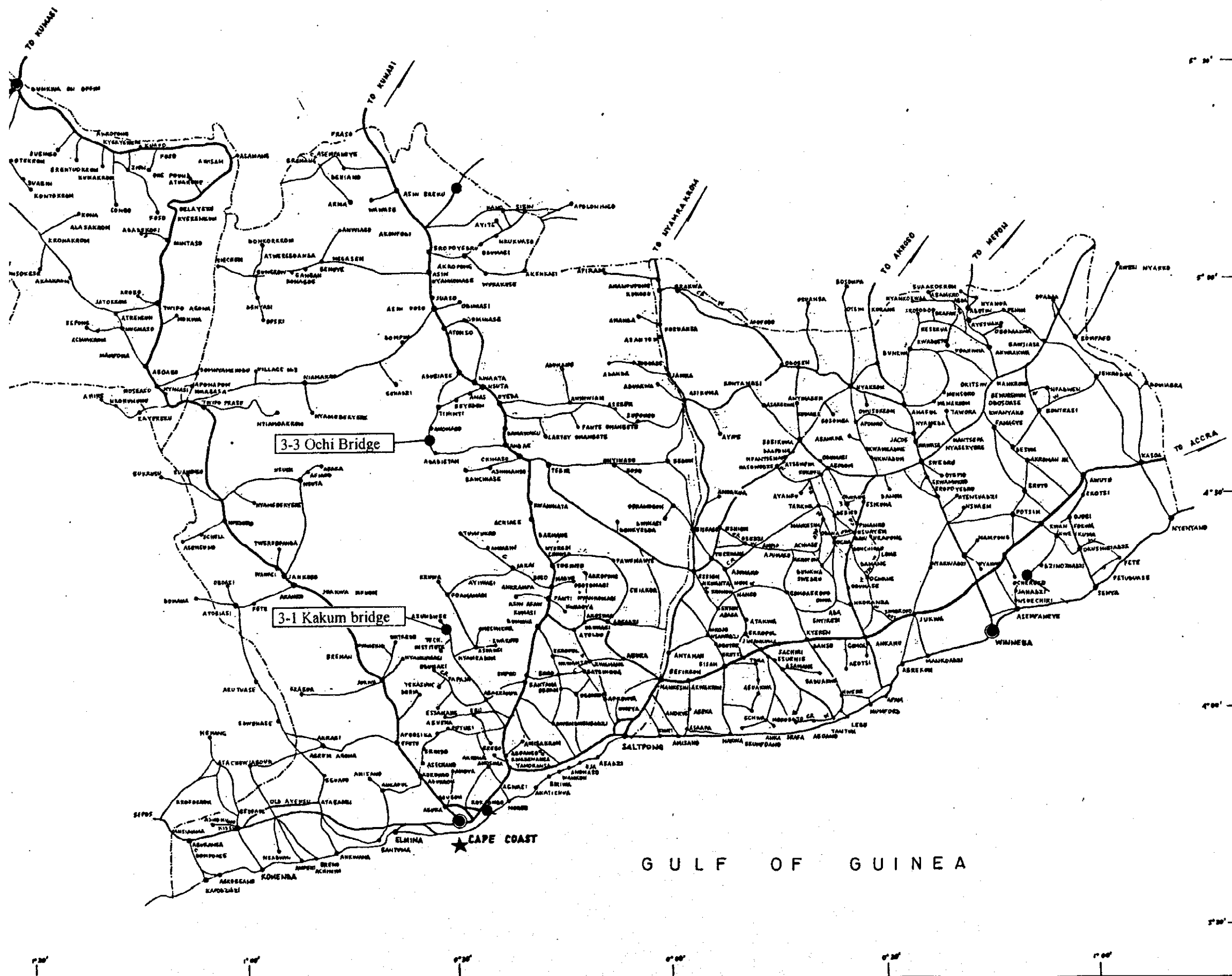




GHANA



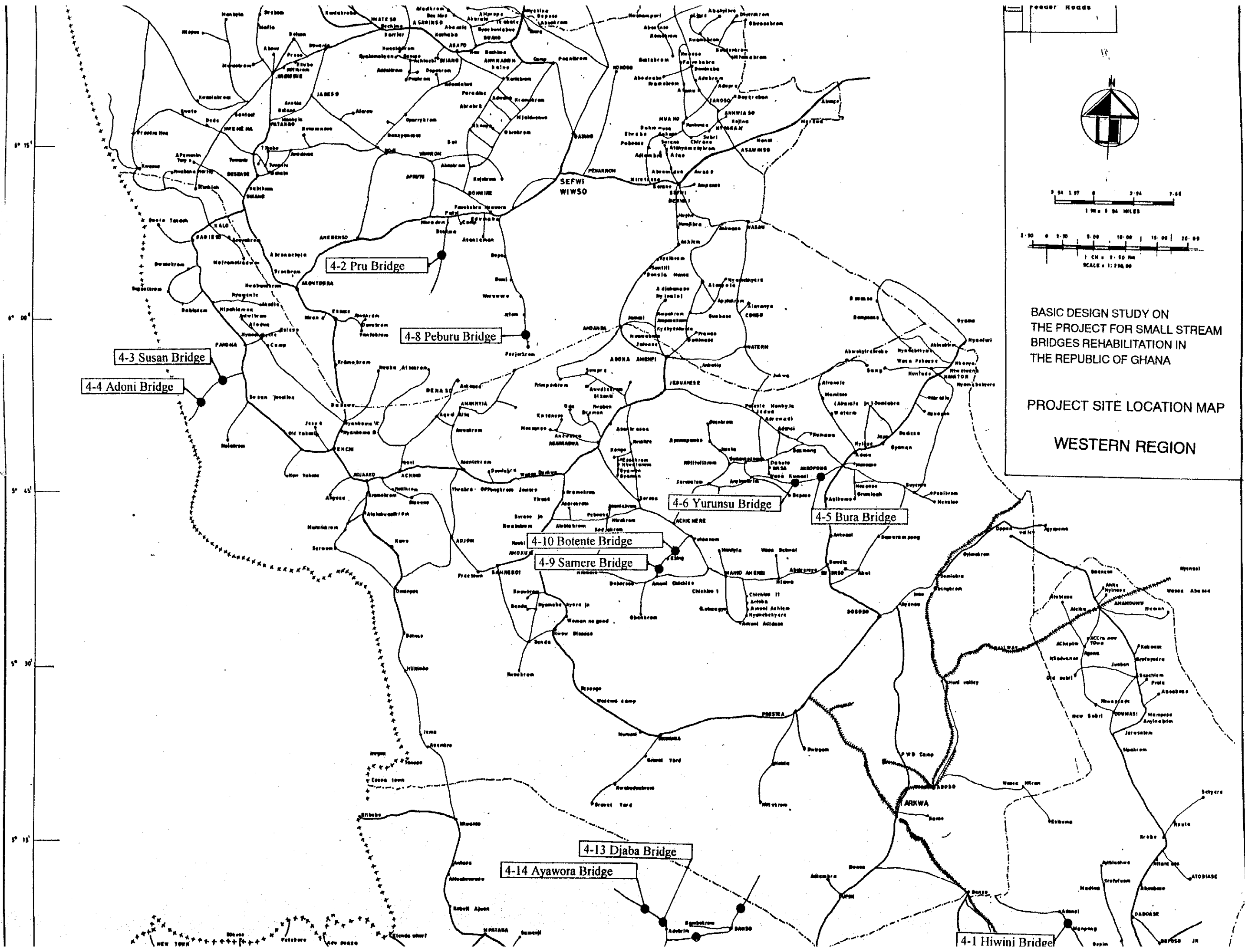




BASIC DESIGN STUDY ON
THE PROJECT FOR SMALL STREAM
BRIDGES REHABILITATION IN
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PROJECT SITE LOCATION MAP

CENTRAL REGION



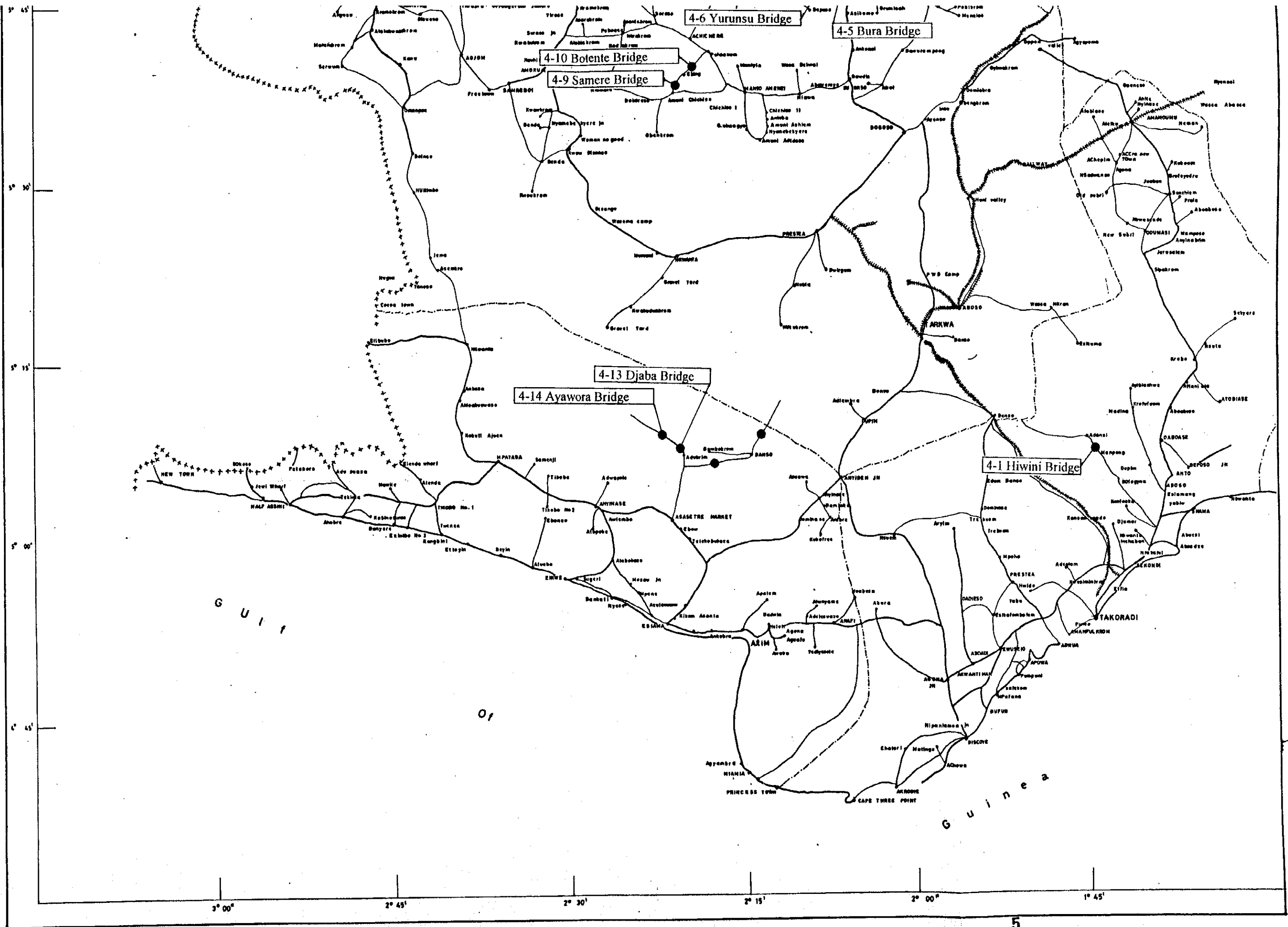
Feeder Roads

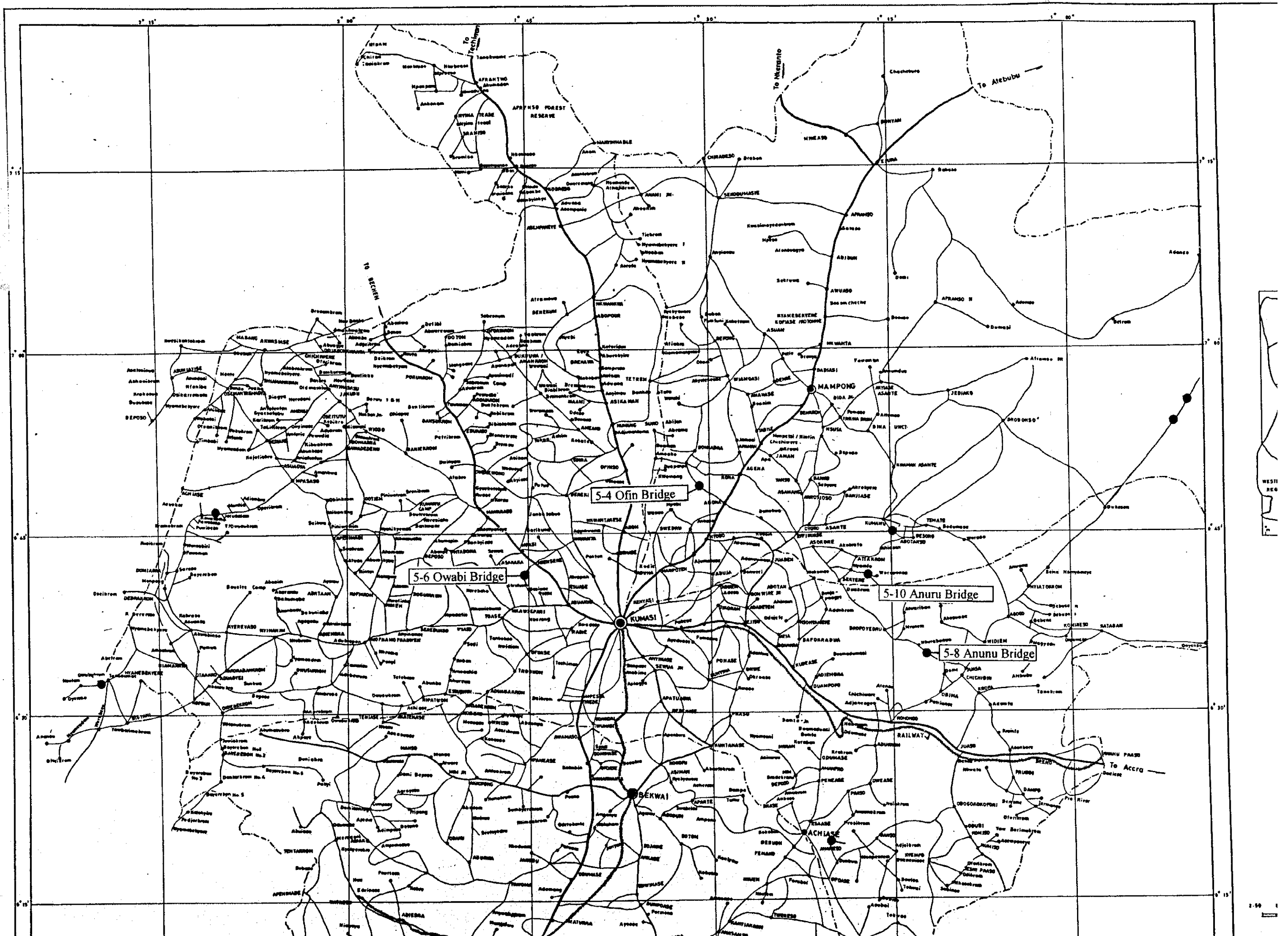
0 0.5 1 1.5 2 2.5
0 1 2 3 4
1 Mile 1.6 Miles
0 1 2 3 4
1 Km 1.6 Km
SCALE: 1:250,000

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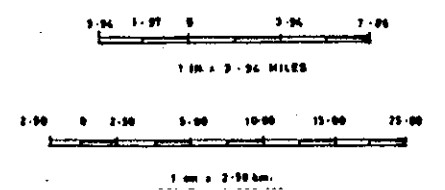
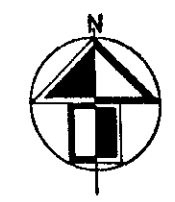
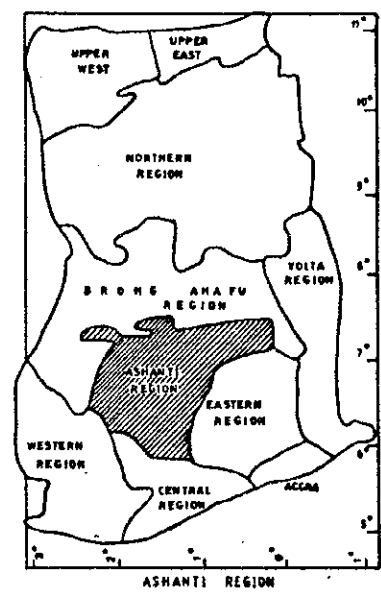
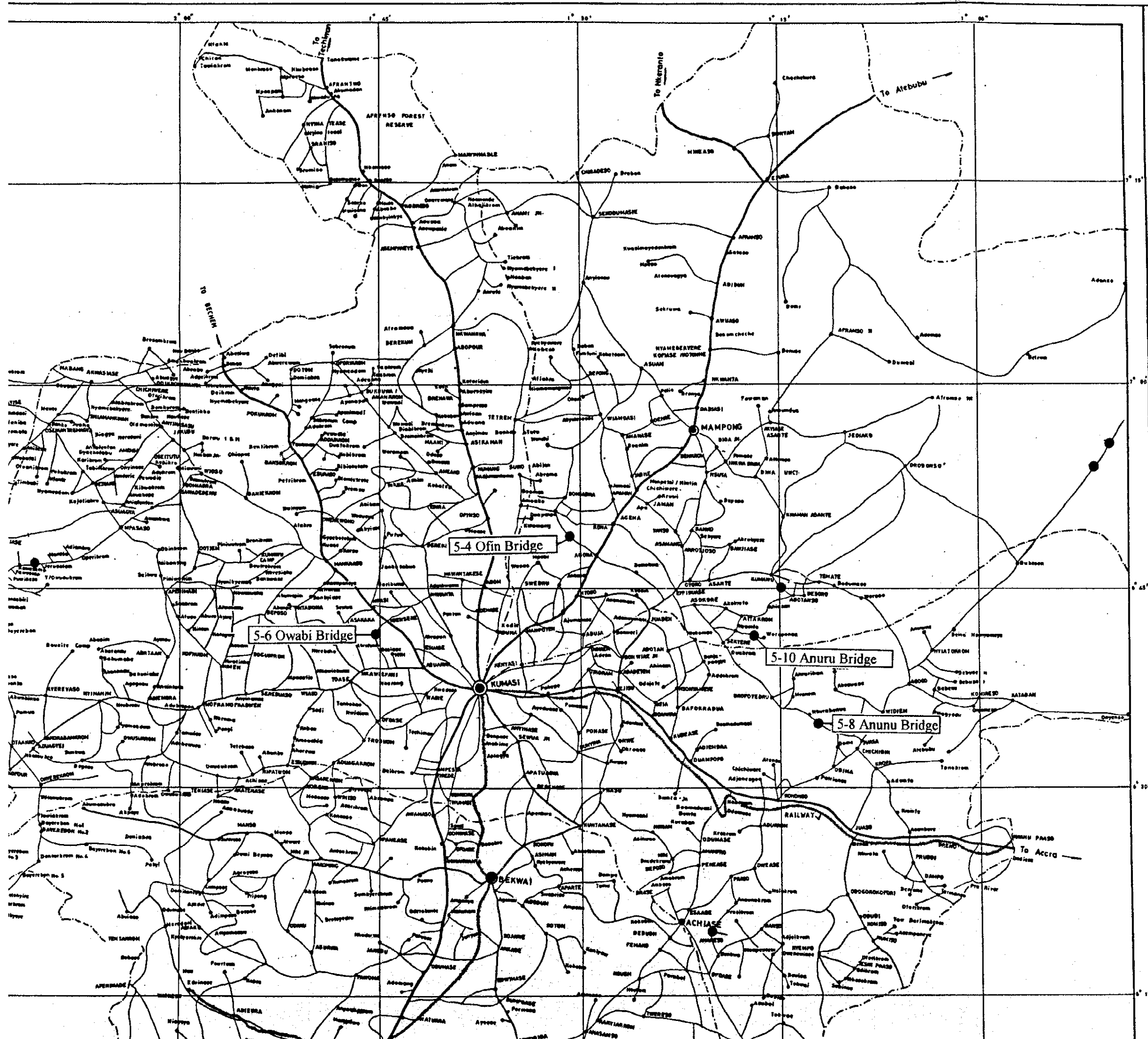
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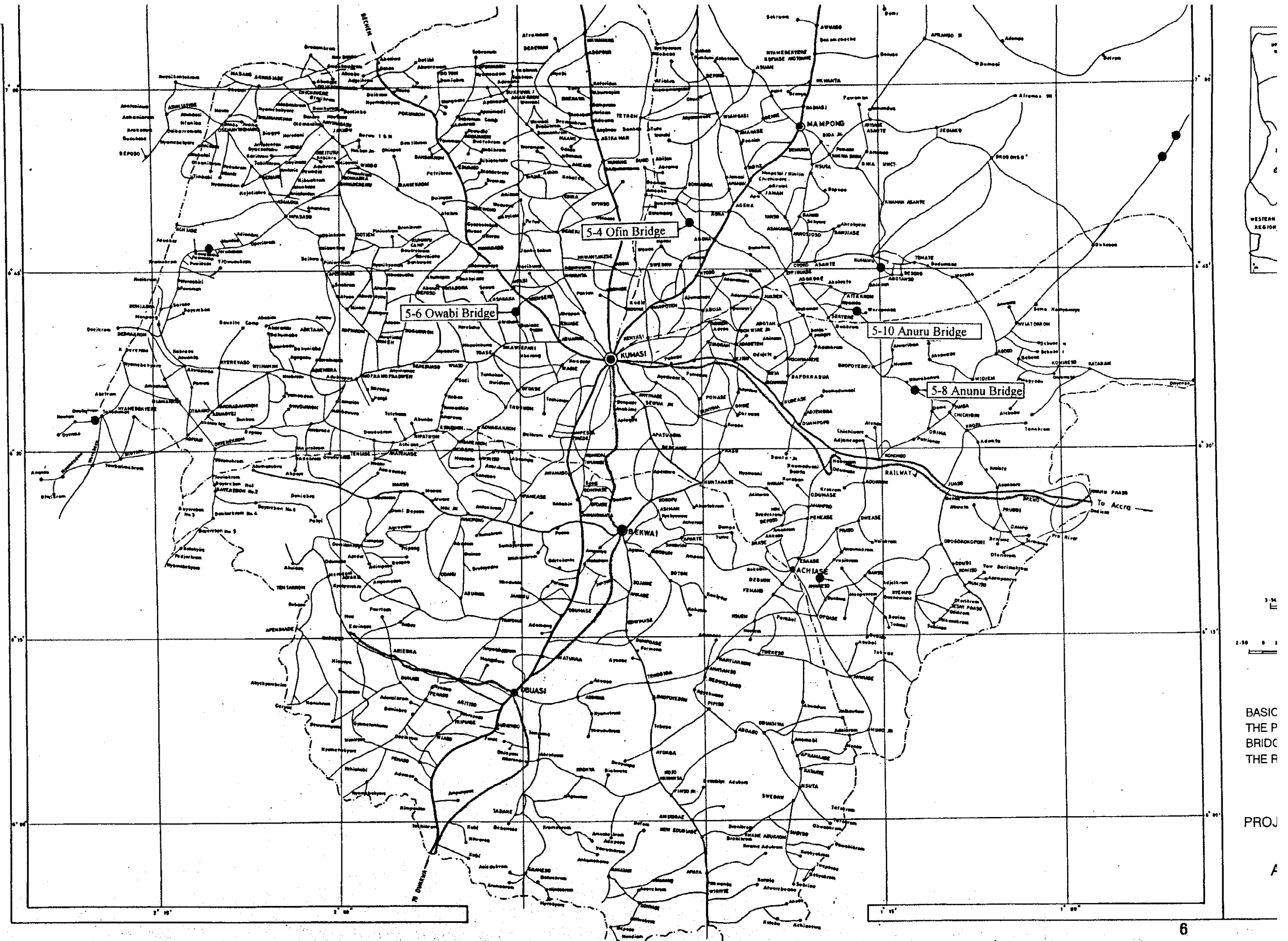
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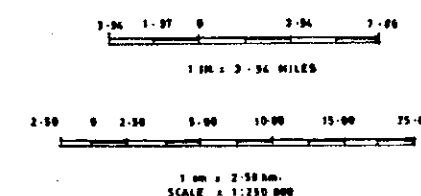
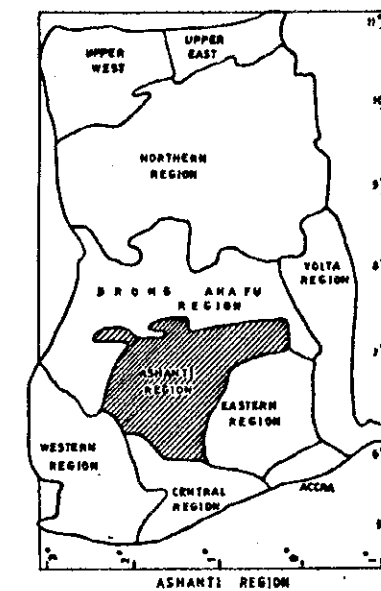
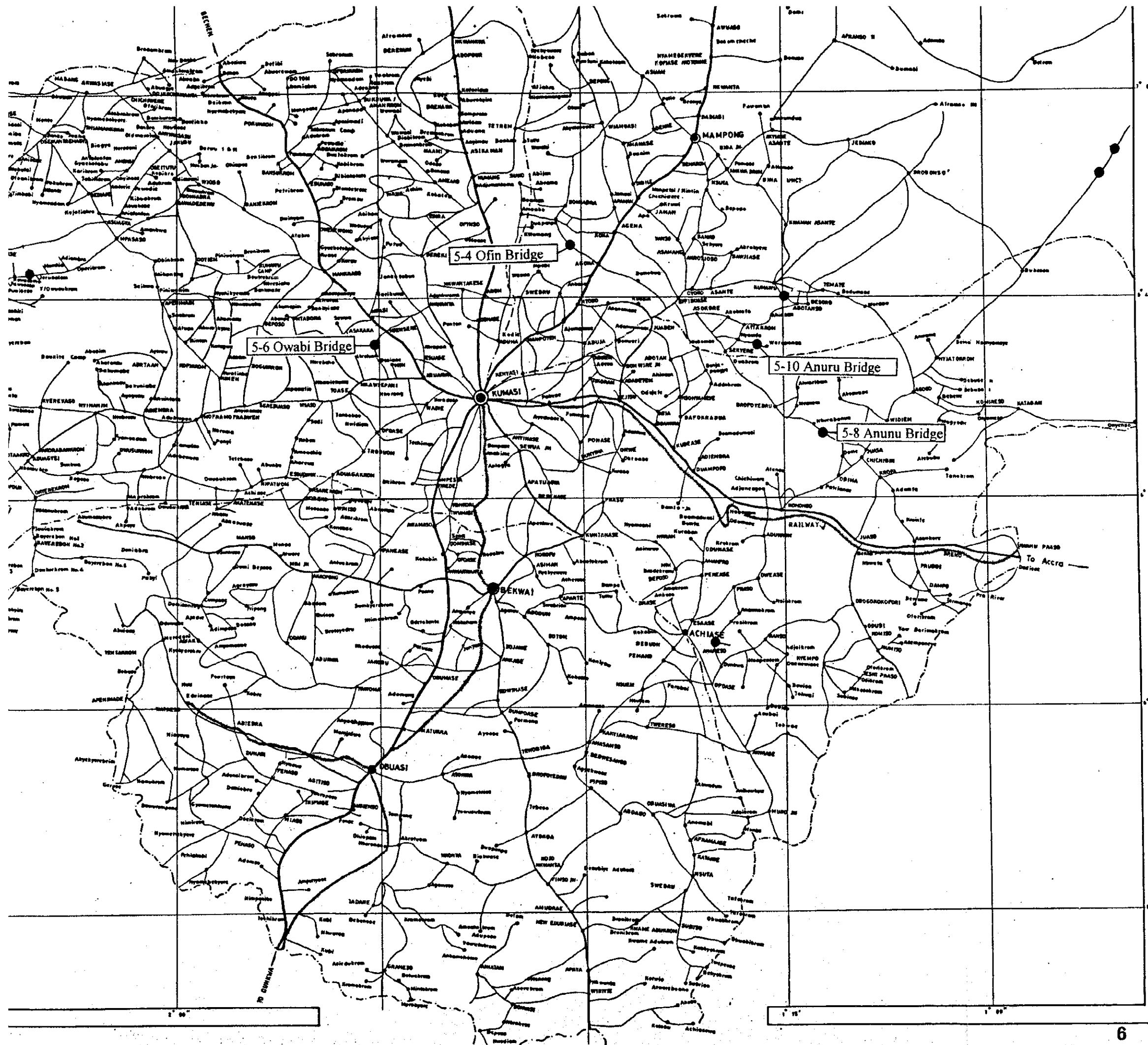


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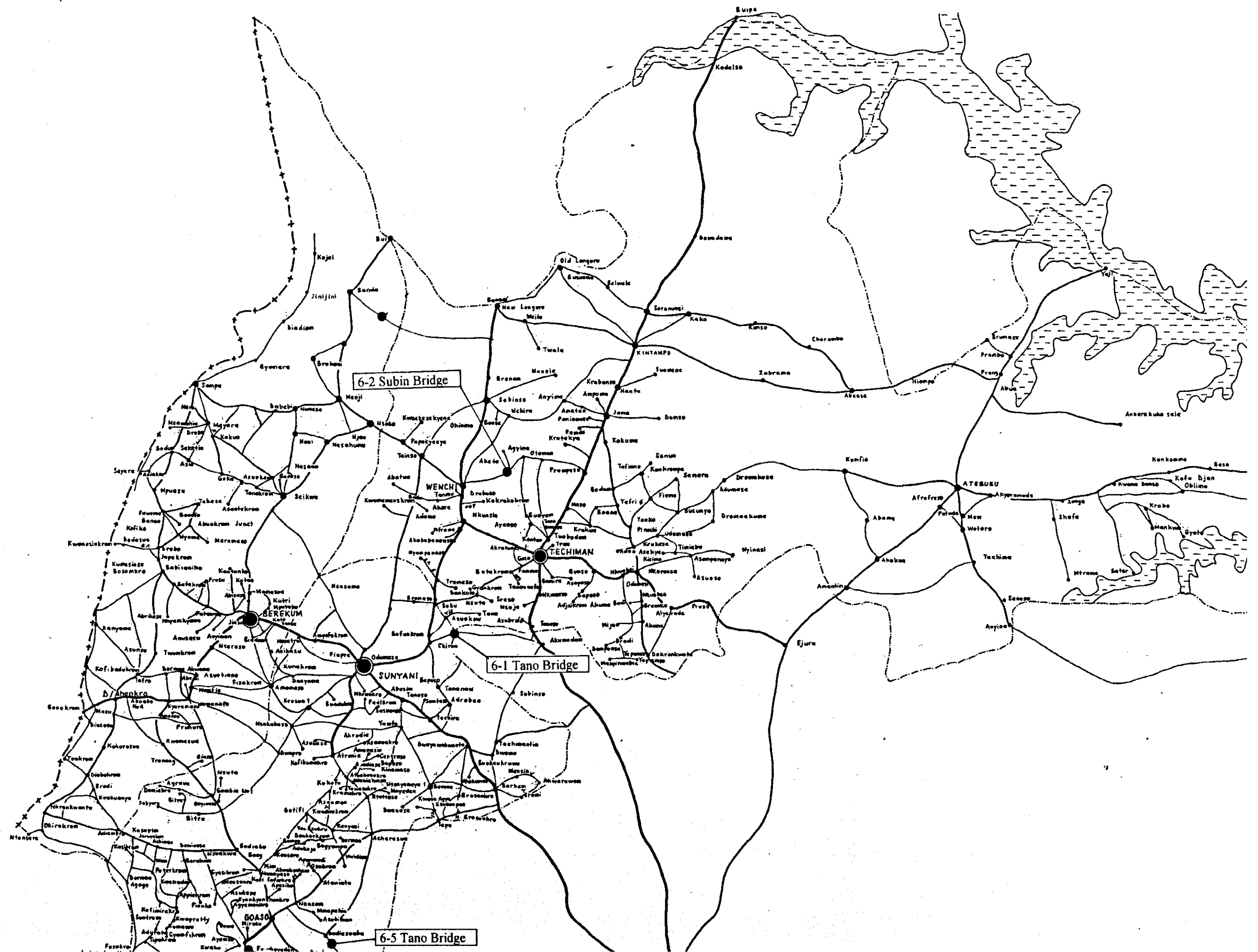
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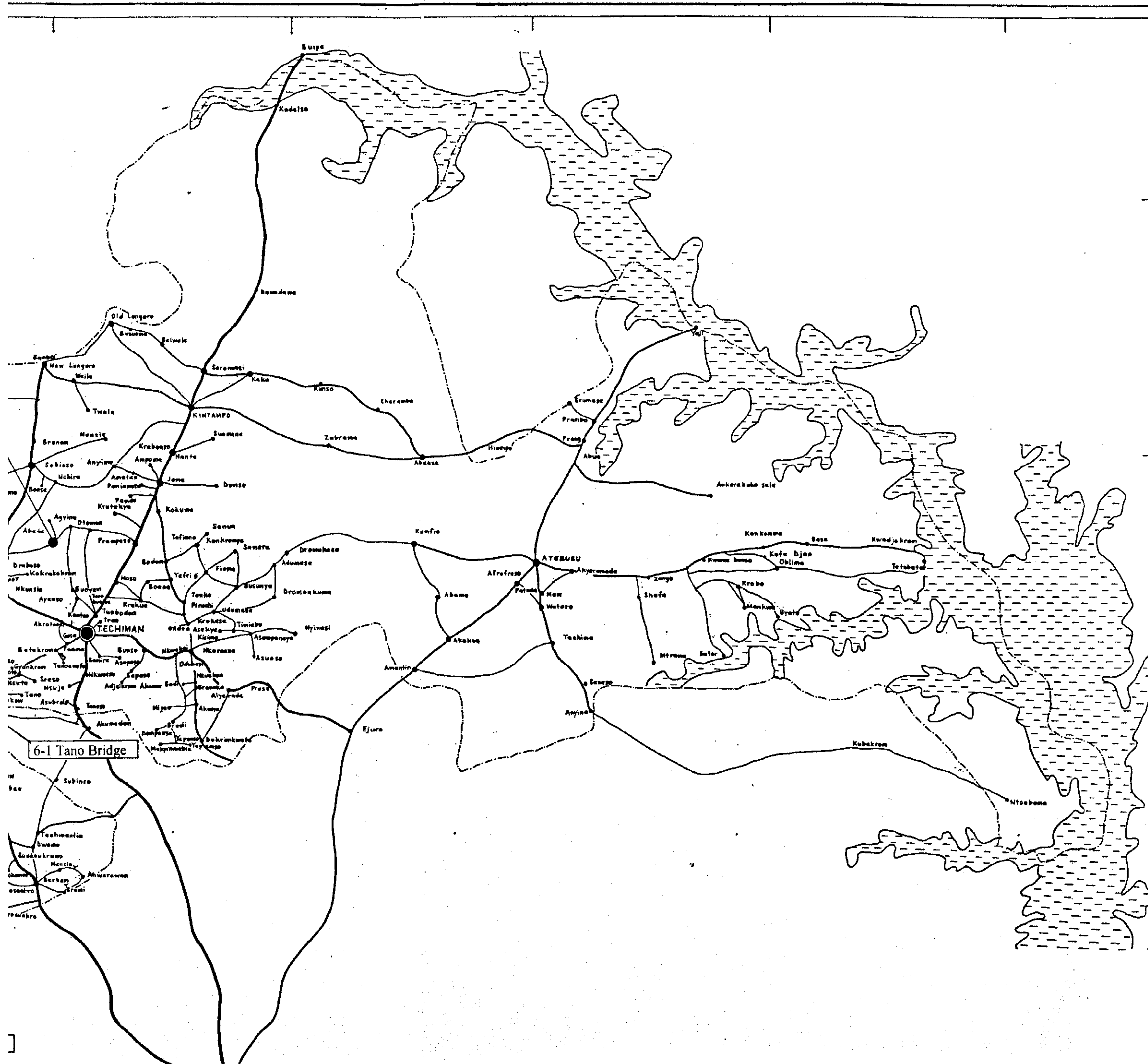


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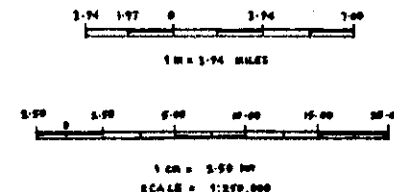
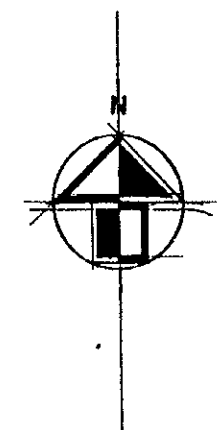
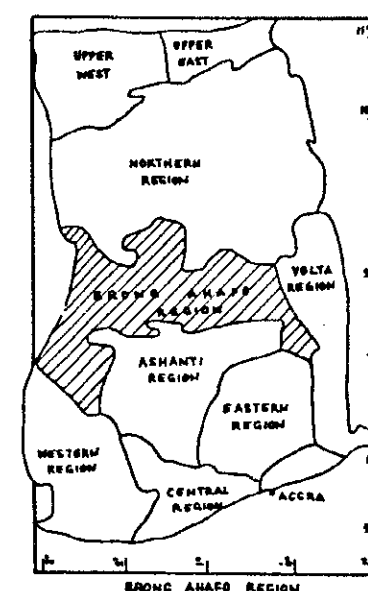
PROJECT SITE LOCATION MAP

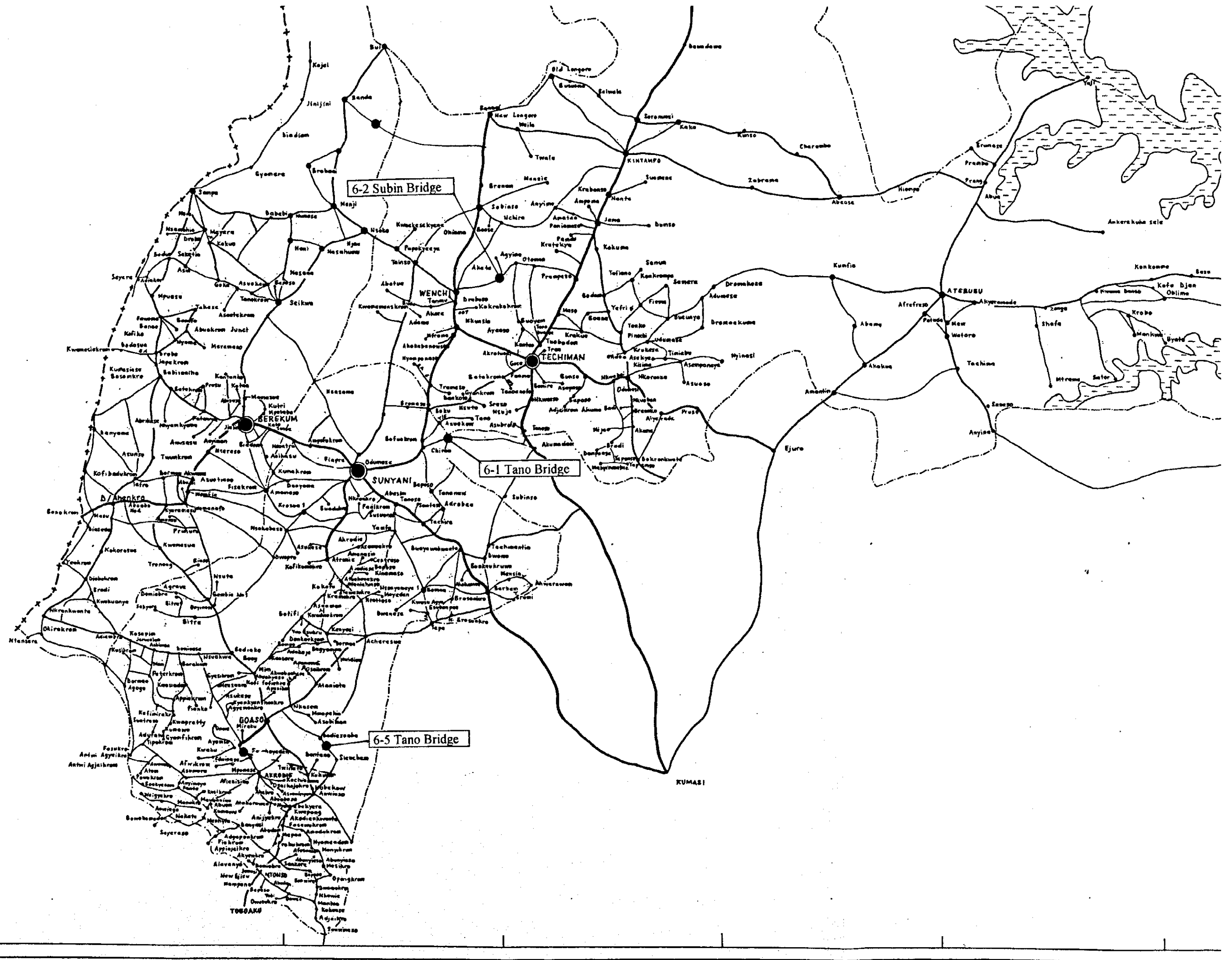
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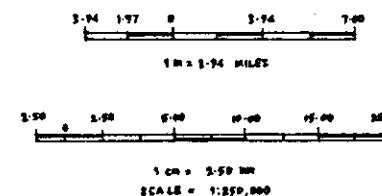
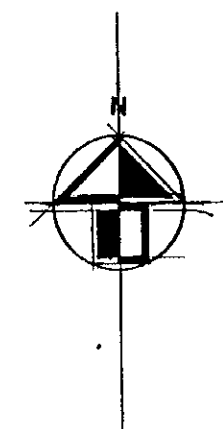
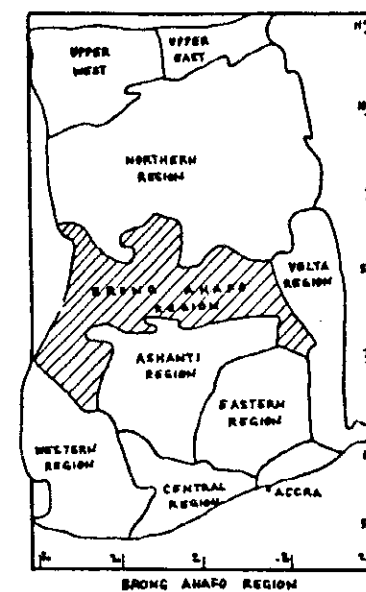
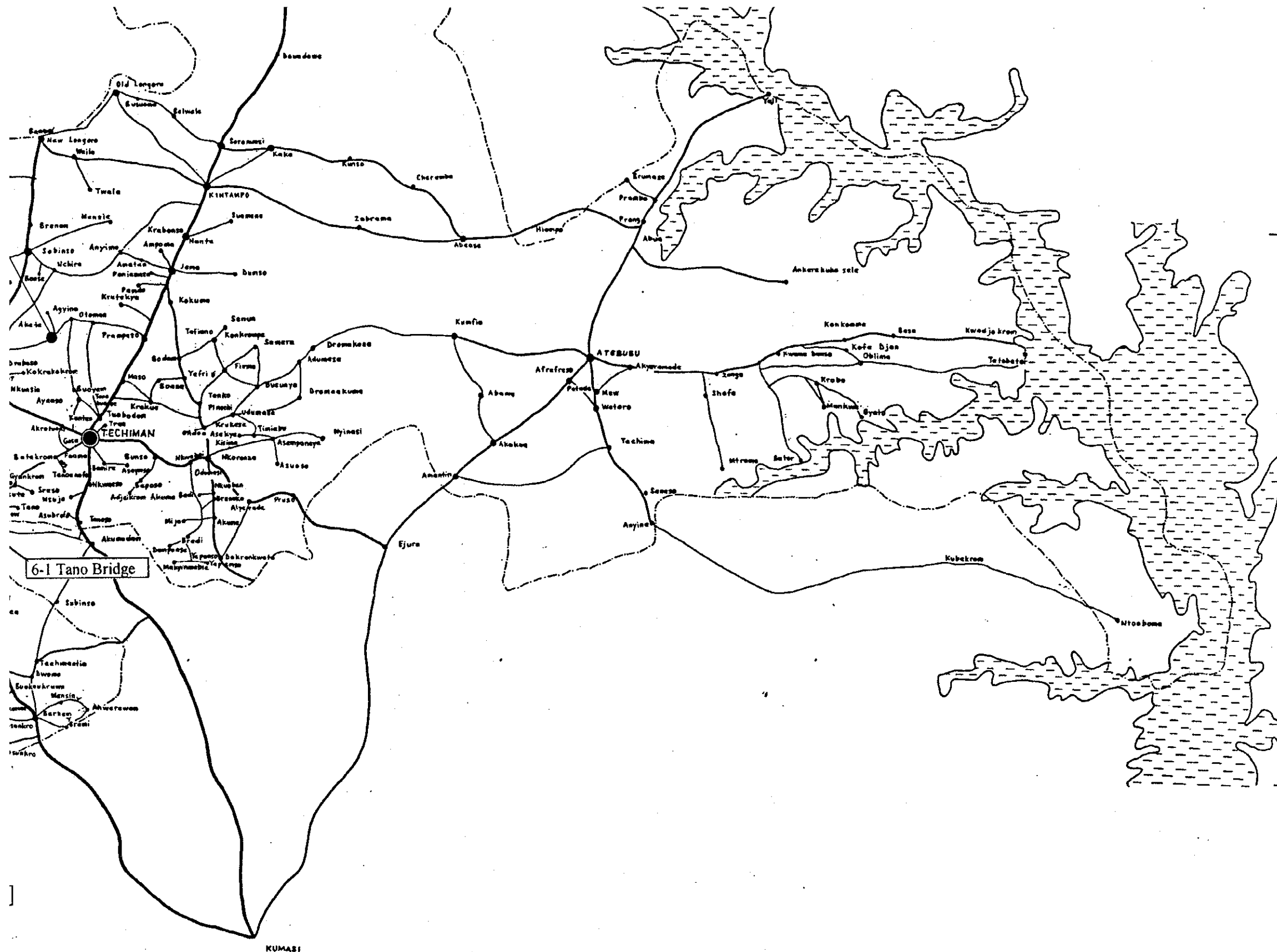




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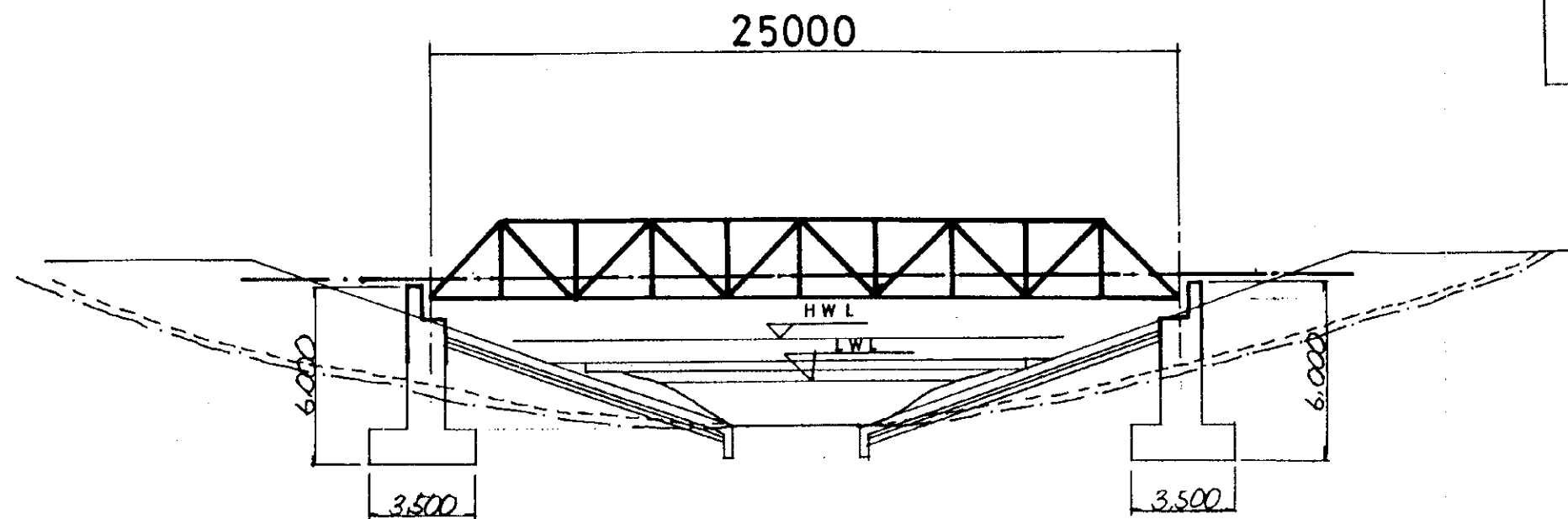




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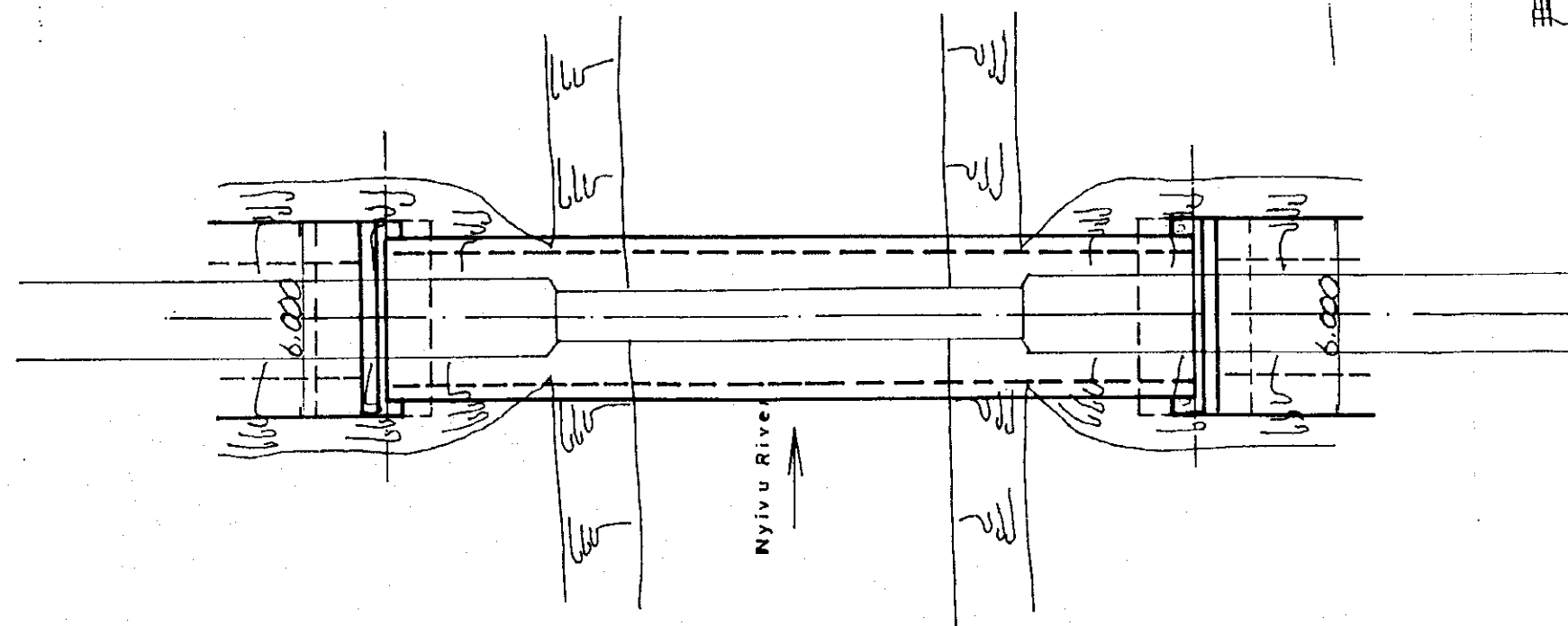
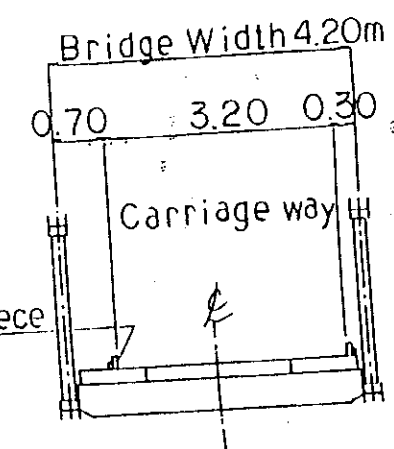
PROJECT SITE LOCATION MAP

BROG-AHAFO REGION



ELEVATION

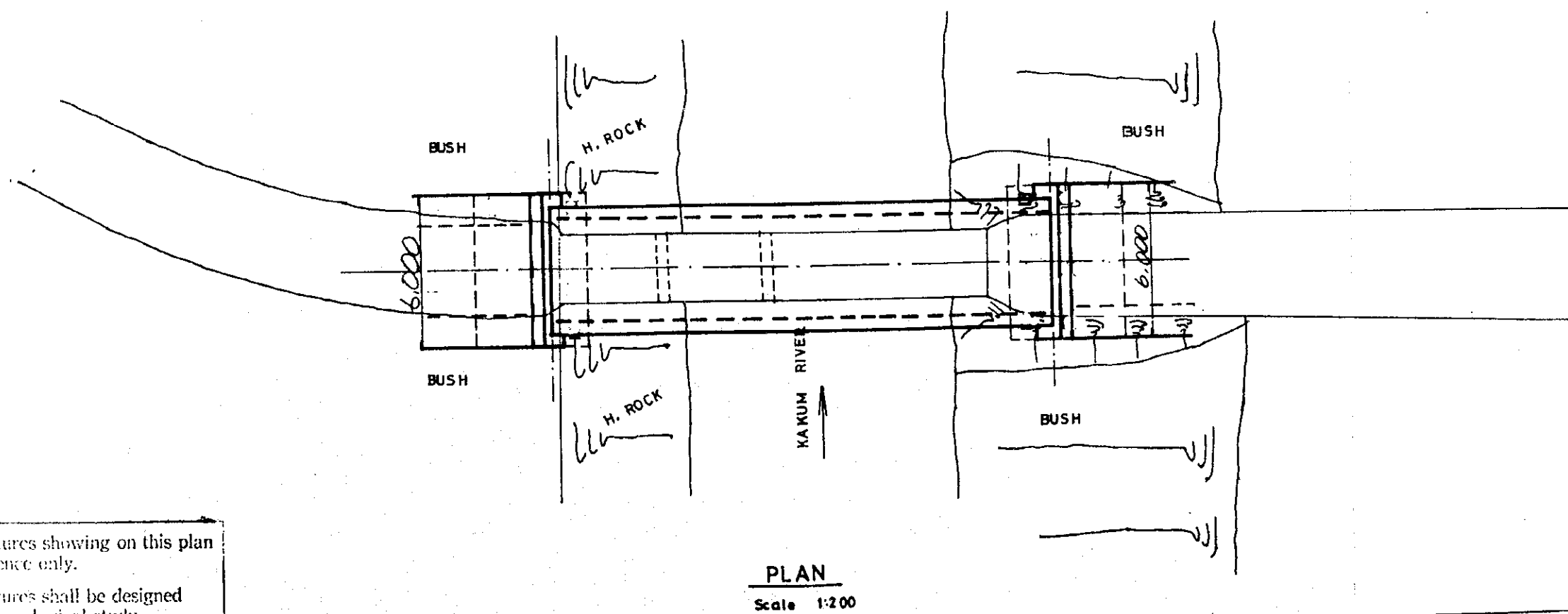
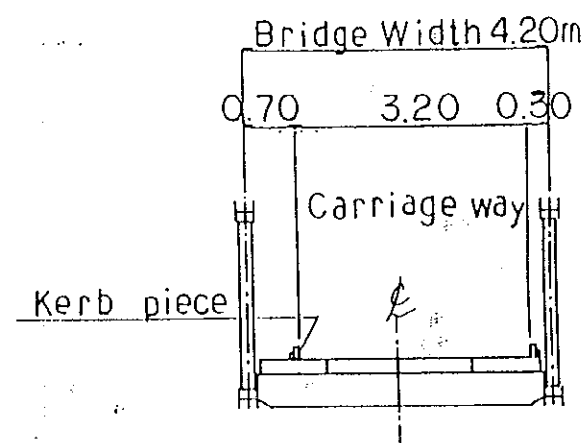
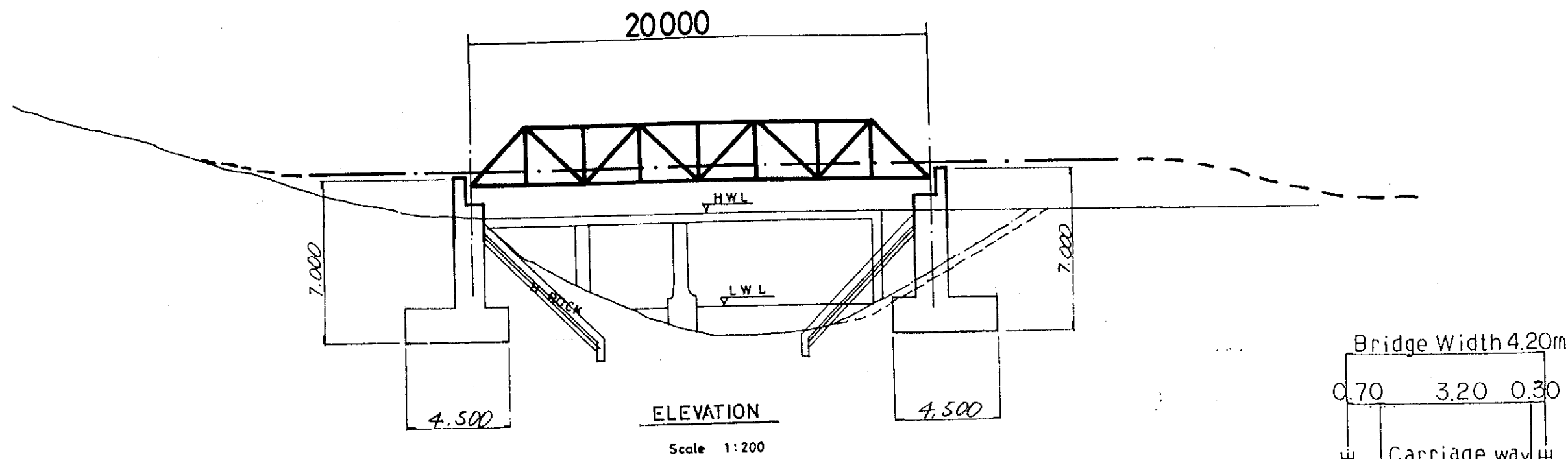
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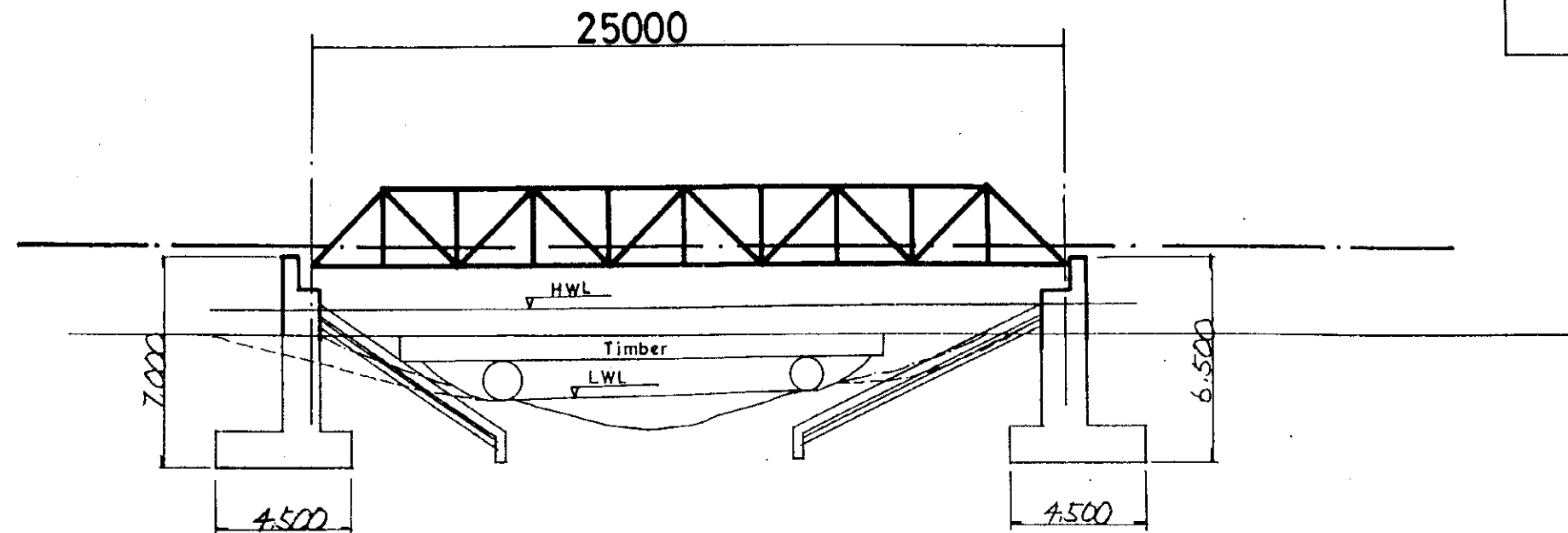
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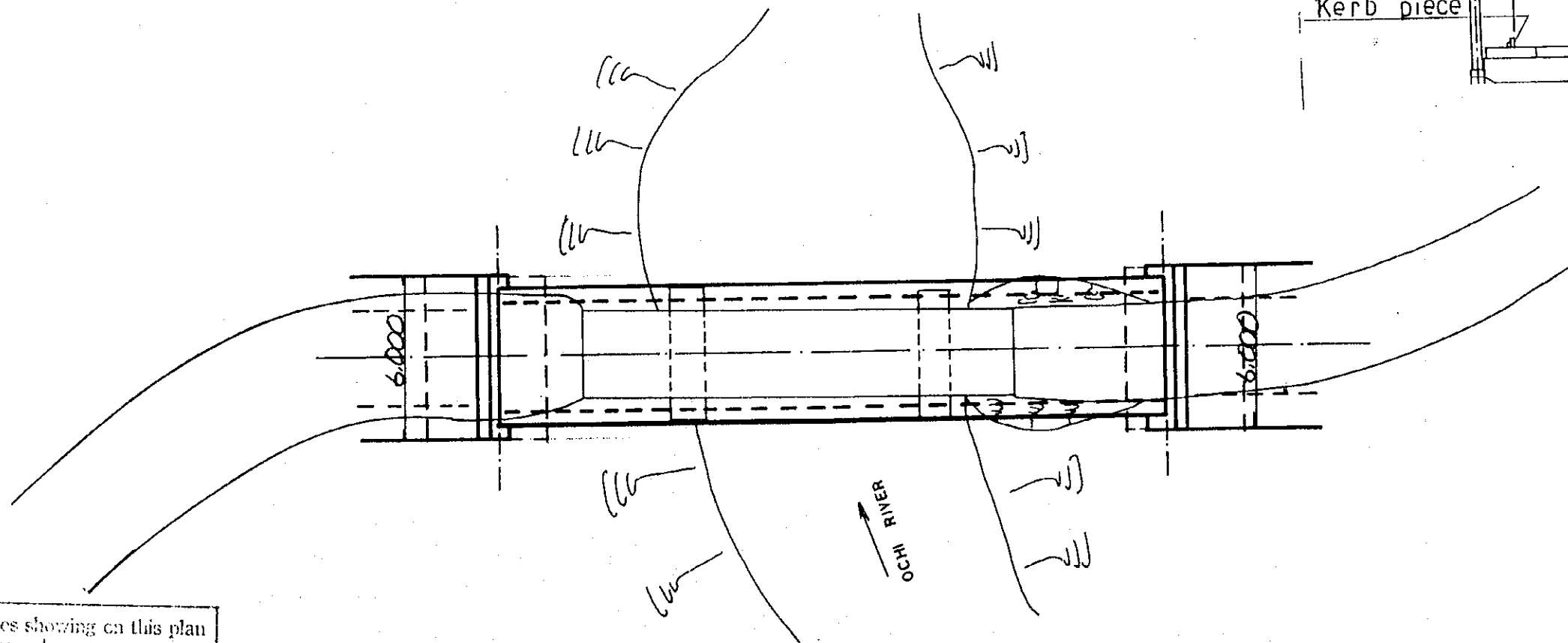
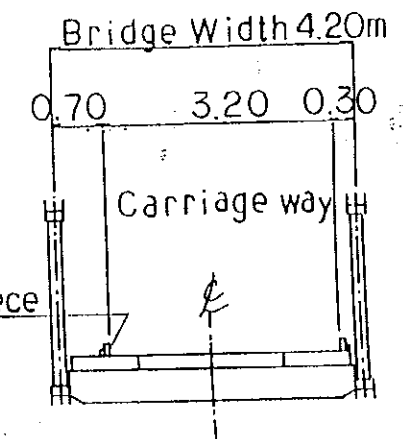
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Substructures shall be designed based on geological study.



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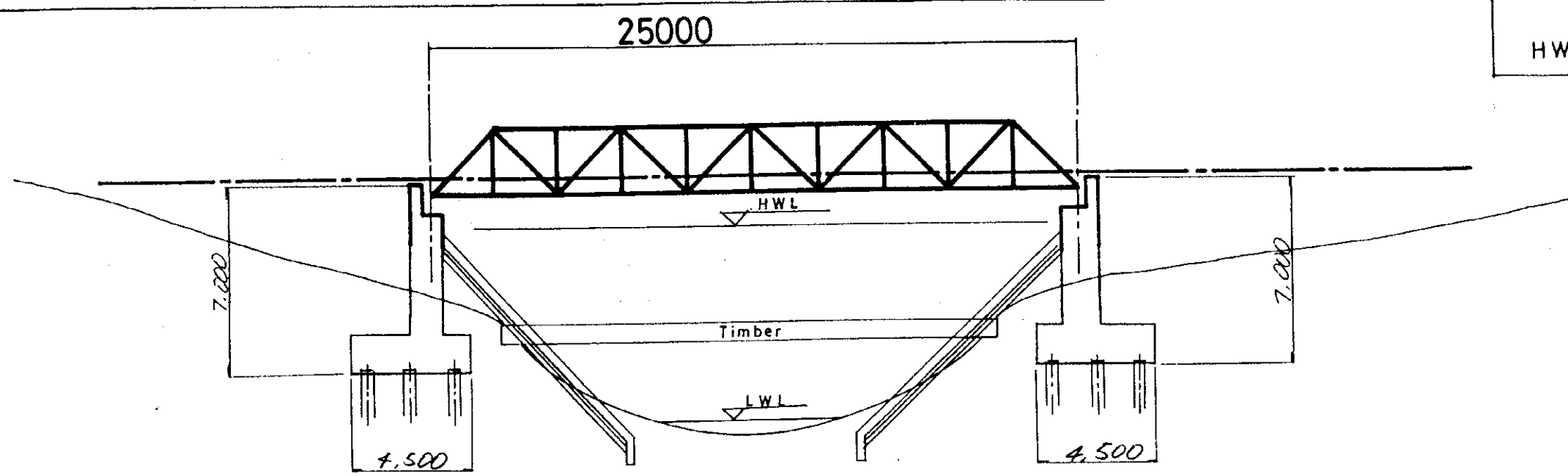


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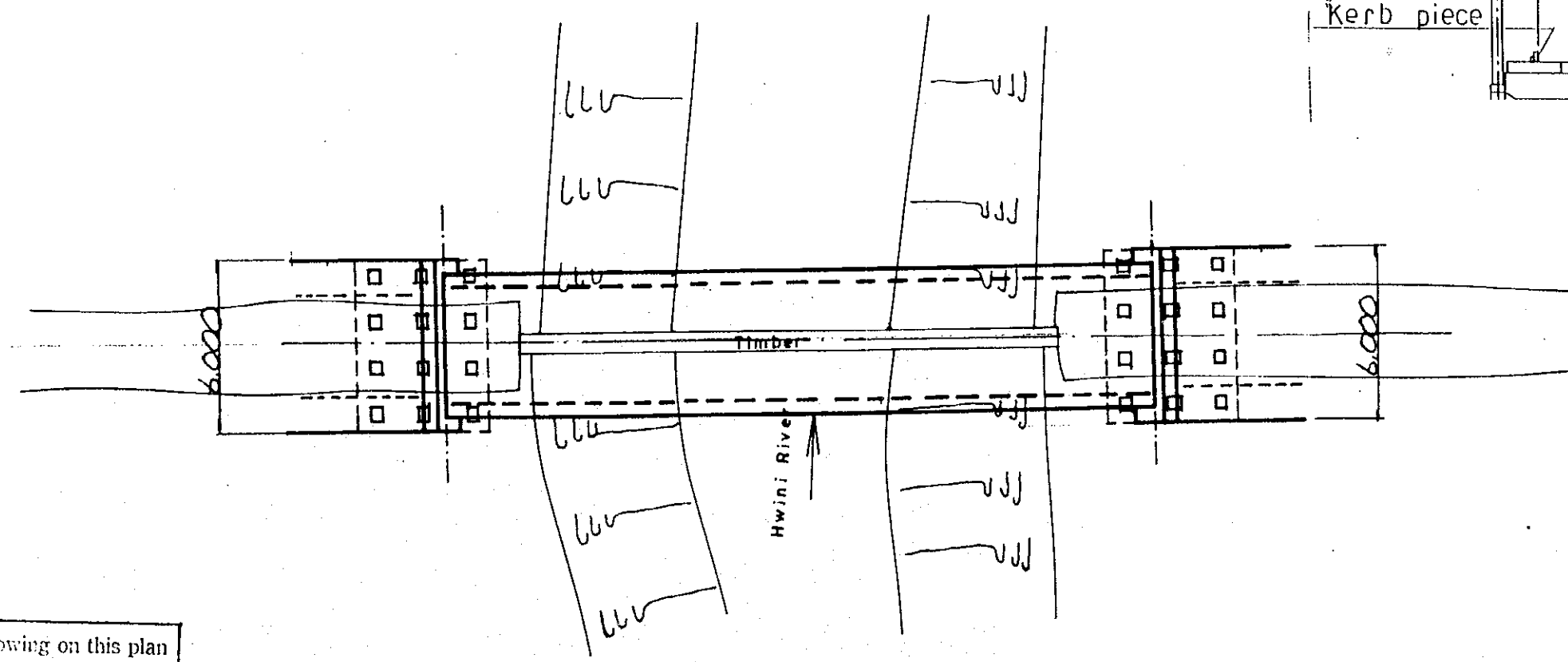
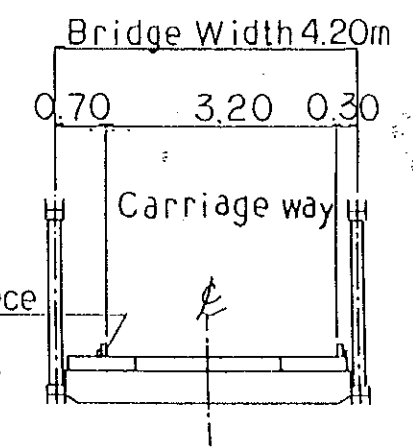


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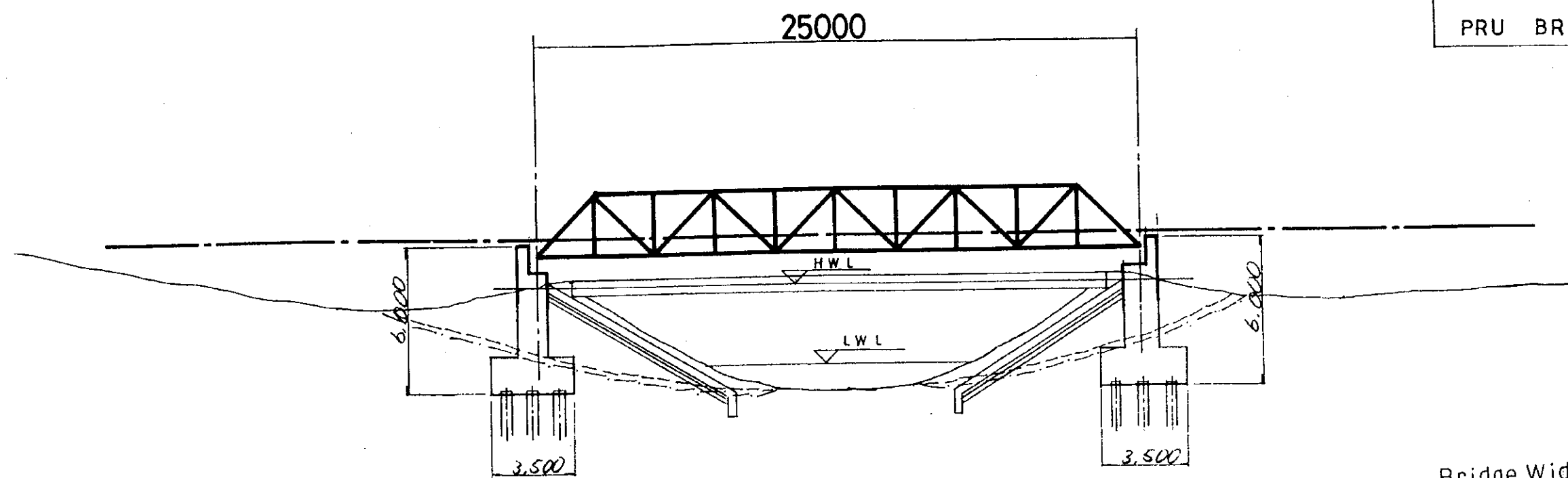


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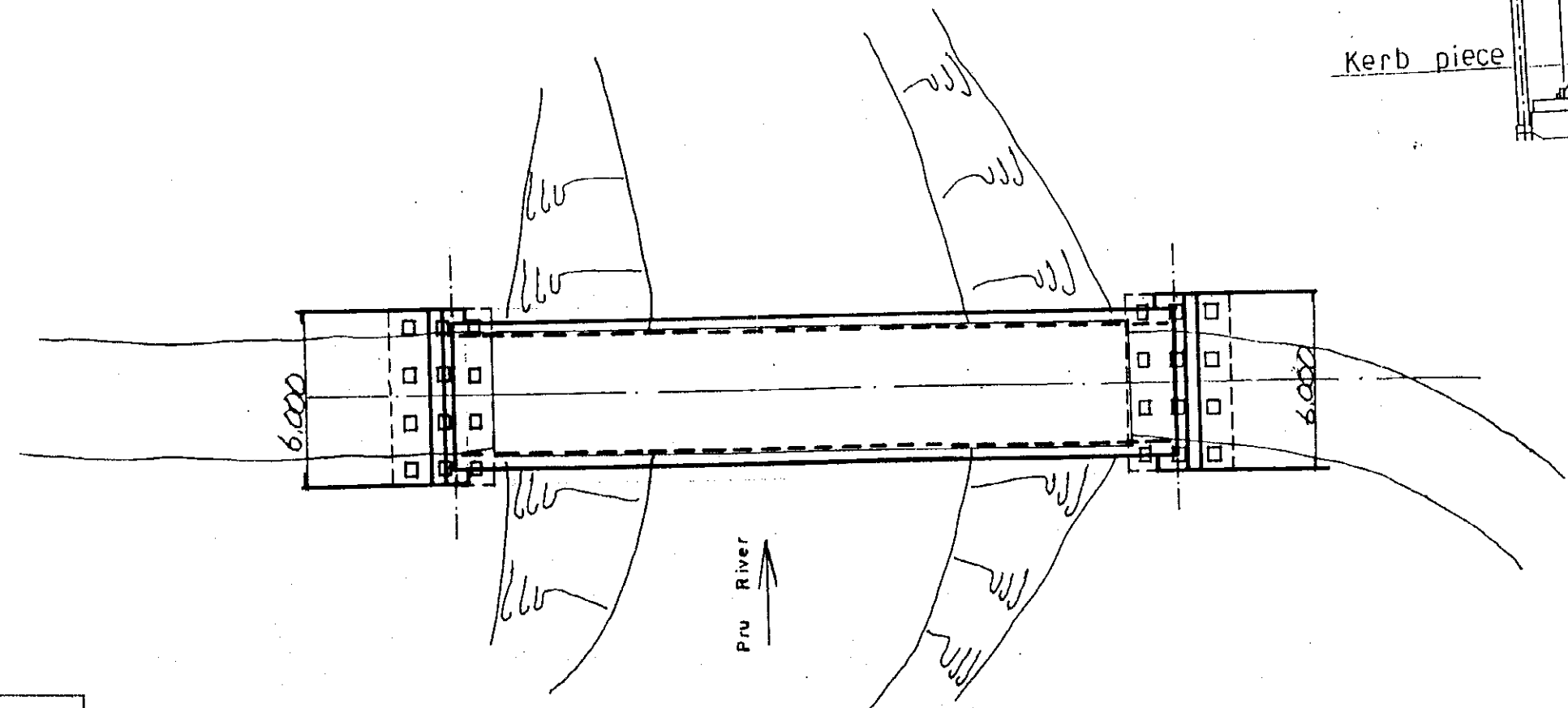
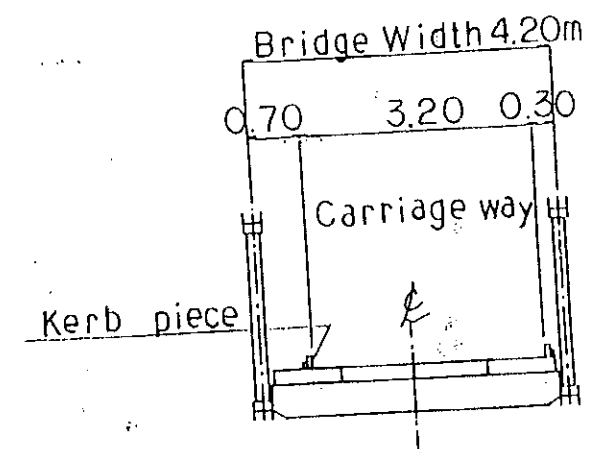


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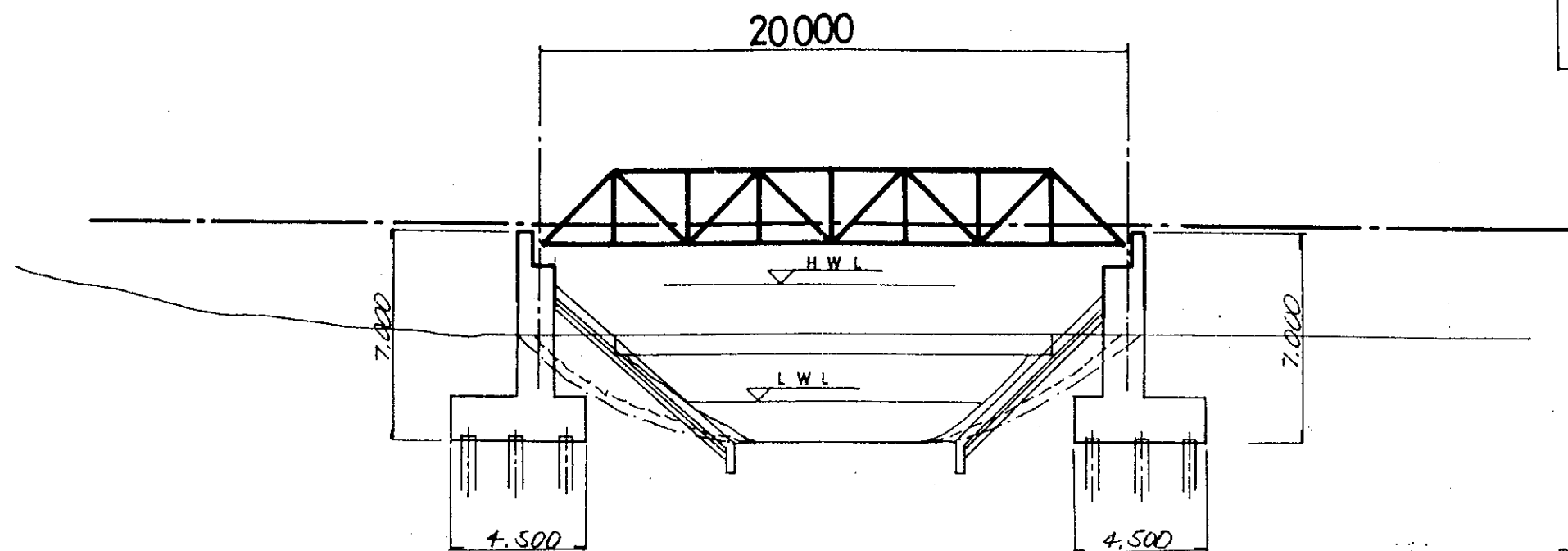


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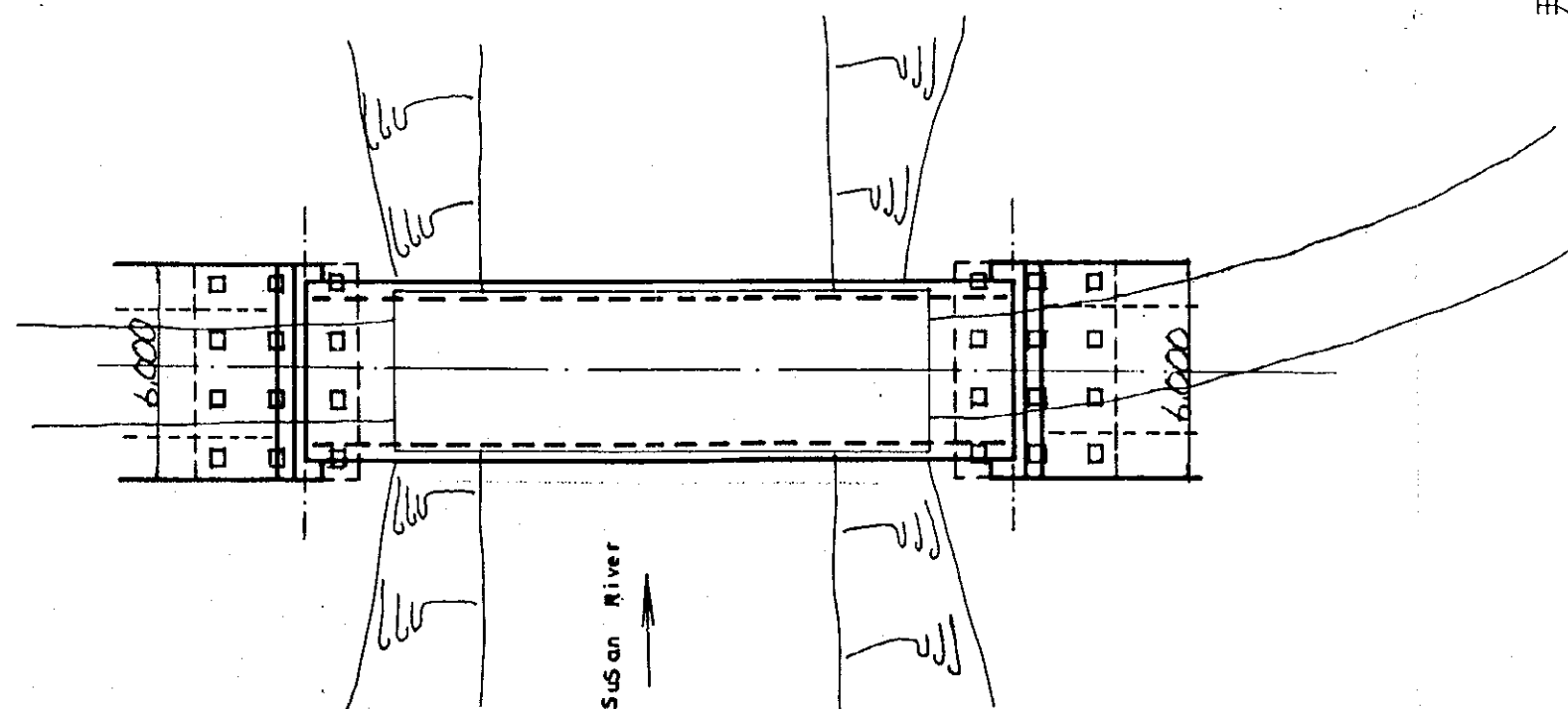
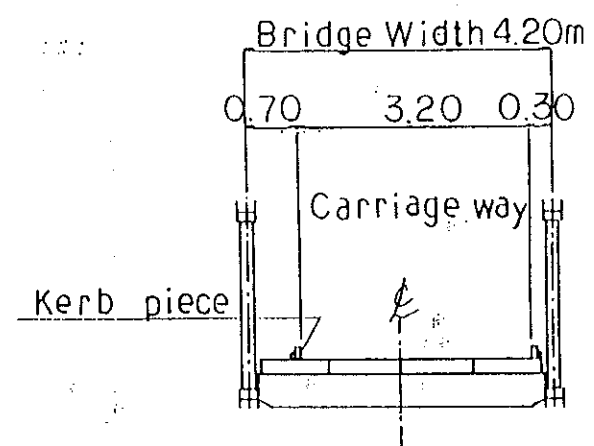


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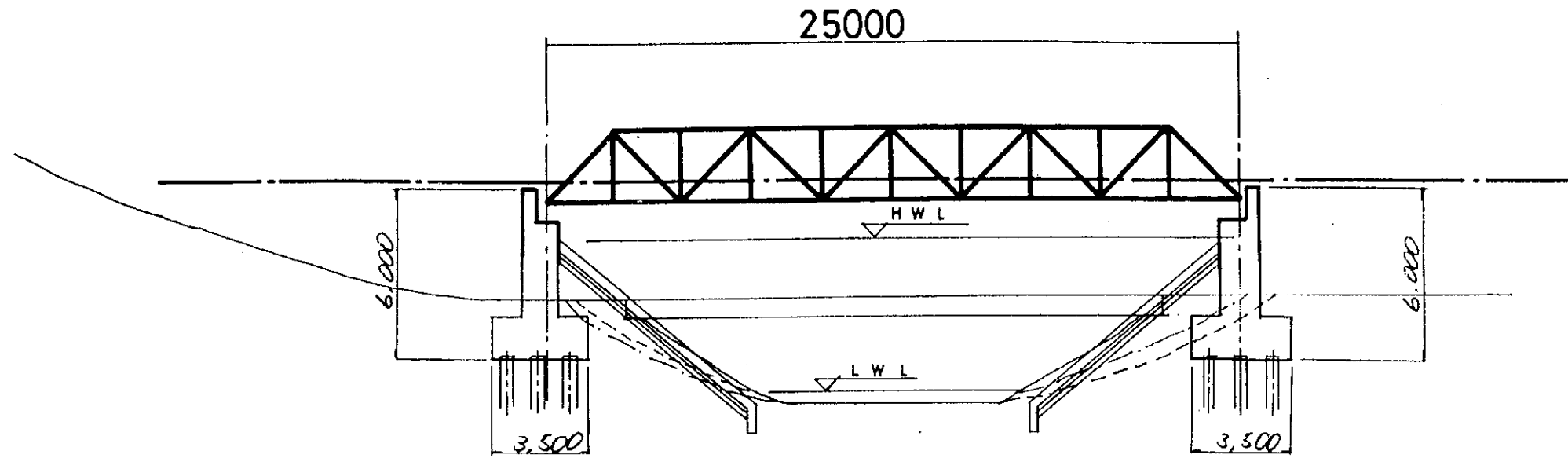


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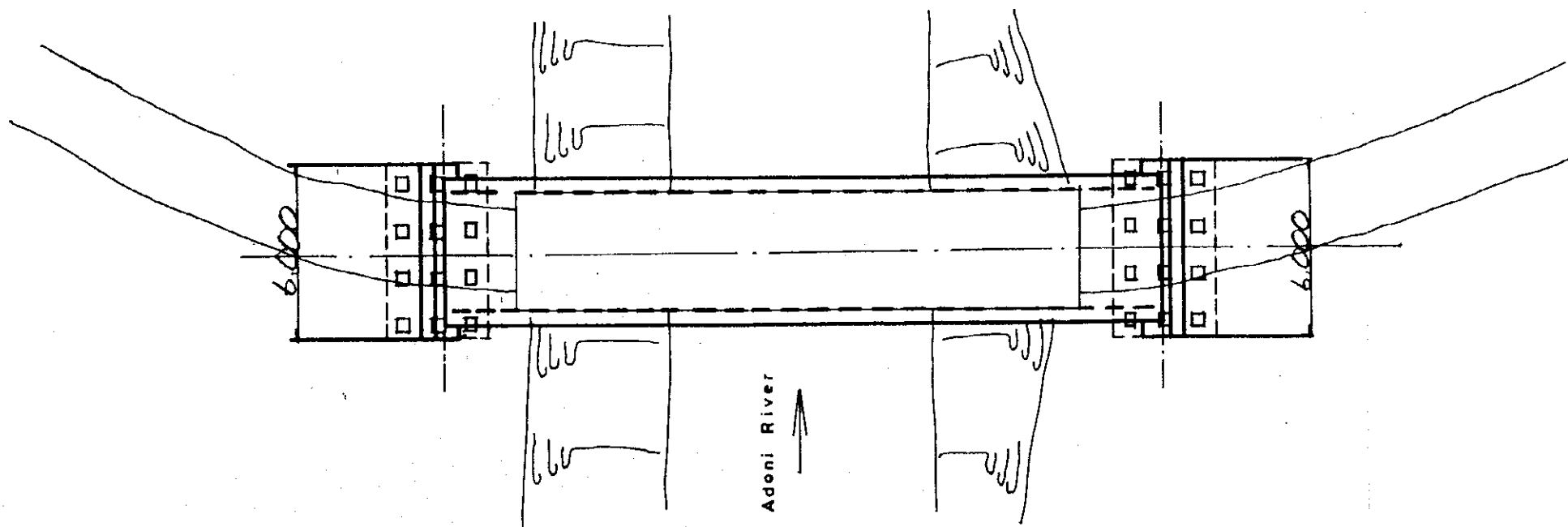
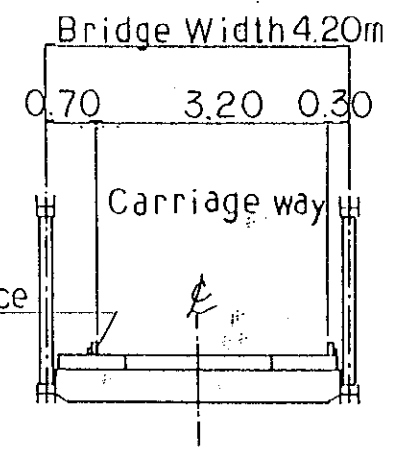


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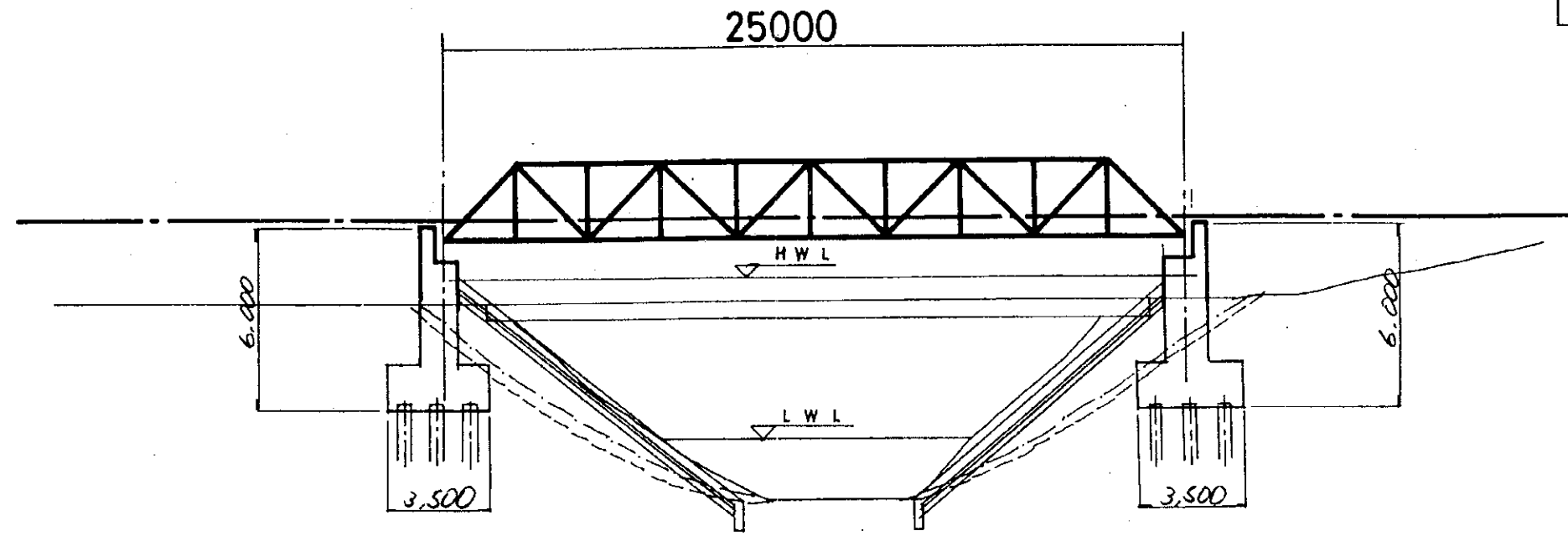


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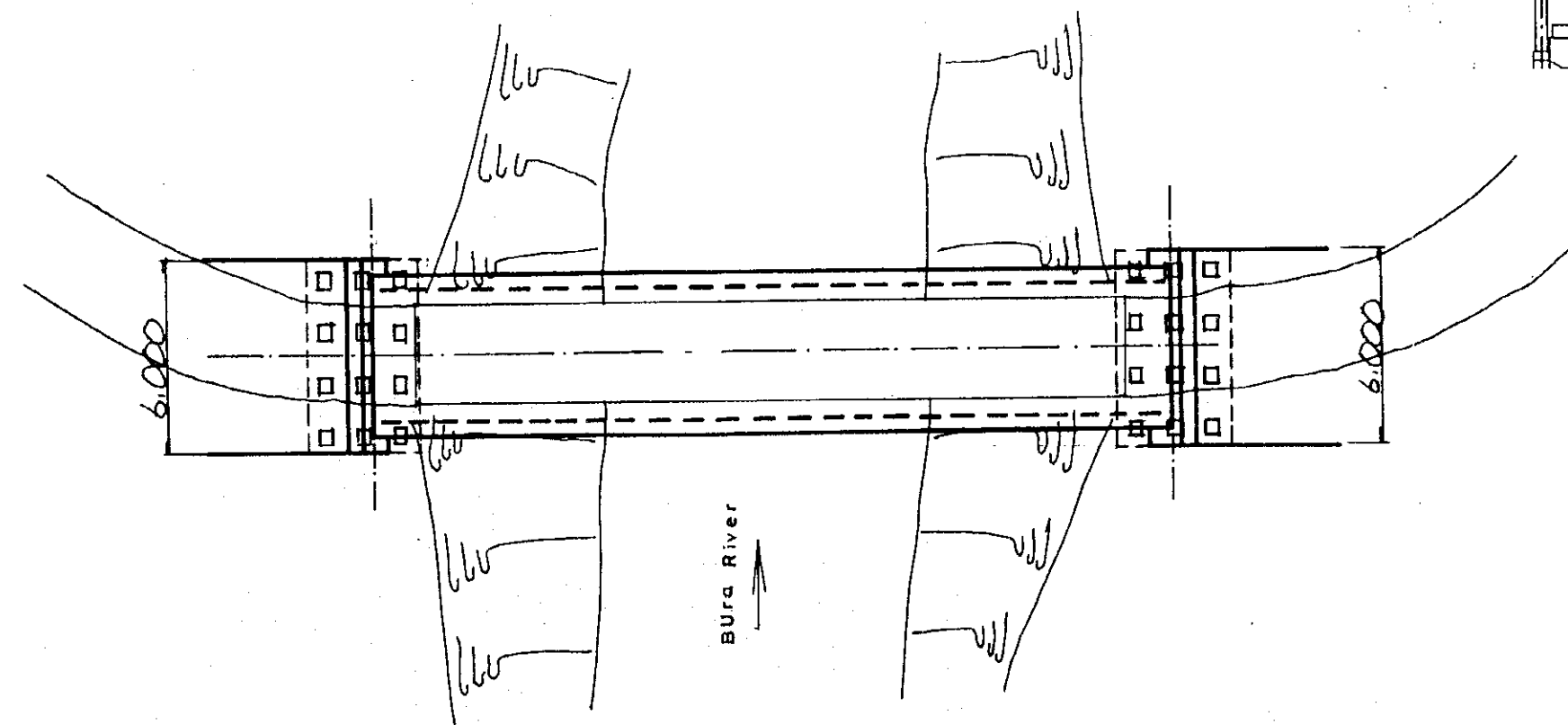
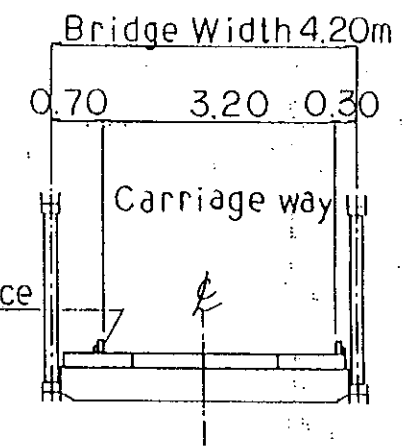


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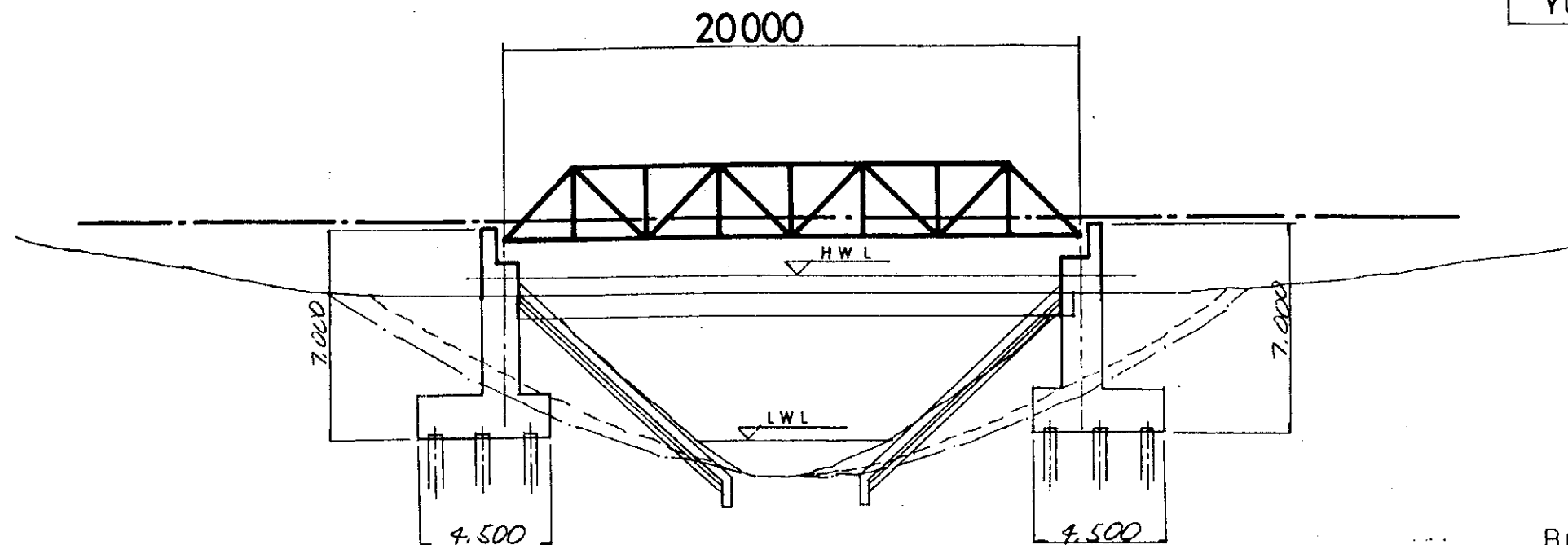


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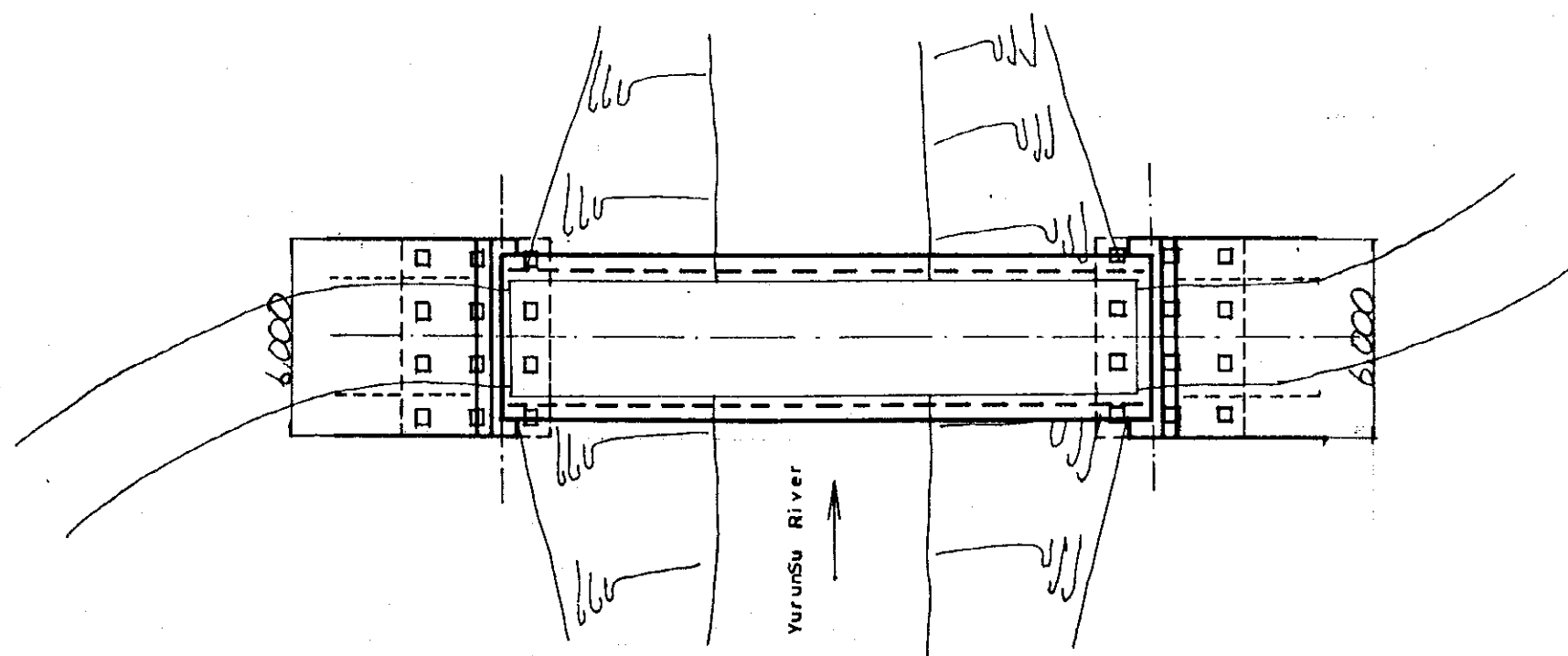
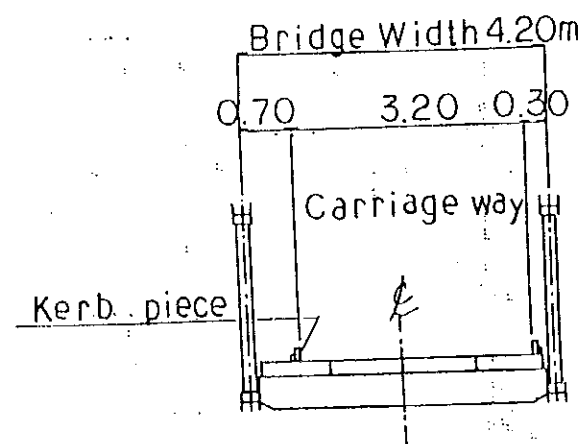


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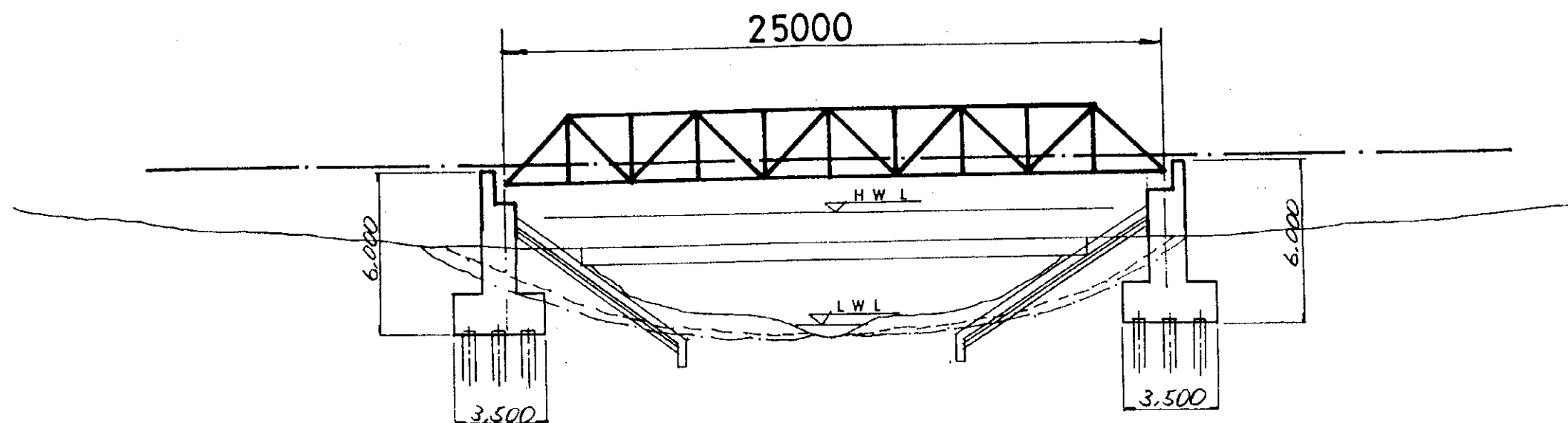


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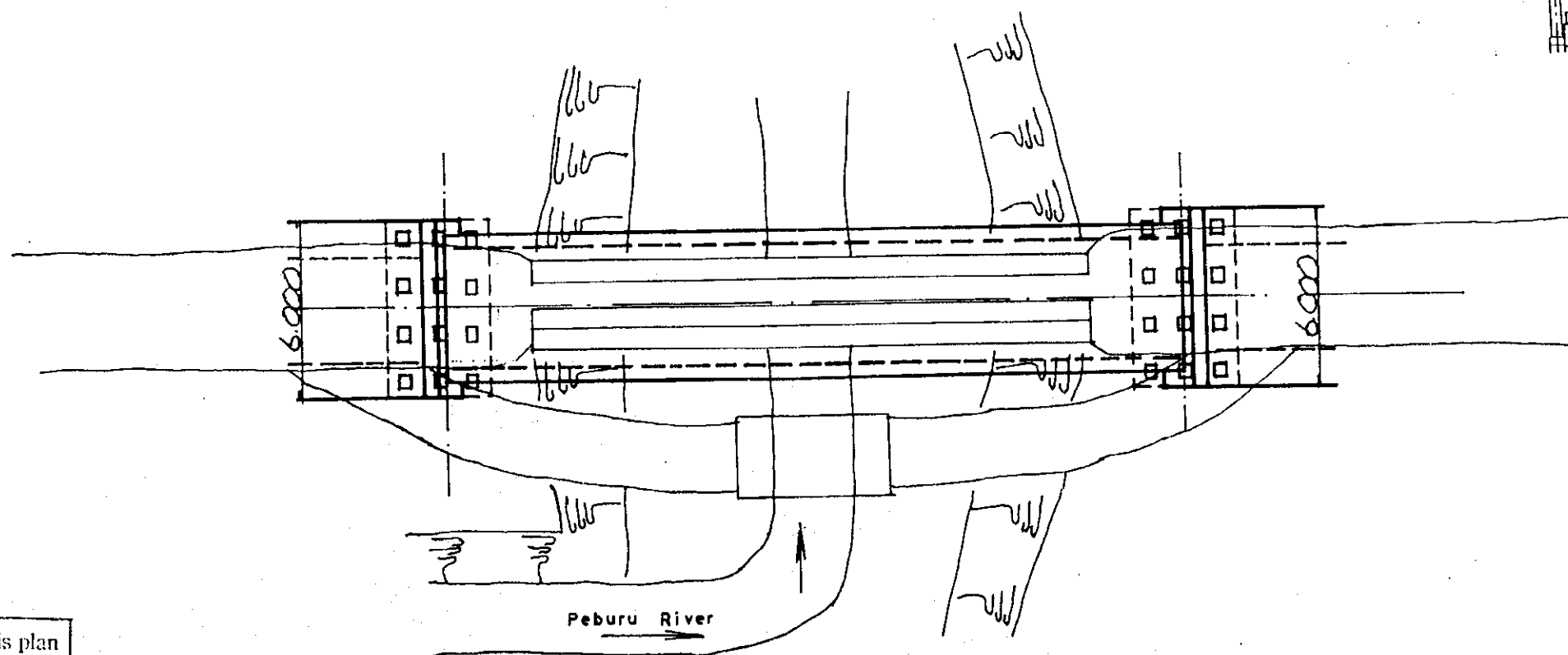
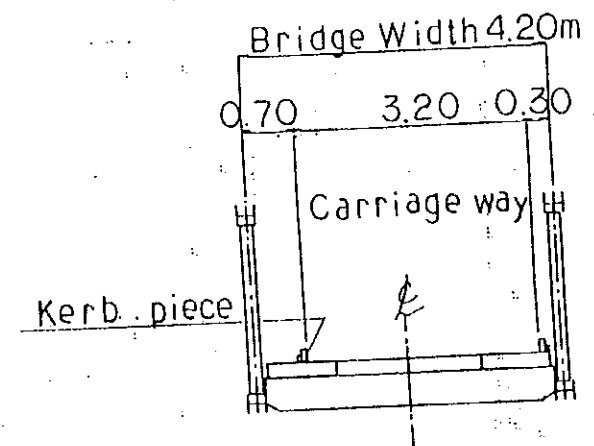


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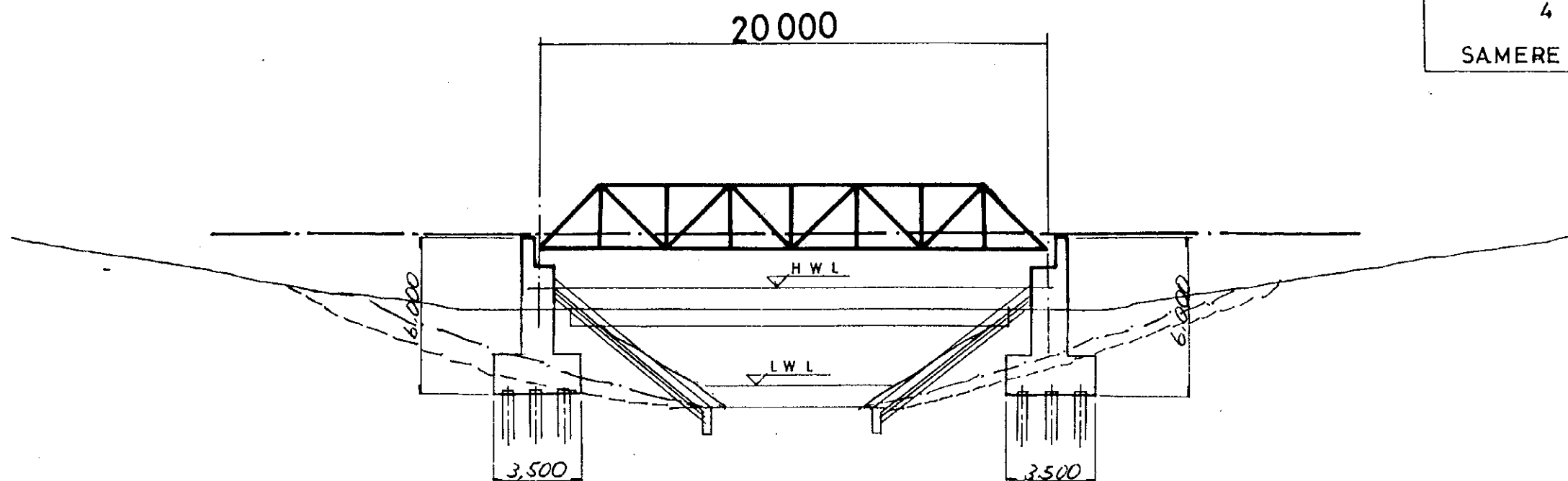


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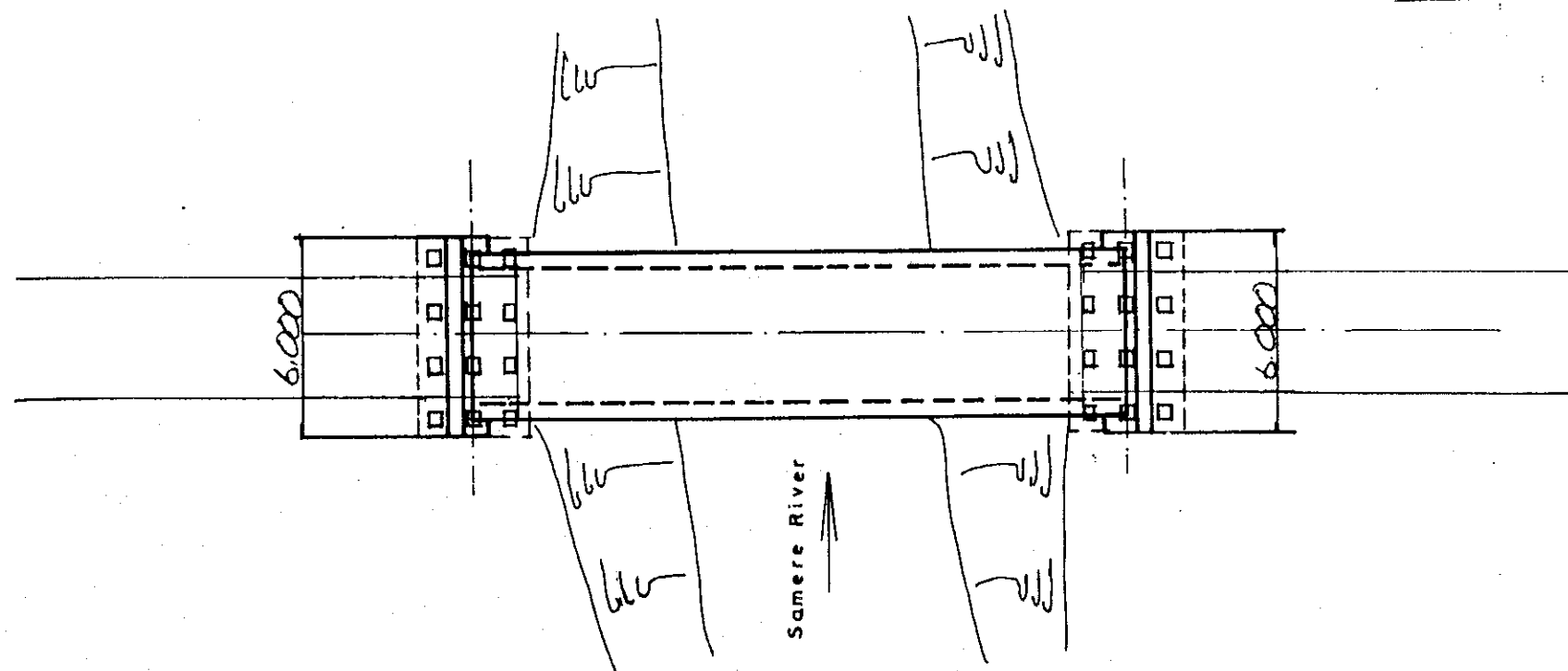
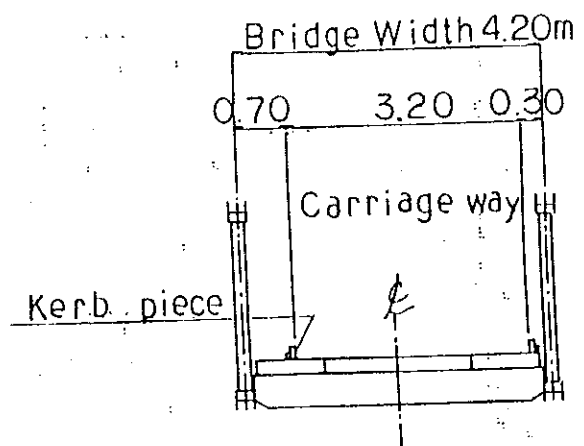


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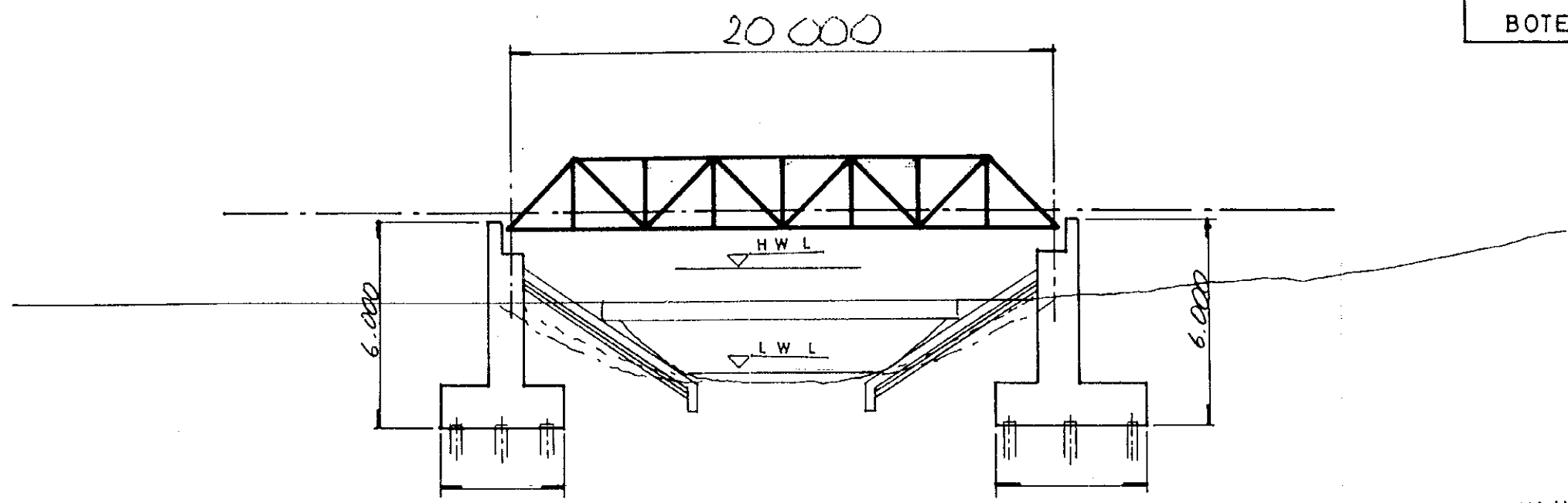


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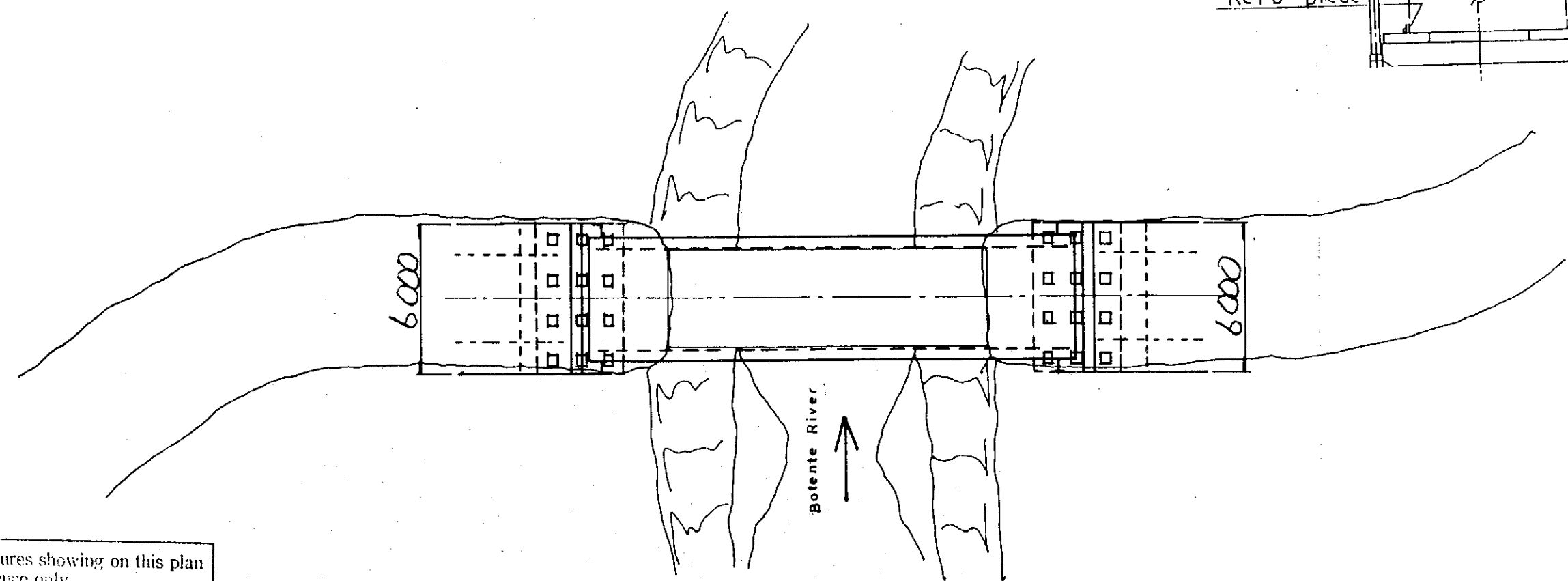
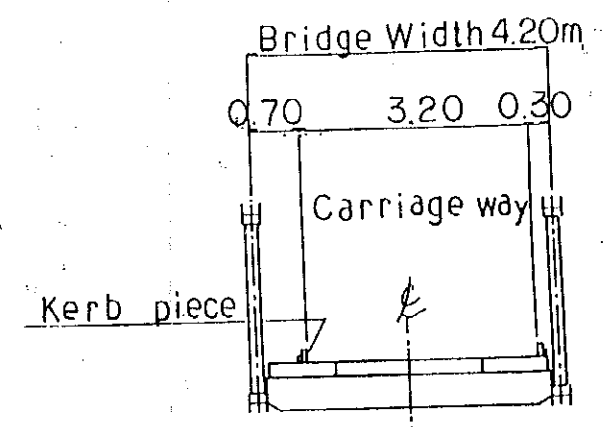


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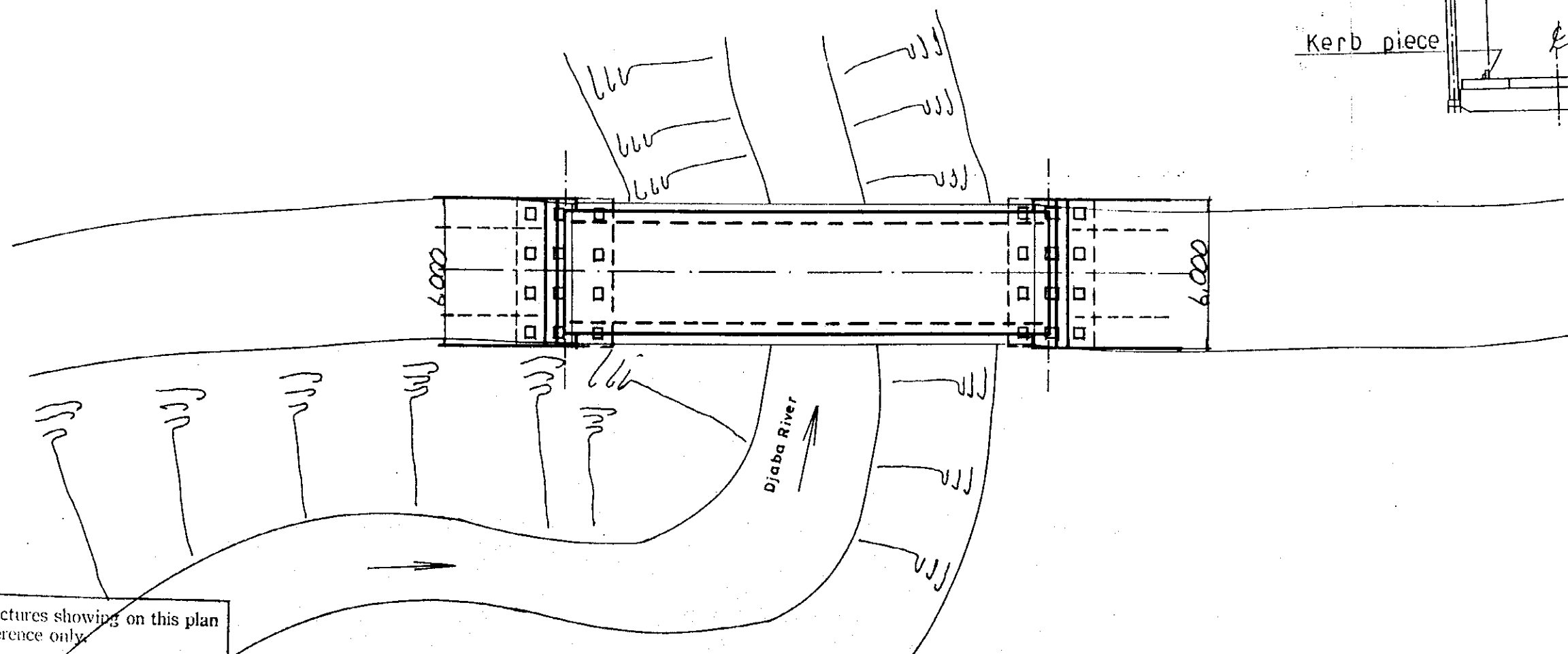
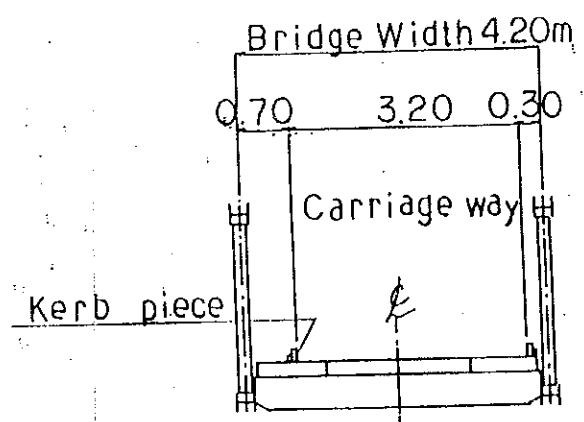
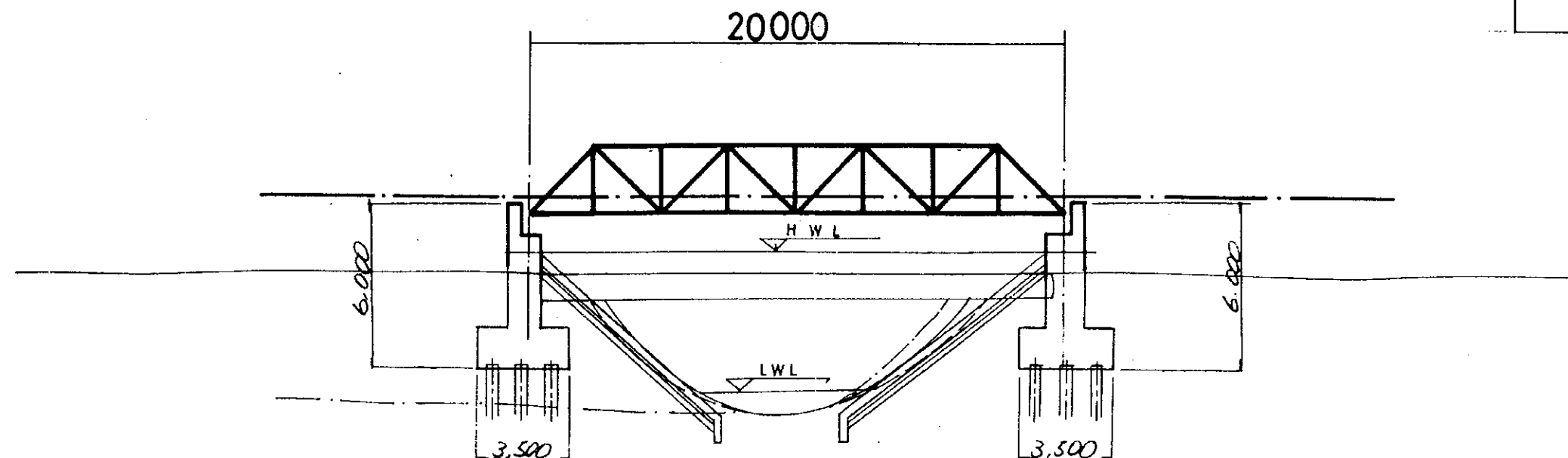


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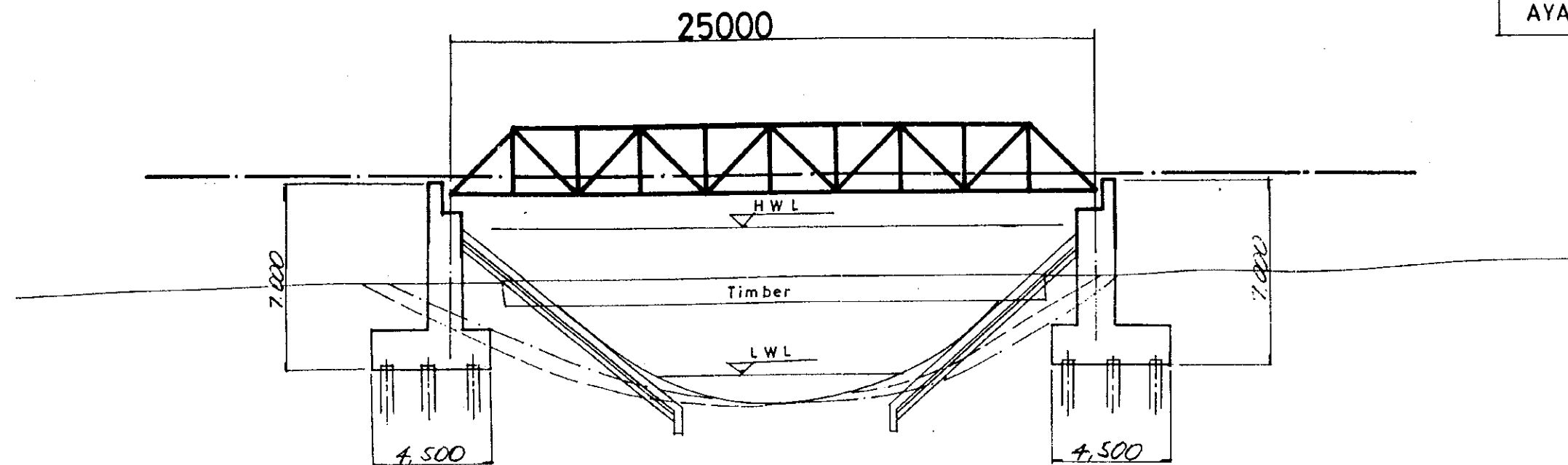


PLAN
Scale 1:200

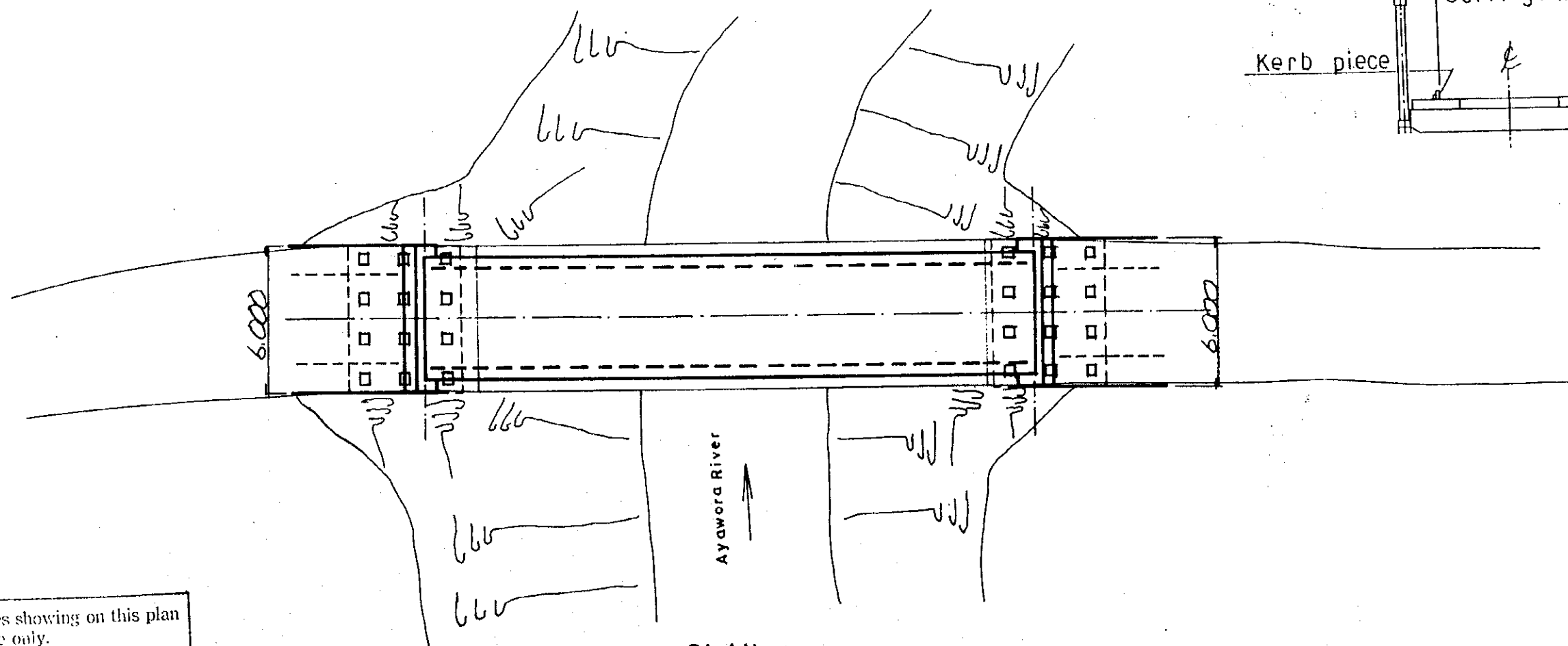
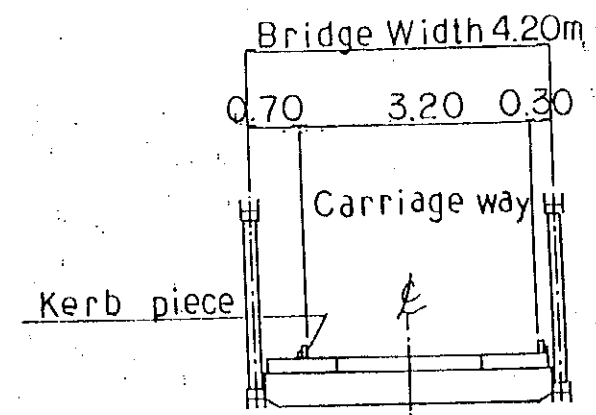
Substructures showing on this plan
are reference only.
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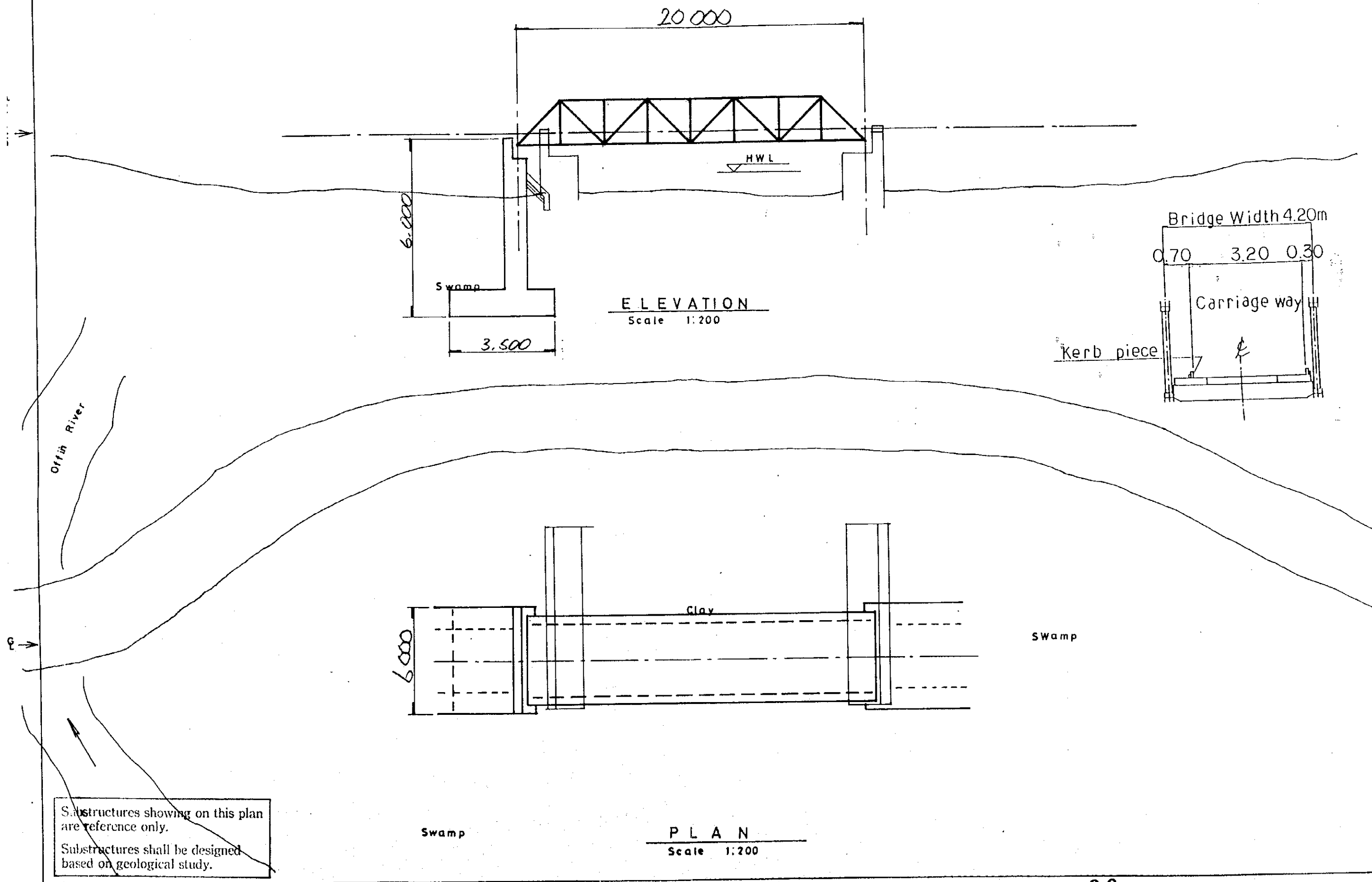


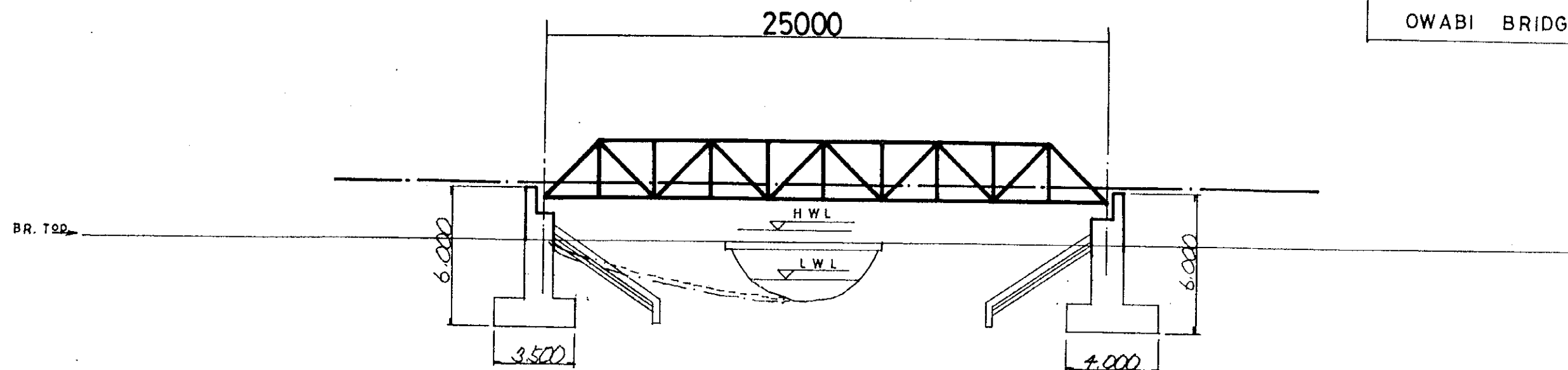
ELEVATION
Scale 1:200



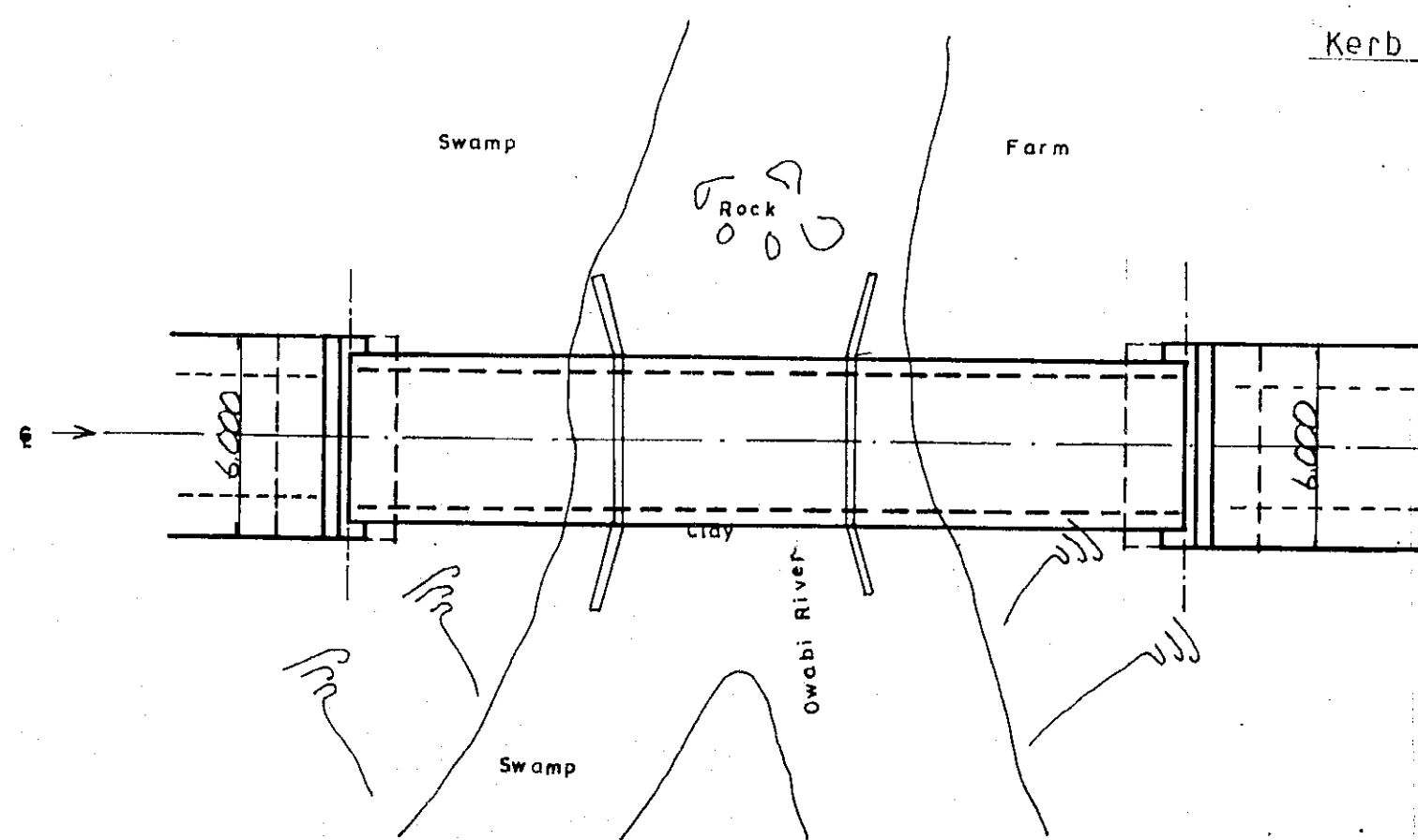
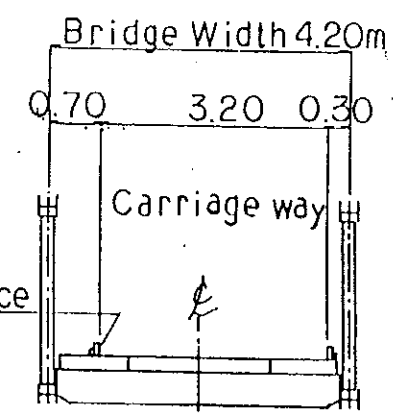
PLAN
Scale 1:200

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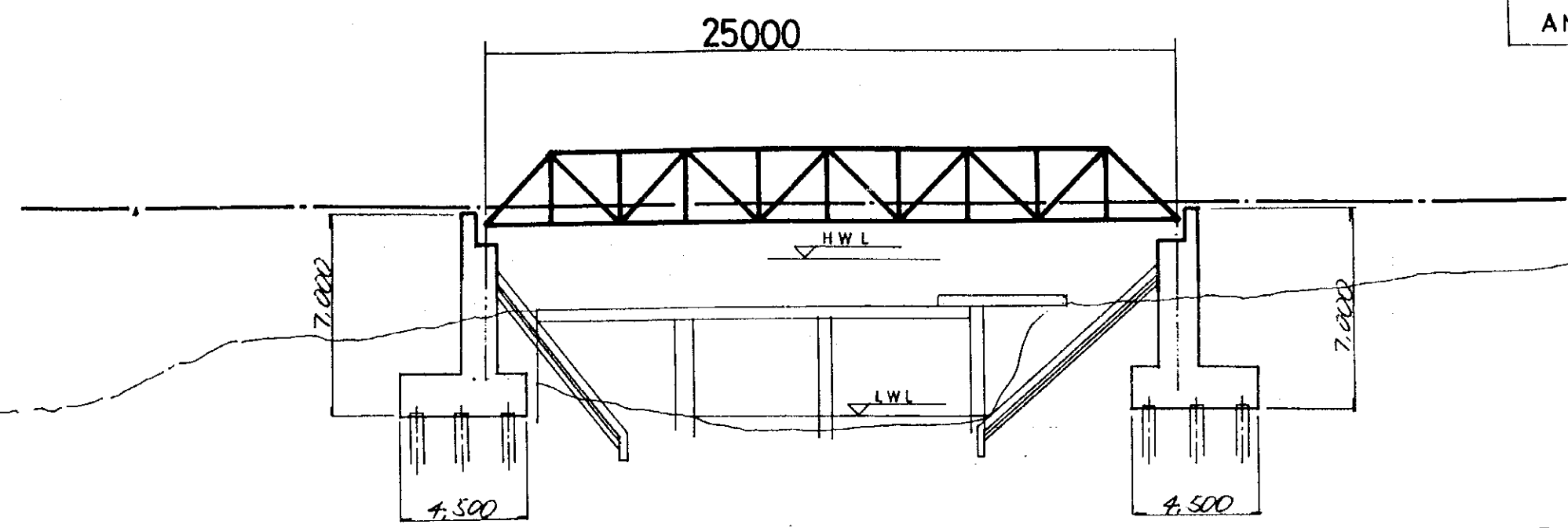


ELEVATION
Scale 1:200

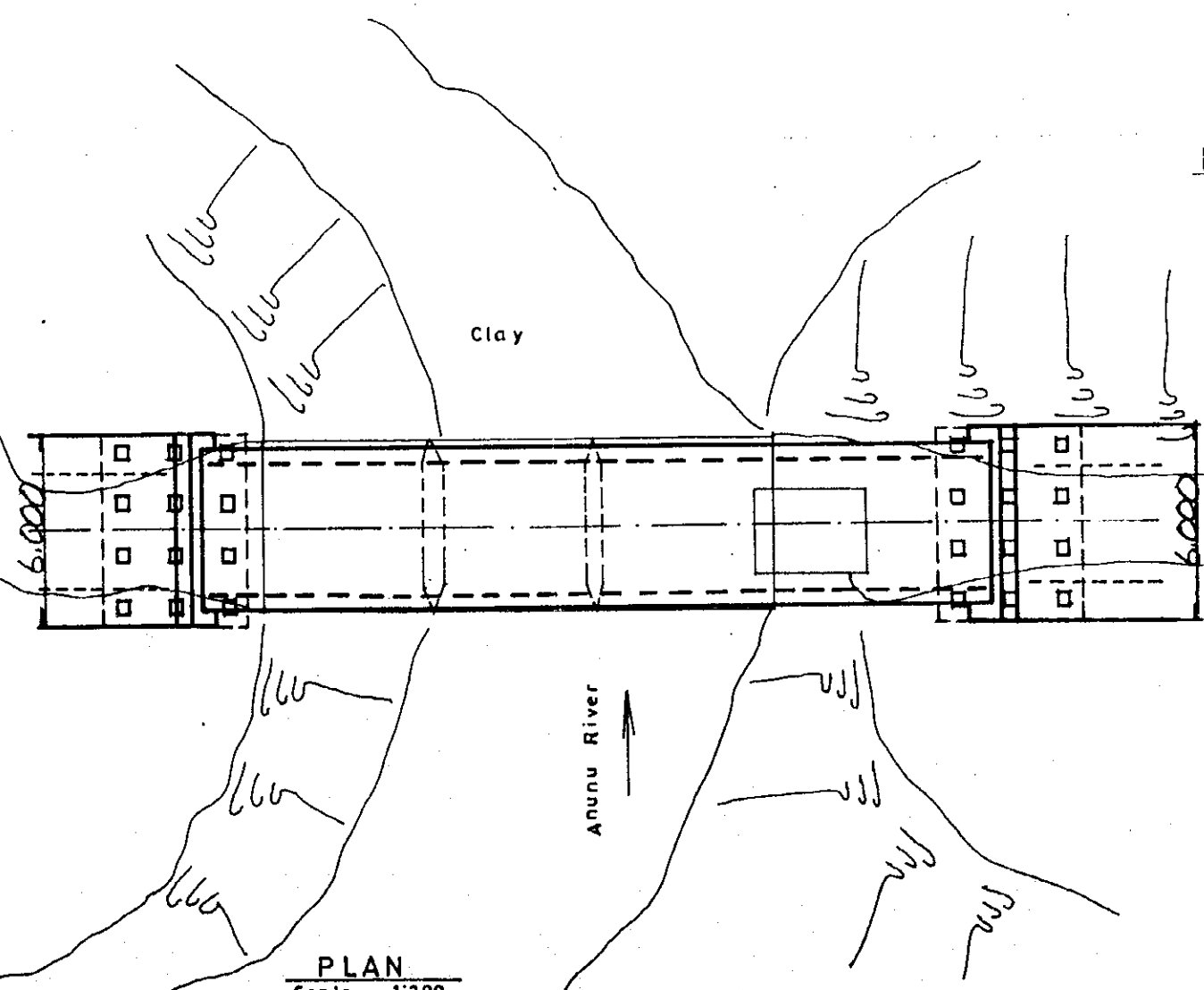
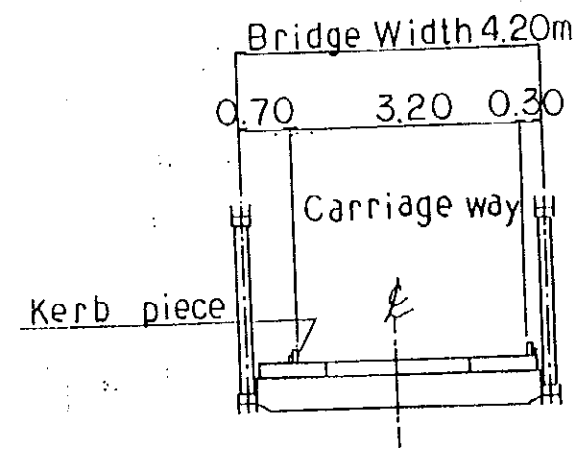


PLAN
Scale 1:200

Substructures showing on this plan
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based on geological study.

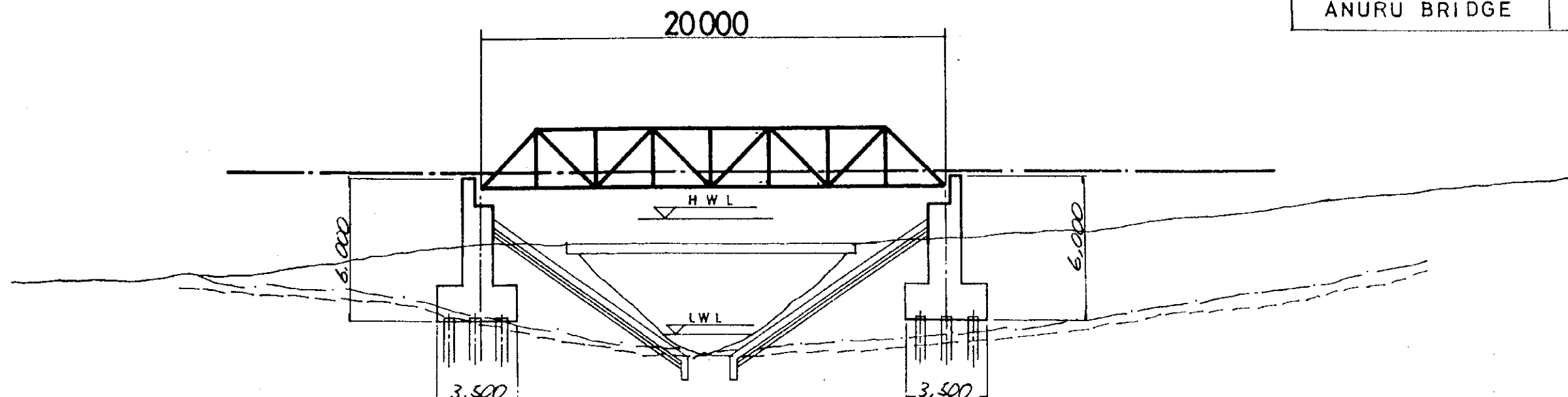


ELEVATION
Scale 1:200



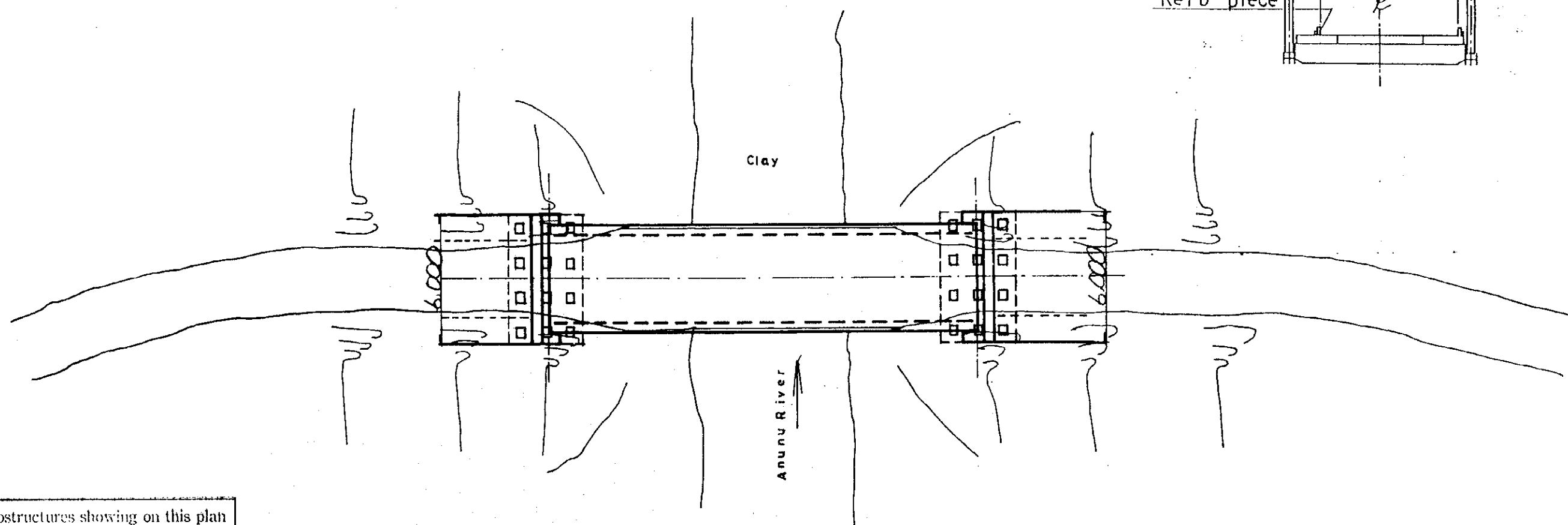
PLAN
Scale 1:200

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ELEVATION

Scale 1:200



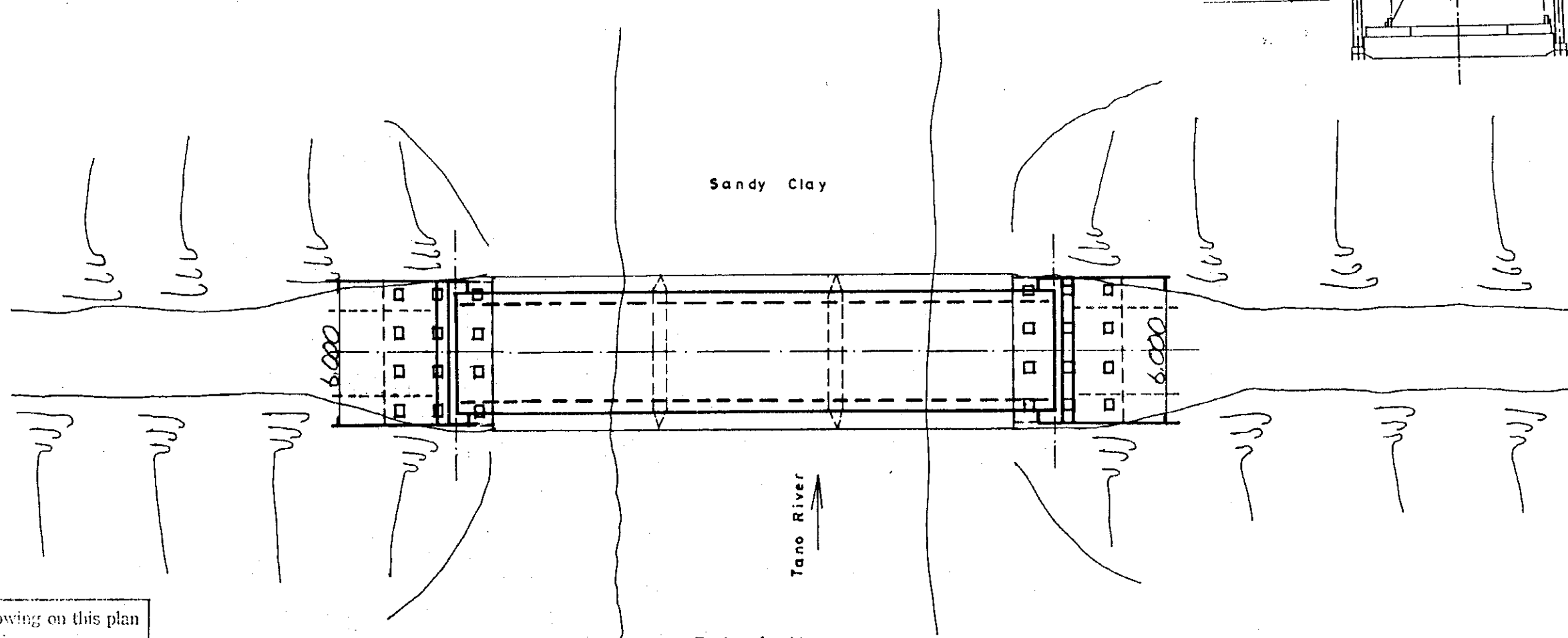
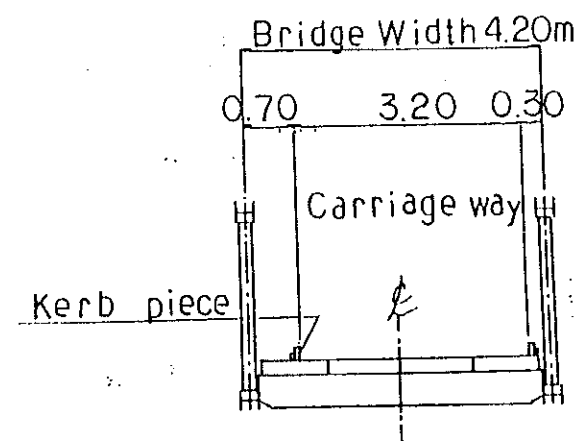
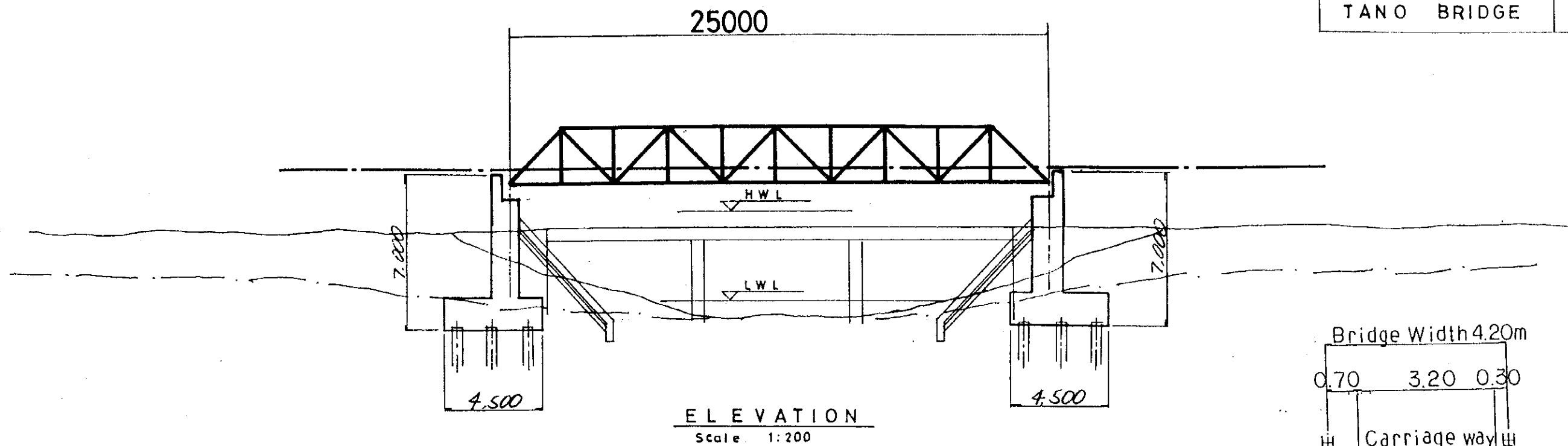
P L A N

Scale 1:200

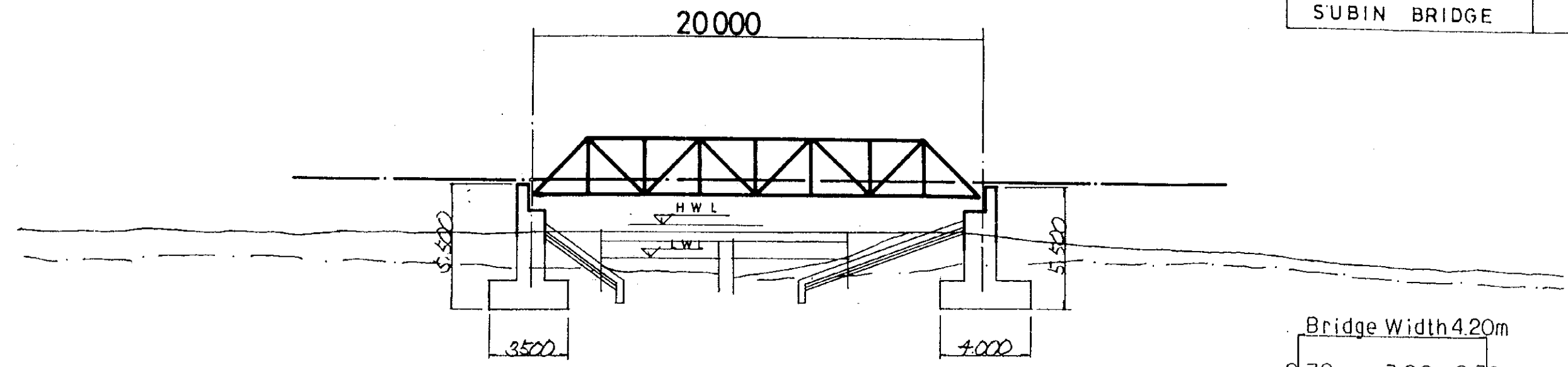
Substructures showing on this plan
are reference only.
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based on geological study.

BR. TOP
↓

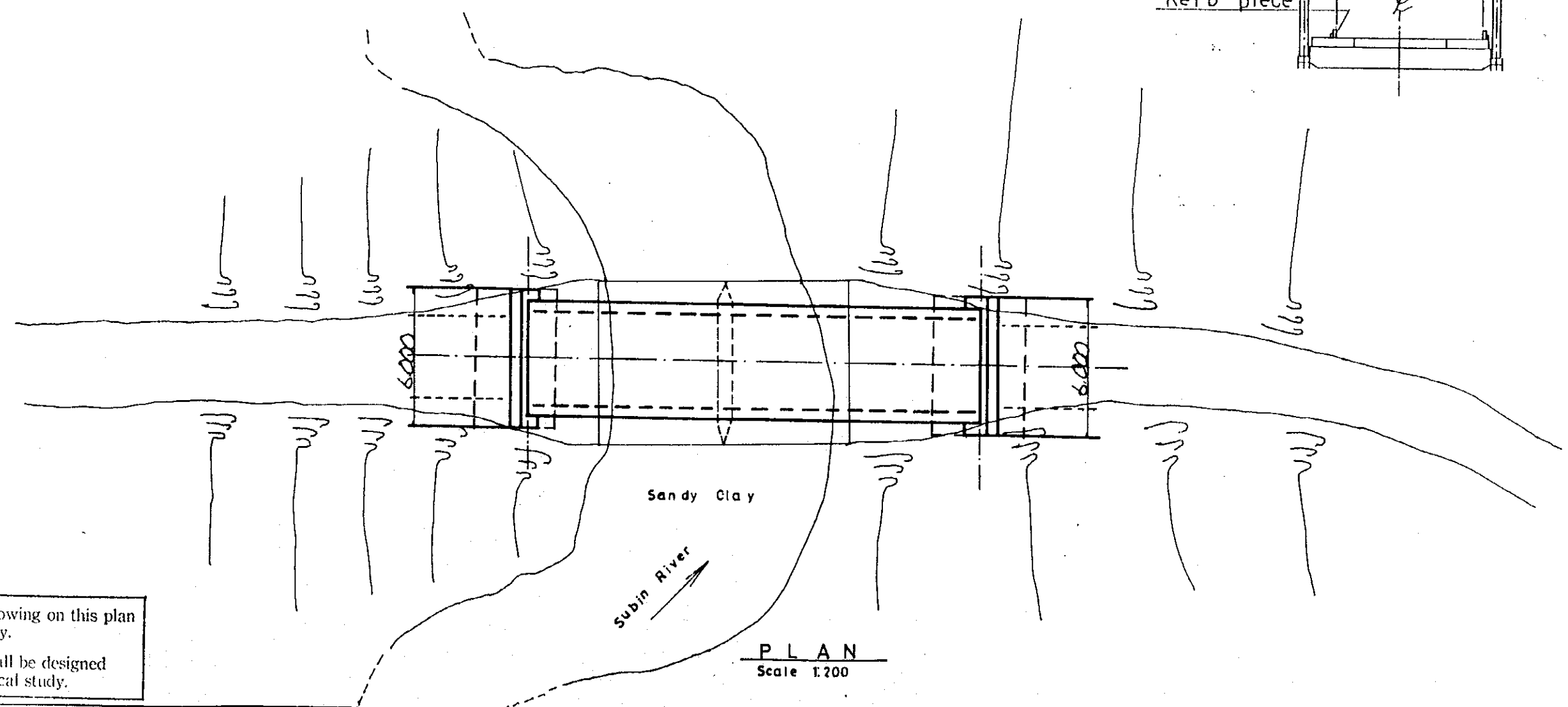
↓



Substructures showing on this plan
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based on geological study.

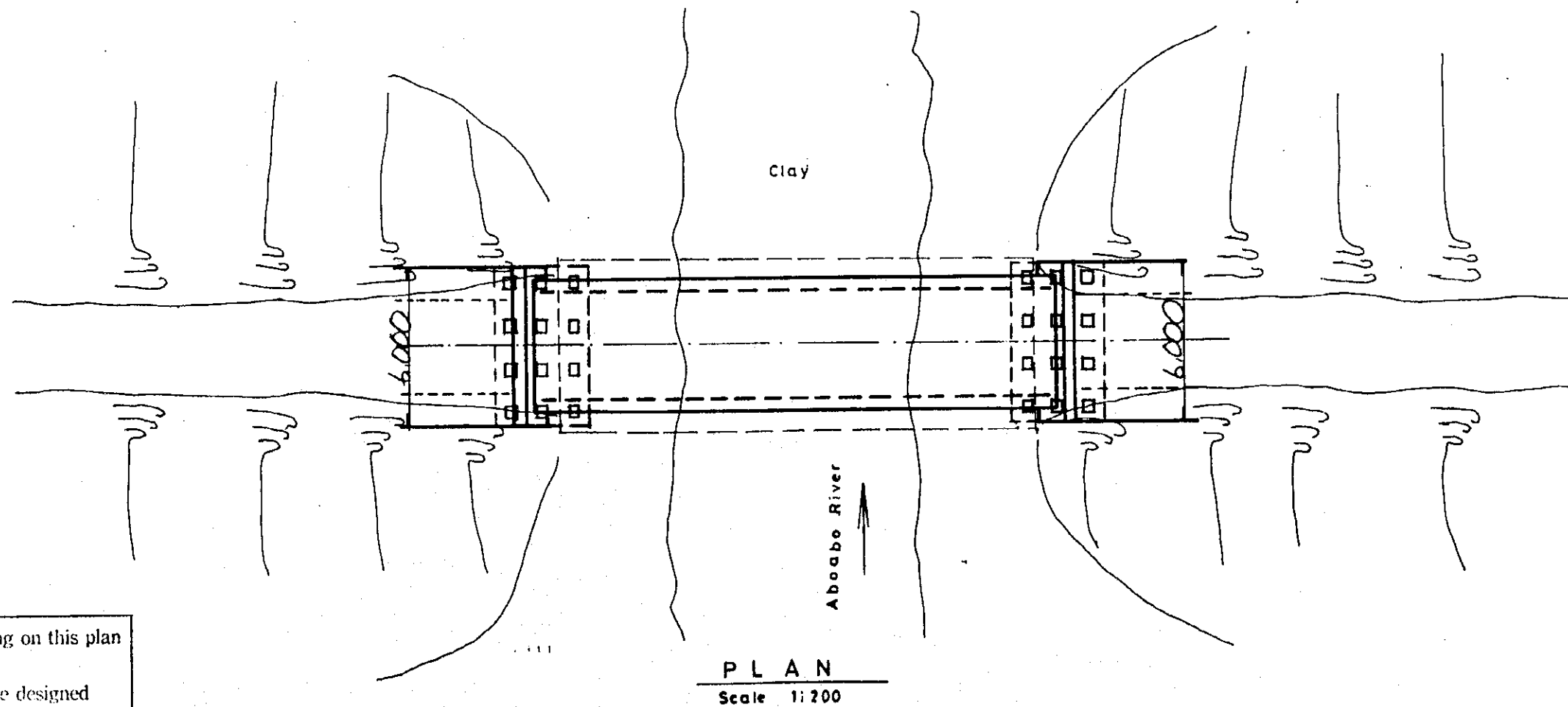
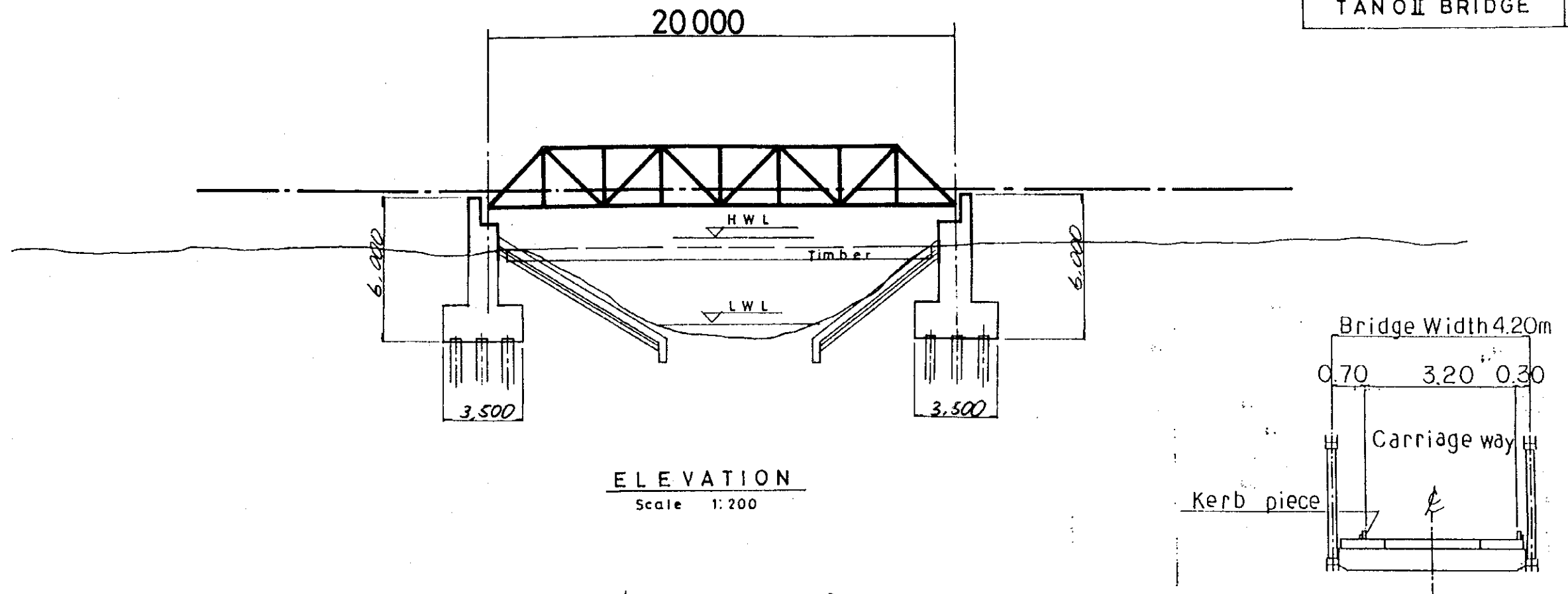


ELEVATION
Scale 1:200



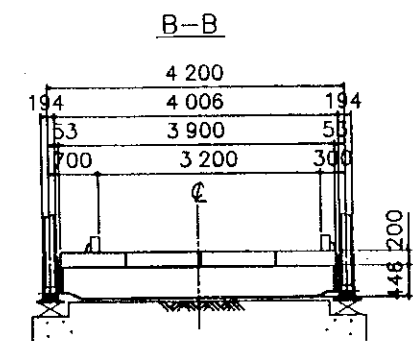
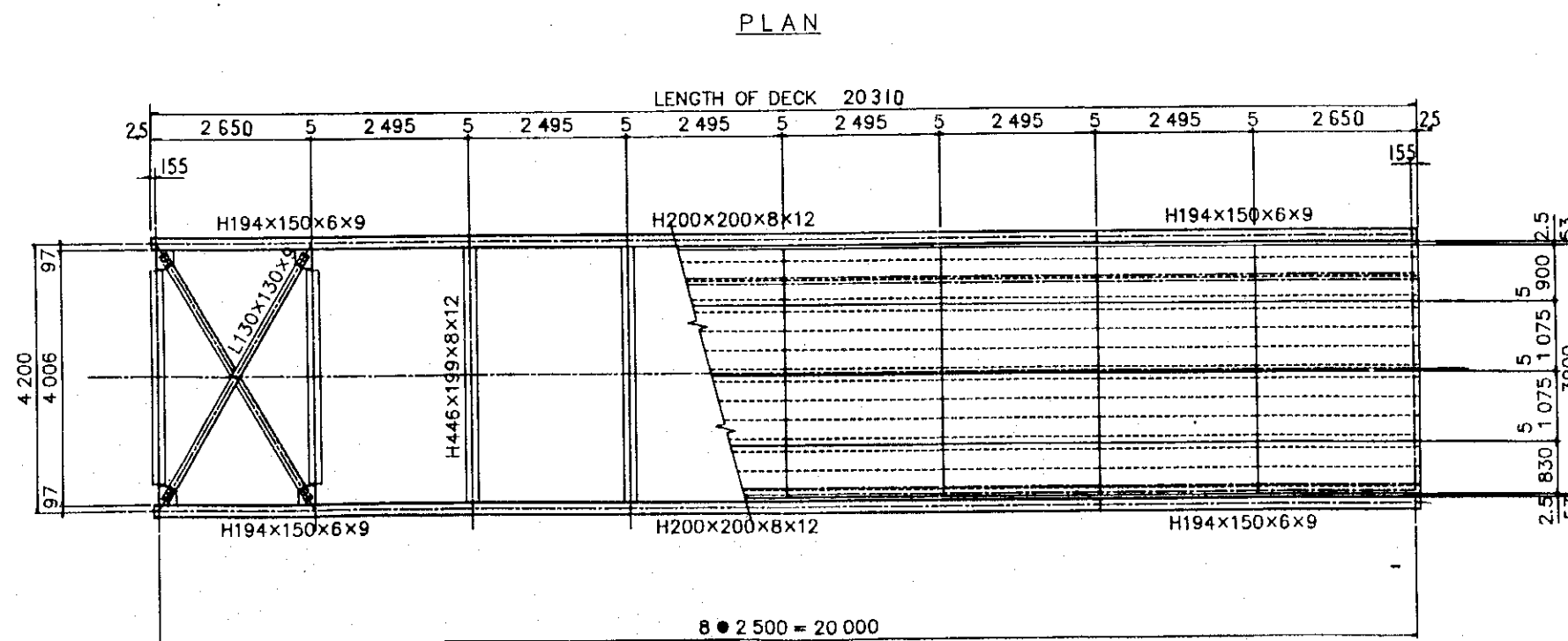
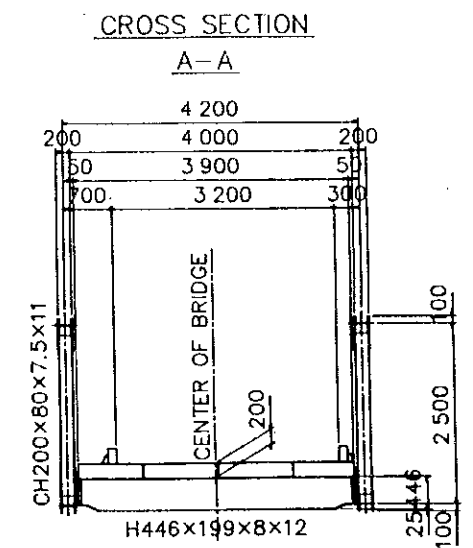
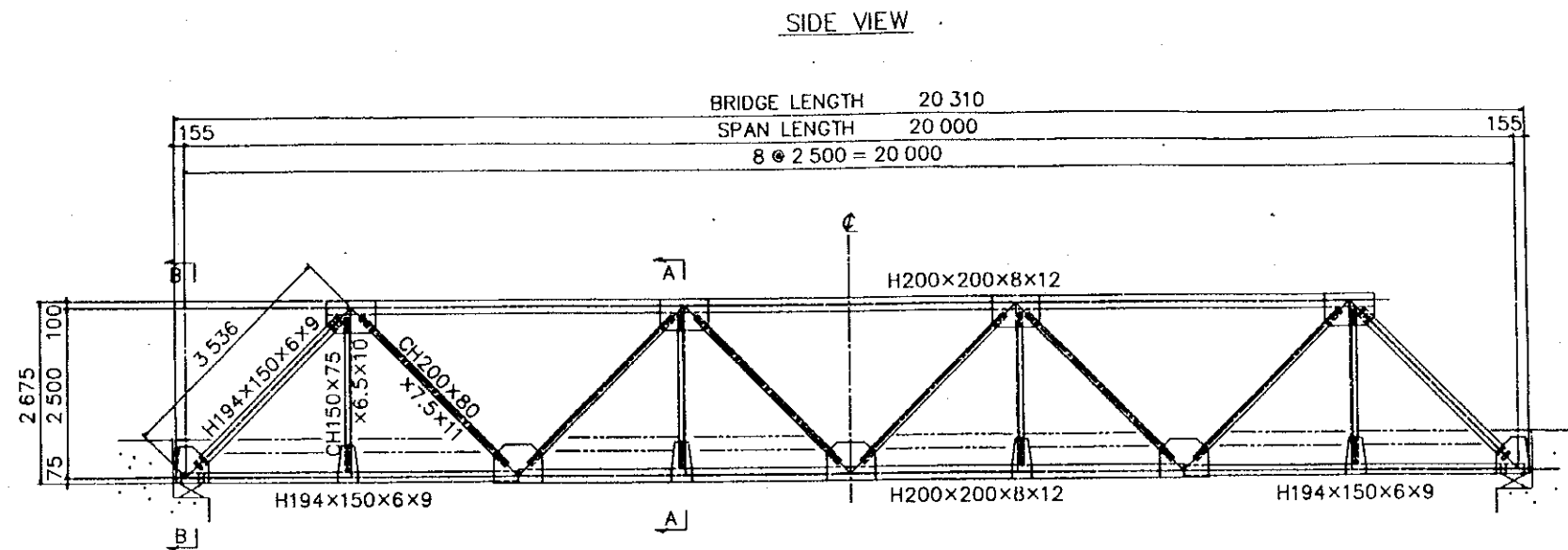
P L A N
Scale 1:200

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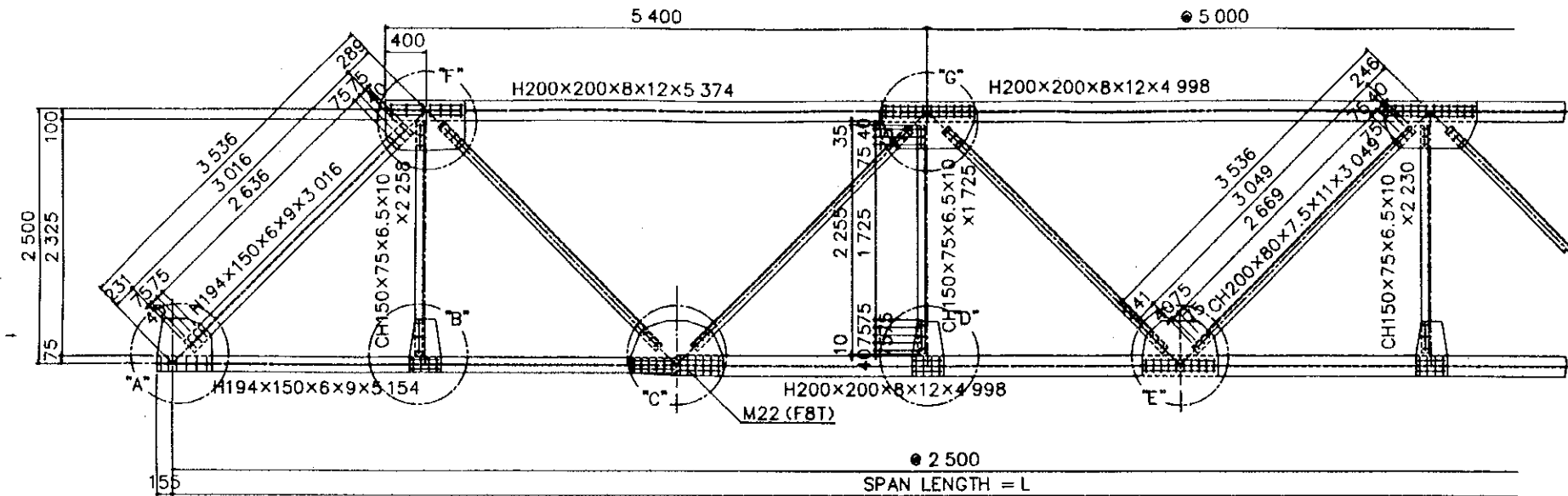
GENERAL ARRANGEMENT SCALE 1:50



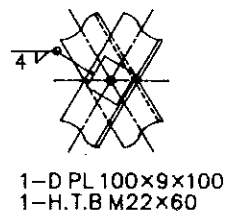
PREFABRICATED STEEL BRIDGE (SPAN 20M) (1/4)

PORTABLE BRIDGE
SUPERSTRUCTURE
20 M PONY TRUSS

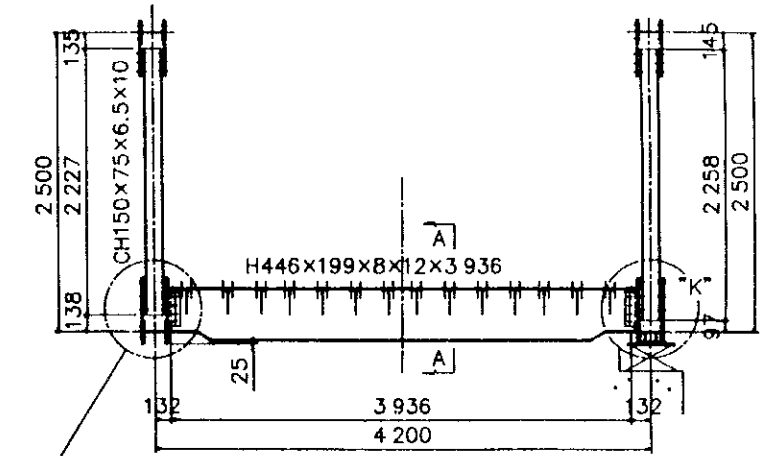
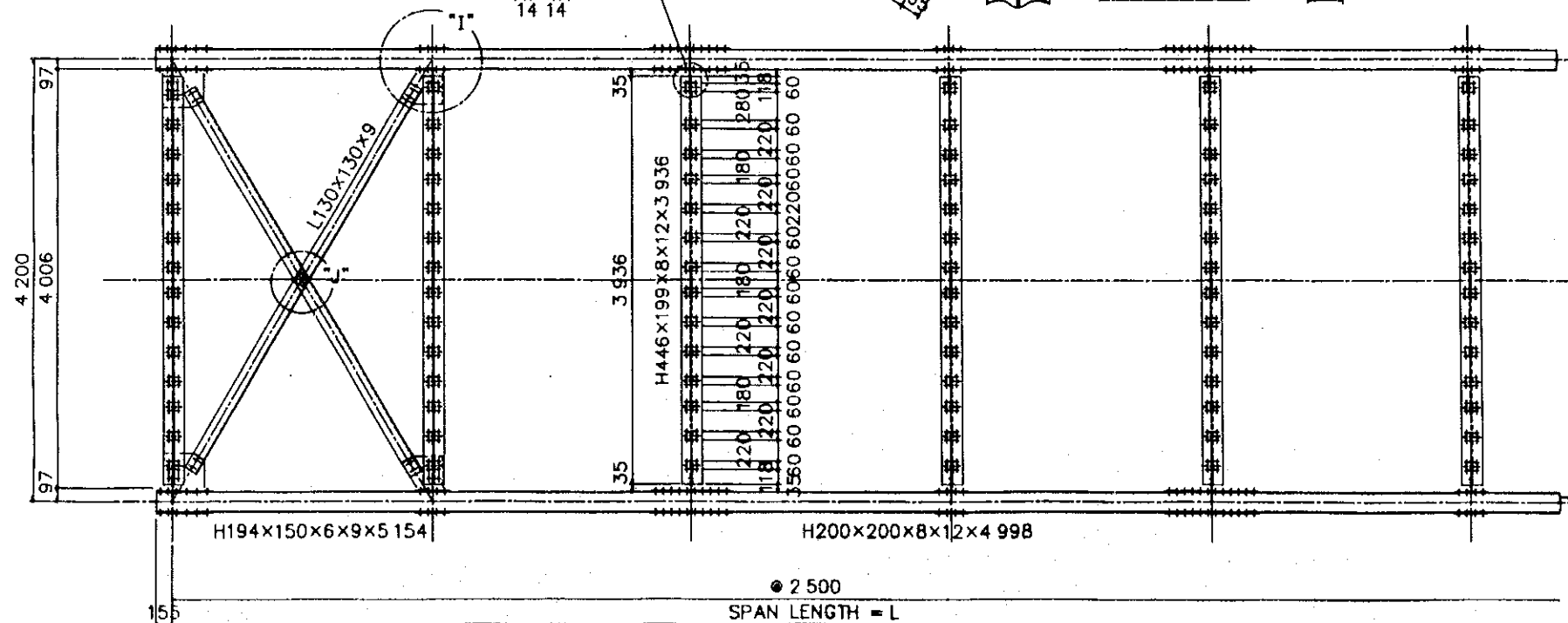
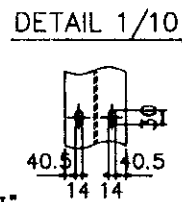
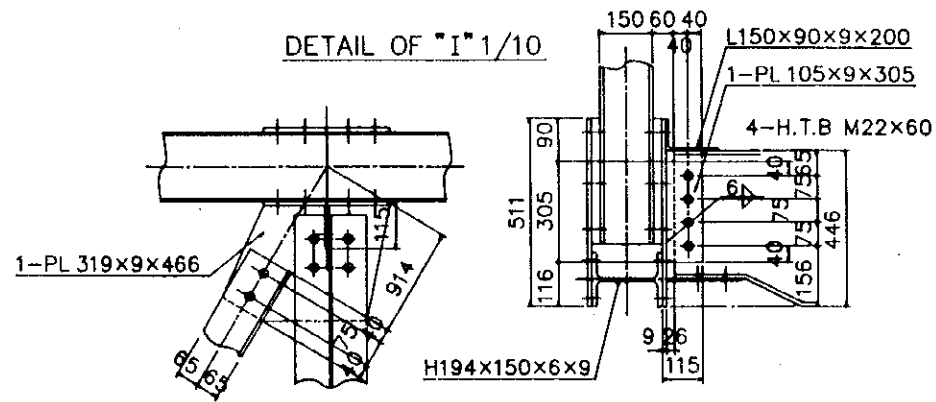
MAIN TRUSS AND FLOOR BEAM
SCALE 1:30



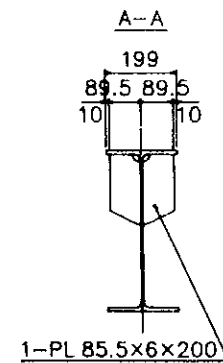
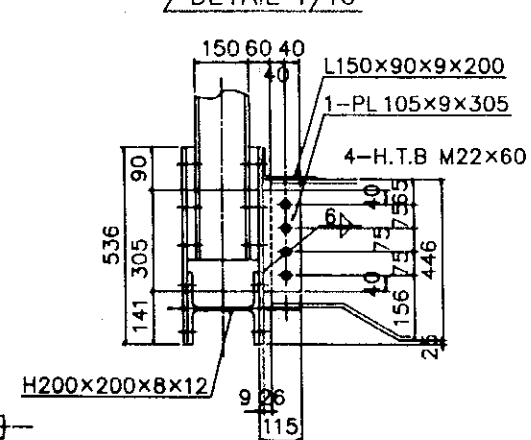
DETAIL OF "J" 1/10



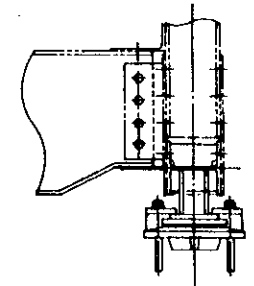
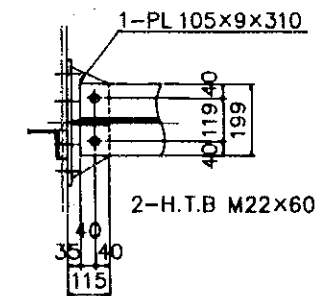
DETAIL OF "I" 1/10



DETAIL 1/10



DETAIL OF "K" 1/10



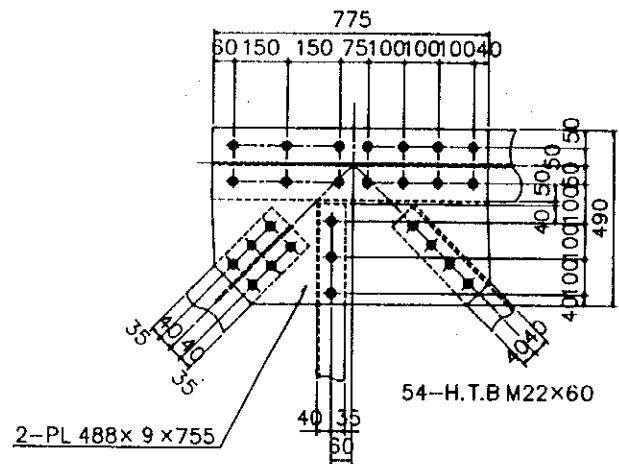
NOTE

1. MATERIAL STANDARD NOT DESCRIBED IS JIS G3101 SS400.
2. ALL MEMBERS SHALL BE GALVANIZED.
3. ALL HIGH STRENGTH BOLTS ARE JIS B1186 F8T (M22).
4. HOLES FOR HIGH STRENGTH BOLTS: 25# (TO BE DRILLED OR PUNCHED).

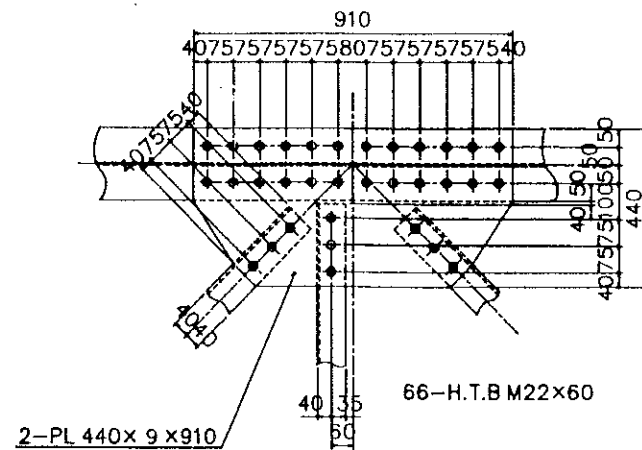
PREFABRICATED STEEL BRIDGE (SPAN 20M) (2/4)

DETAIL OF MAIN TRUSS AND FLOOR BEAM
SCALE 1:10

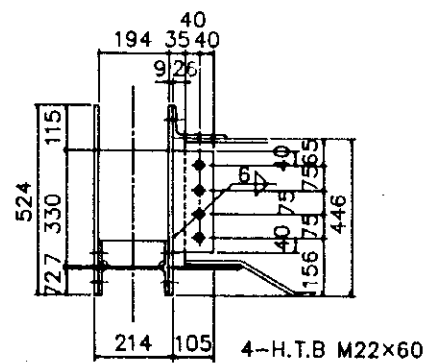
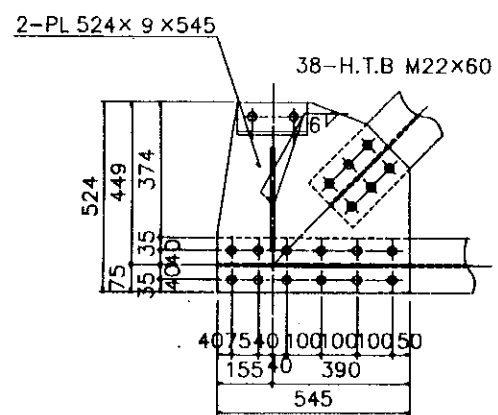
DETAIL OF "F"



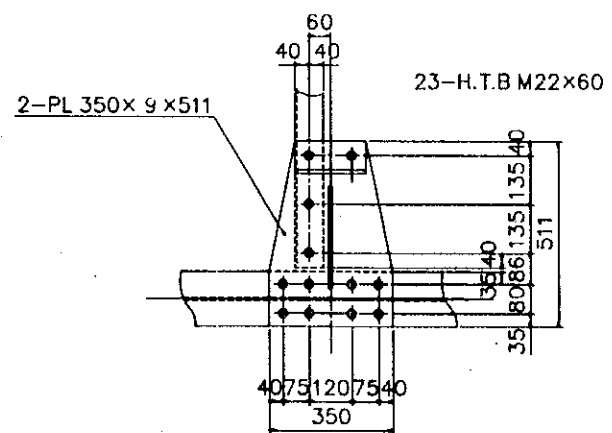
DETAIL OF "G"



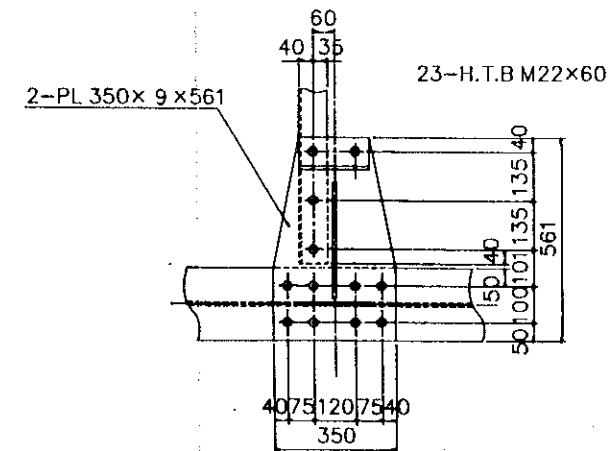
DETAIL OF "A"



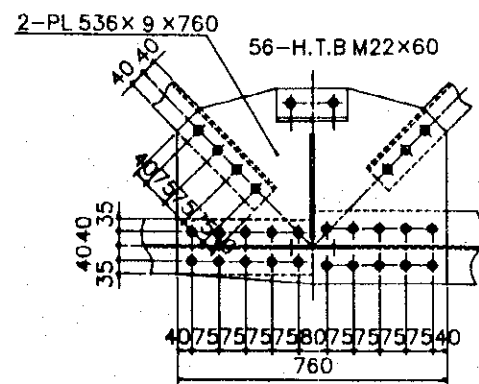
DETAIL OF "B"



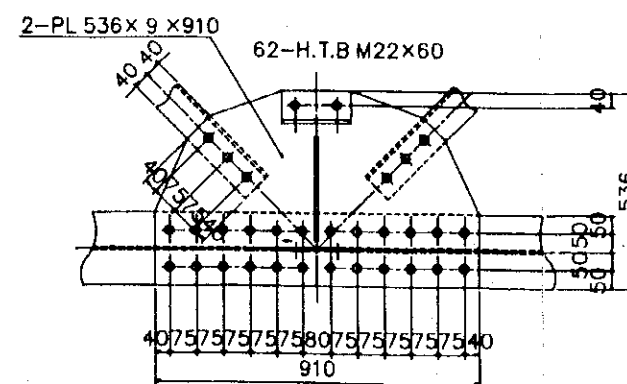
DETAIL OF "D"



DETAIL OF "C"



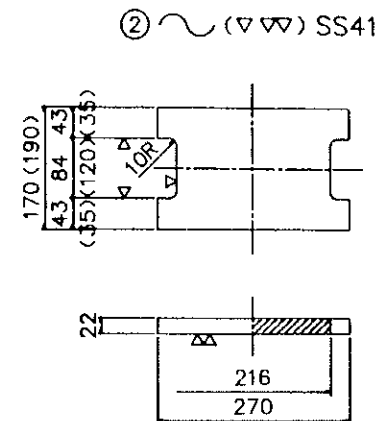
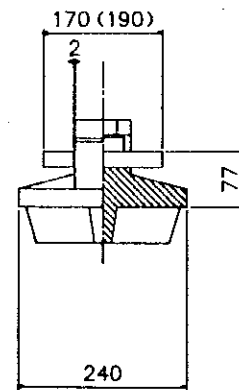
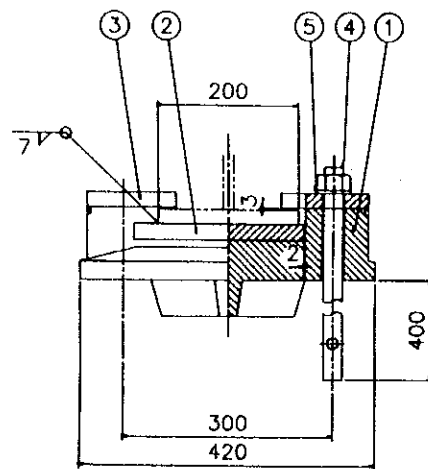
DETAIL OF "E"



NOTE

1. MATERIAL STANDARD NOT DESCRIBED
IS JIS G3101 SS400.
2. ALL MEMBERS SHALL BE GALVANIZED
3. ALL HIGH STRENGTH BOLTS ARE JIS
B1186 F8T (M22).
4. HOLES FOR HIGH STRENGTH BOLTS: 25φ
(TO BE DRILLED OR PUNCHED).

PREFABRICATED STEEL BRIDGE (SPAN 20M) (3/4)



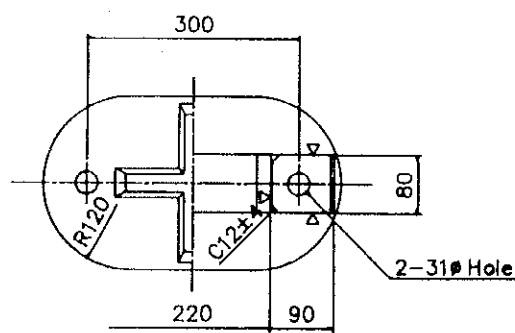
LB-101 (Fix-R30) - S56 LINE BEARING S=1/5

Material List

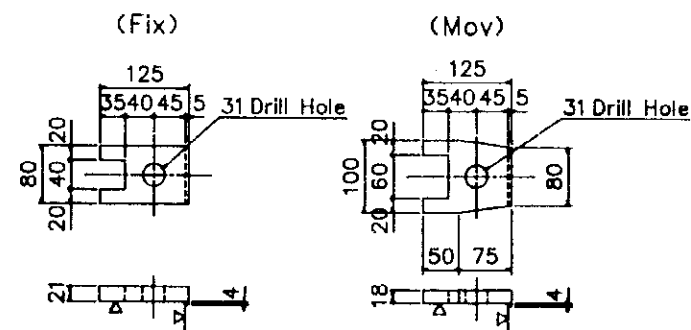
No.	Item	Spec	Q'ty	Weight (Kg)	Remark
①	Lower Shoe	SC 46	1	36.5	
②	Upper Shoe	SS 41	1	7.1	
③	Pinch Plate	SS 41	2	2.6	
④	Anchor Bolt & Nut	SS 41	2	6.1	
⑤	Washer	SS 41	2	0.1	Round
Total (Kg)				52.4	

Painting Surface 0.28m²

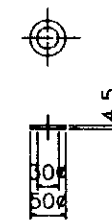
① ~ (▽▽) SC46



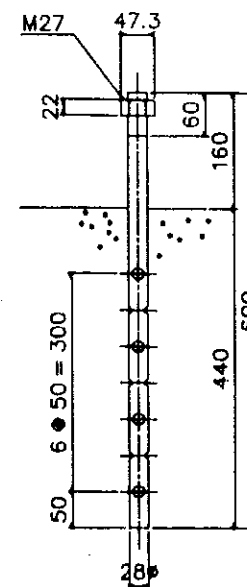
③ ~ (▽) SS41



⑤ ~ SS41



④ ~ SS41

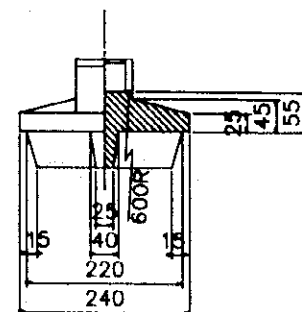
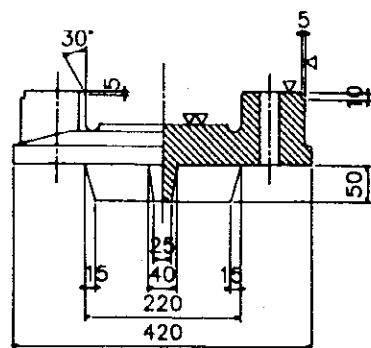


LB-102 (Mov-R30-e20) - S56 LINE BEARING S=1/5

Material List

No.	Item	Spec	Q'ty	Weight (Kg)	Remark
①	Lower Shoe	SC 46	1	36.5	
②	Upper Shoe	SS 41	1	7.7	
③	Pinch Plate	SS 41	2	2.5	
④	Anchor Bolt & Nut	SS 41	2	6.1	
⑤	Washer	SS 41	2	0.1	Round
Total (Kg)				52.9	

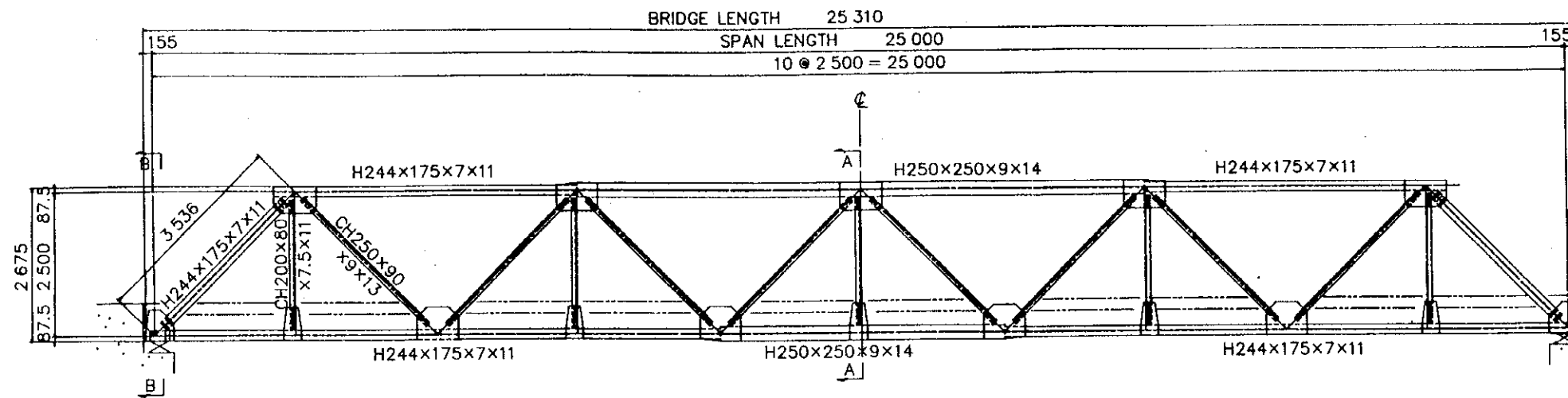
Painting Surface 0.24m²



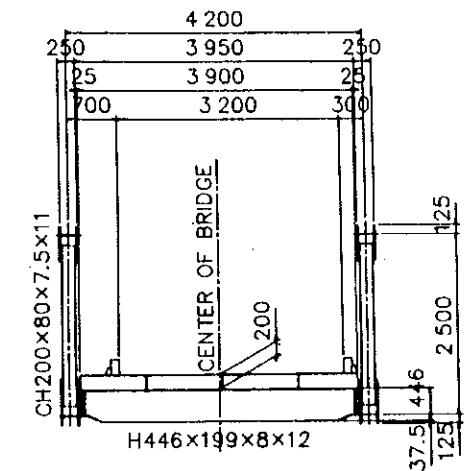
Dimensions in () indicate the movable bearing.

GENERAL ARRANGEMENT SCALE 1:50

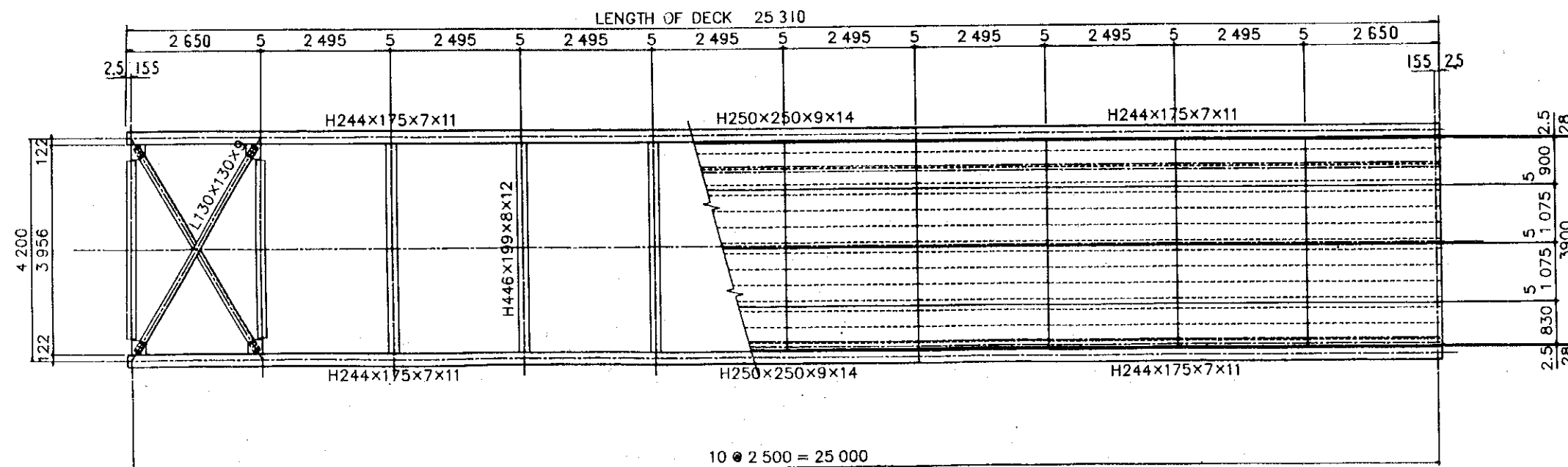
SIDE VIEW



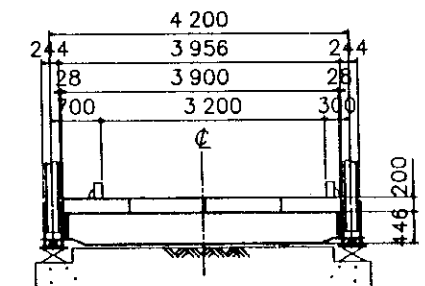
CROSS SECTION
A-A



PLAN



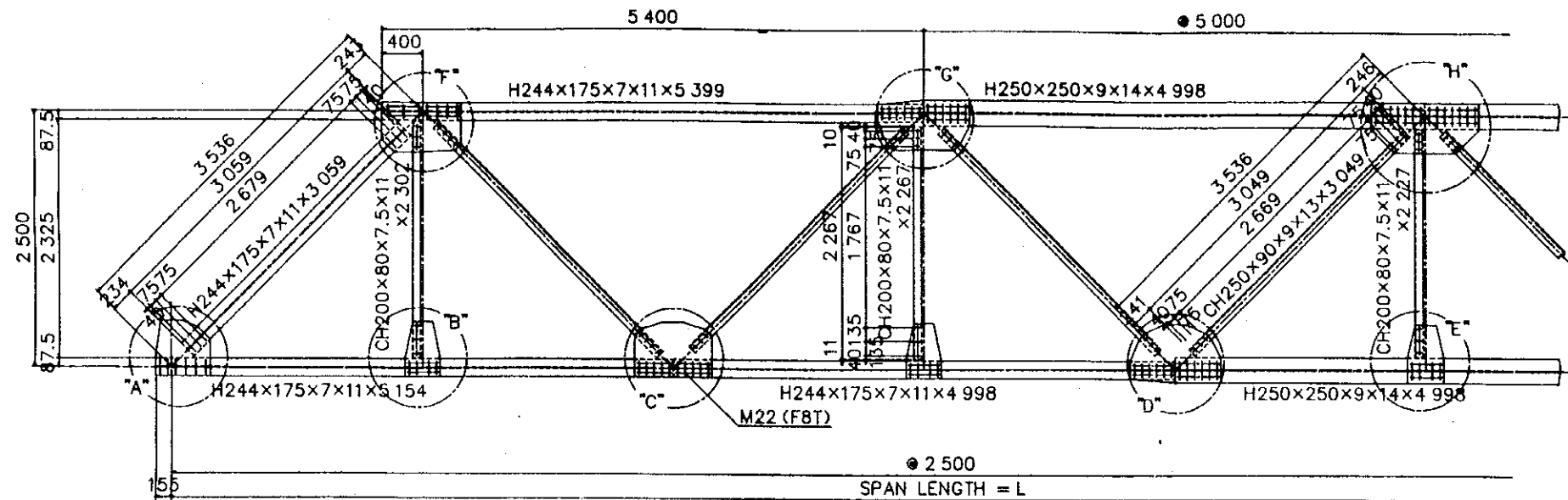
B-B



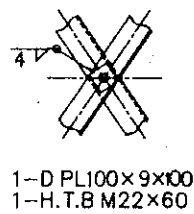
PREFABRICATED STEEL BRIDGE (SPAN 25M) (1/4)

PORTABLE BRIDGE
SUPERSTRUCTURE
25 M PONY TRUSS

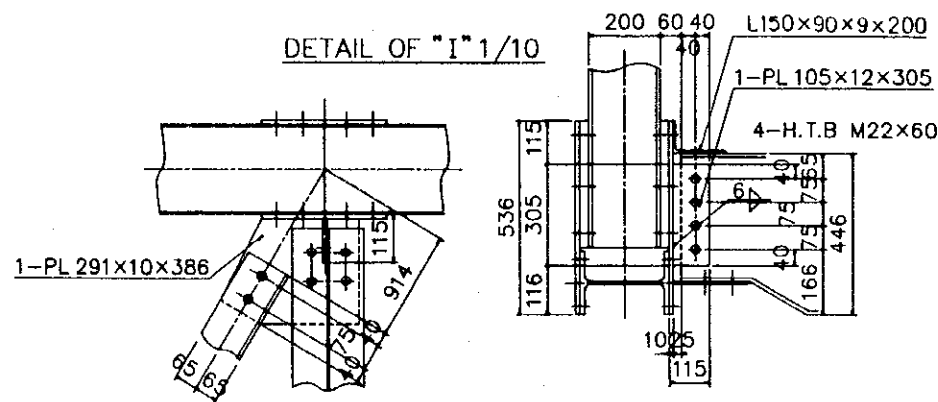
MAIN TRUSS AND FLOOR BEAM SCALE 1:30



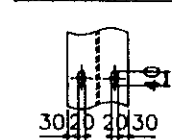
DETAIL OF "J" 1/10



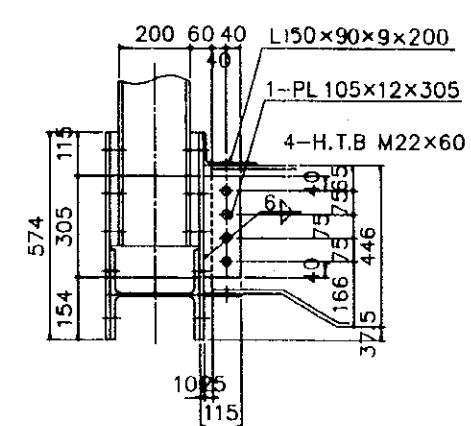
DETAIL OF "I" 1/10



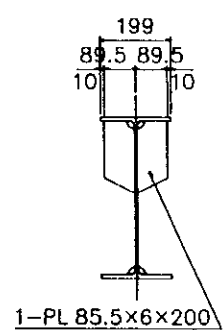
DETAIL 1/10



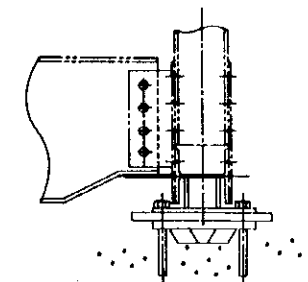
DETAIL 1/10



A-A



DETAIL OF "K" 1/10

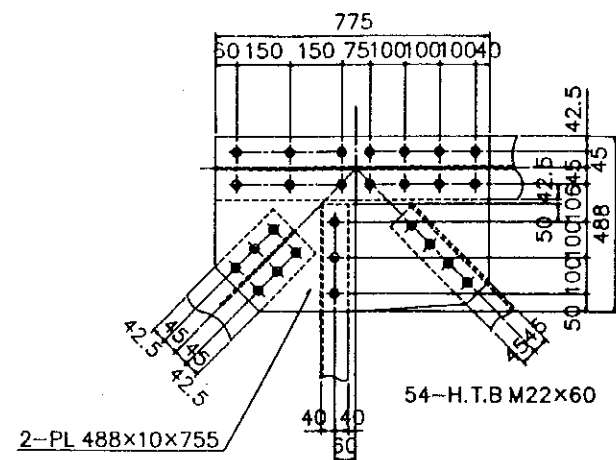


- NOTE
- 1.MATERIAL STANDARD NOT DESCRIBED IS JIS G3101 SS400.
 - 2.ALL MEMBERS SHALL BE GALVANIZED.
 - 3.ALL HIGH STRENGTH BOLTS ARE JIS B1186 F8T (M22).
 - 4.HOLES FOR HIGH STRENGTH BOLTS: 25φ (TO BE DRILLED OR PUNCHED).

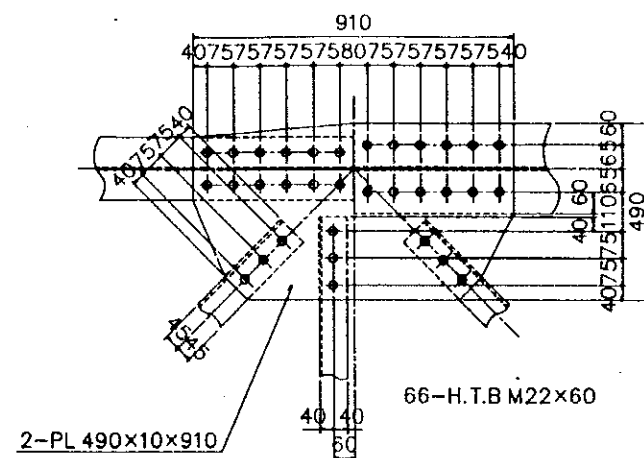
PREFABRICATED STEEL BRIDGE (SPAN 25M) (2/4)

DETAIL OF MAIN TRUSS AND FLOOR BEAM SCALE 1:10

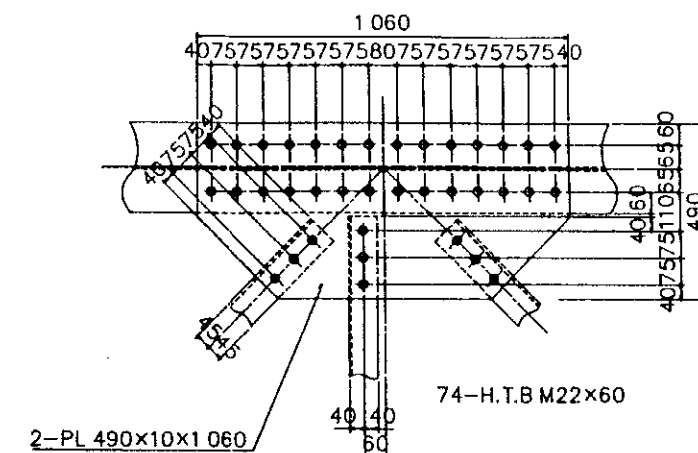
DETAIL OF "F"



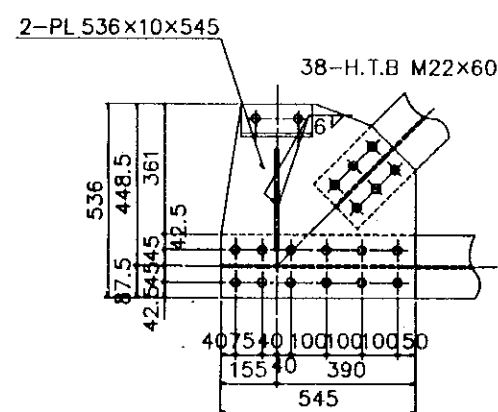
DETAIL OF "G"



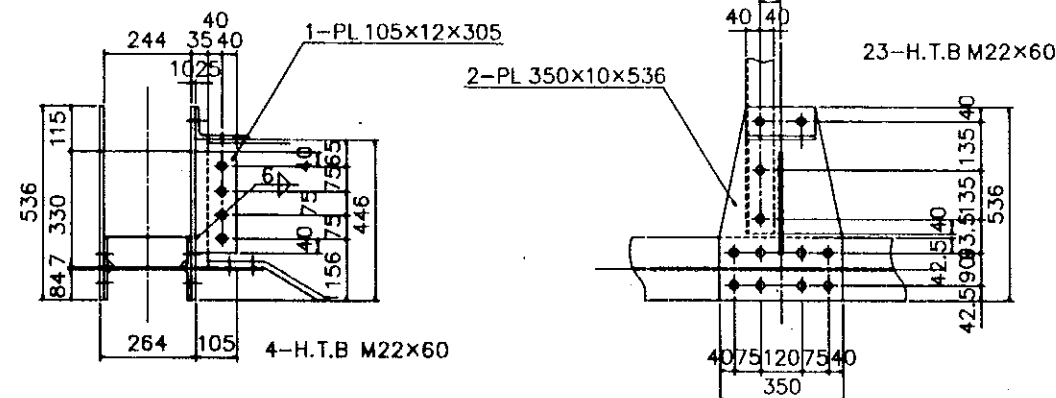
DETAIL OF "H"



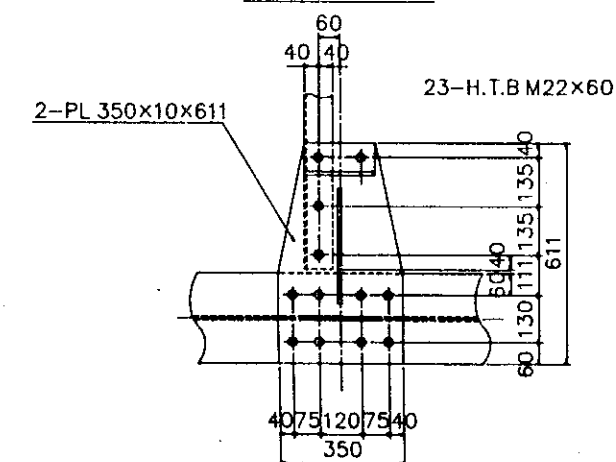
DETAIL OF "A"



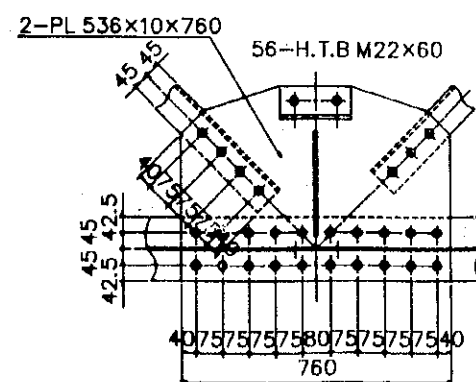
DETAIL OF "B"



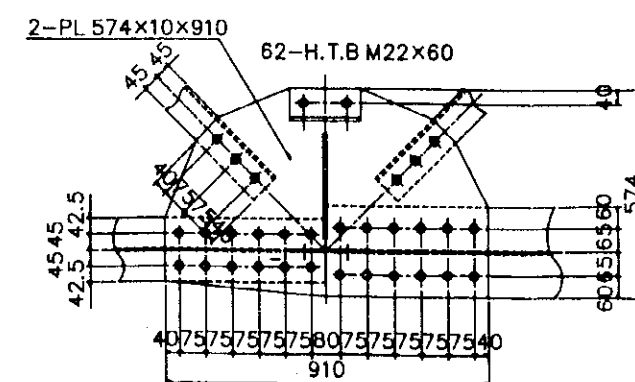
DETAIL OF "E"



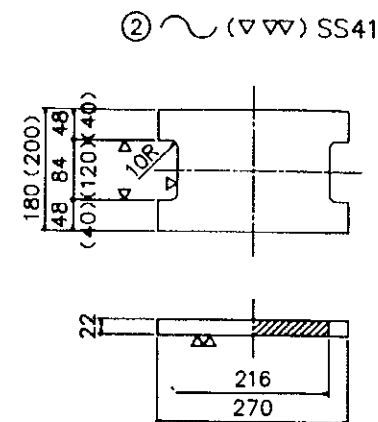
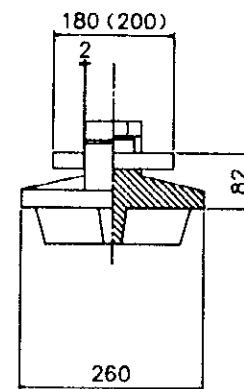
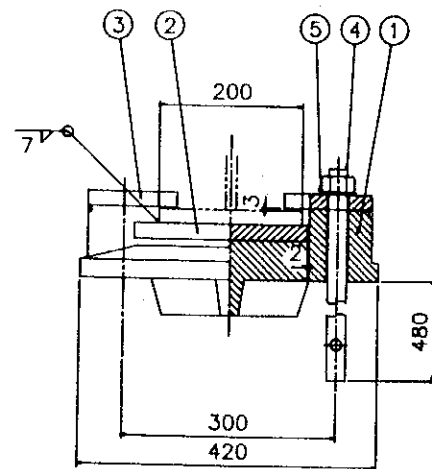
DETAIL OF "C"



DETAIL OF "D"



NOTE
1. MATERIAL STANDARD NOT DESCRIBED
IS JIS G3101 SS400.
2. ALL MEMBERS SHALL BE GALVANIZED
3. ALL HIGH STRENGTH BOLTS ARE JIS
B1186 F8T (M22).
4. HOLES FOR HIGH STRENGTH BOLTS: 25φ
(TO BE DRILLED OR PUNCHED).



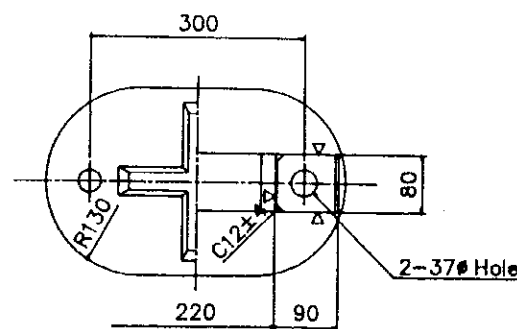
LB-103 (Fix-R40) - S56 LINE BEARING S=1/5

Material List

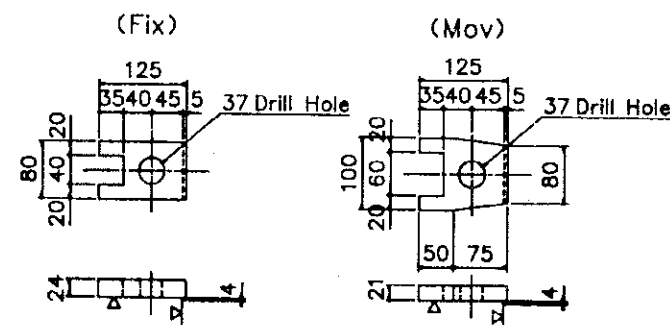
No.	Item	Spec	Q'ty	Weight (Kg)	Remark
①	Lower Shoe	SC 46	1	42.3	
②	Upper Shoe	SS 41	1	7.6	
③	Pinch Plate	SS 41	2	2.9	
④	Anchor Bolt & Nut	SS 41	2	8.6	
⑤	Washer	SS 41	2	0.1	Round
Total (Kg)				61.5	

Painting Surface 0.30m²

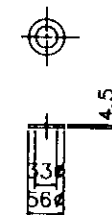
① ~ (▽▽) SC46



③ ~ (▽) SS41



⑤ ~ SS41

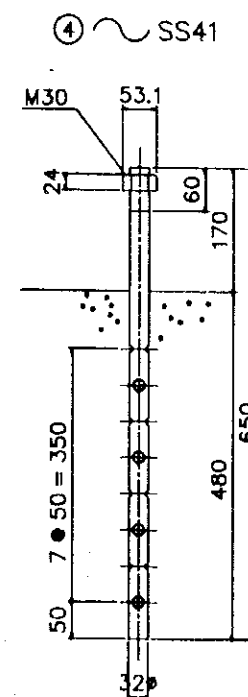
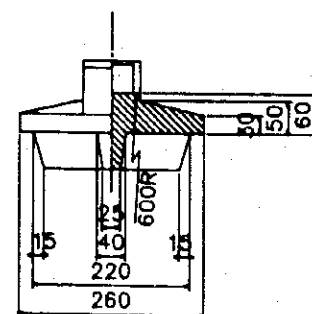
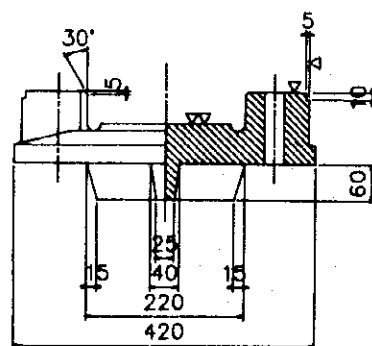


LB-104 (Mov-R40-e20) - S56 LINE BEARING S=1/5

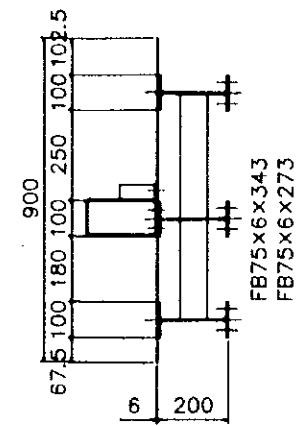
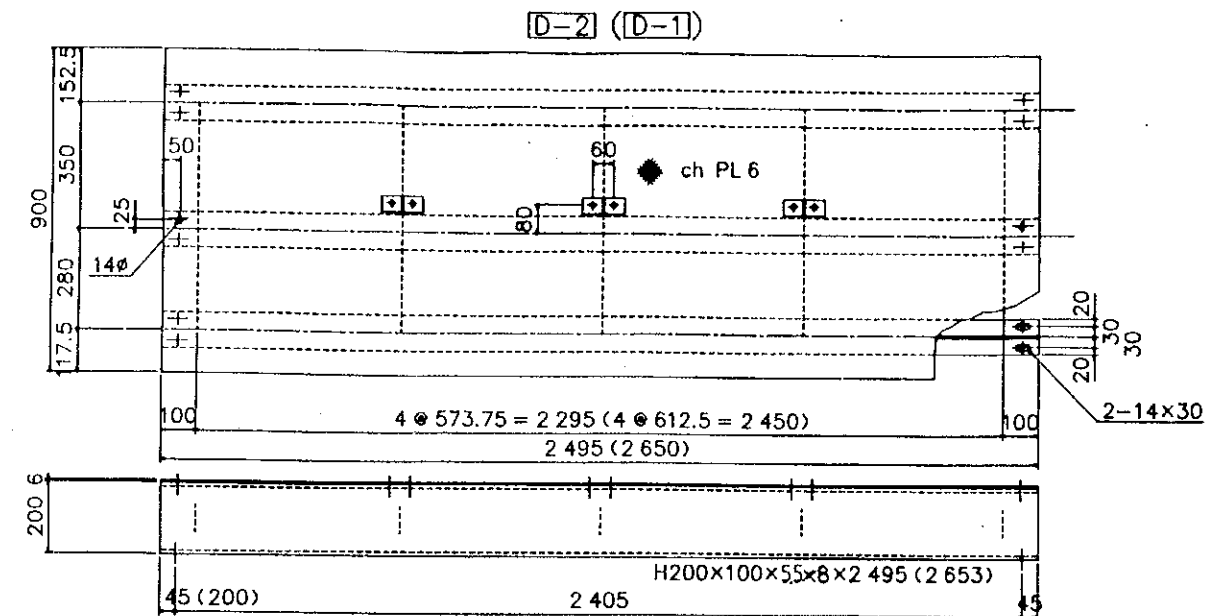
Material List

No.	Item	Spec	Q'ty	Weight (Kg)	Remark
①	Lower Shoe	SC 46	1	42.3	
②	Upper Shoe	SS 41	1	8.2	
③	Pinch Plate	SS 41	2	2.9	
④	Anchor Bolt & Nut	SS 41	2	8.6	
⑤	Washer	SS 41	2	0.1	Round
Total (Kg)				62.1	

Painting Surface 0.26m²

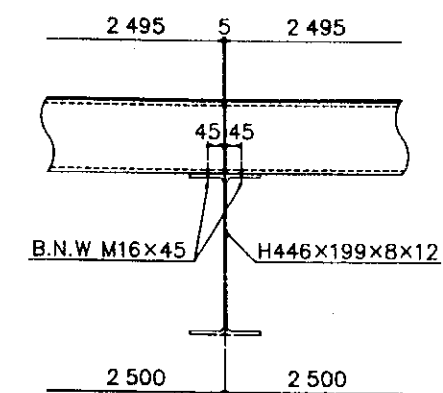
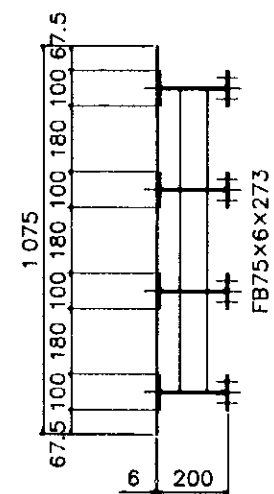
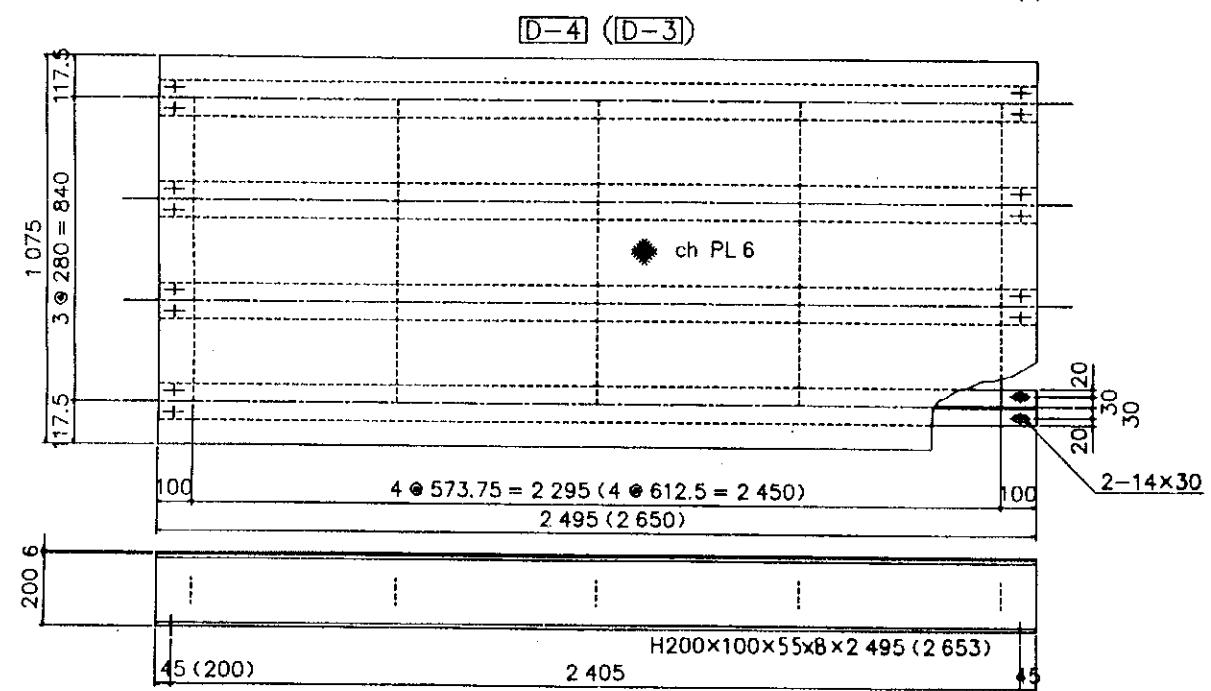
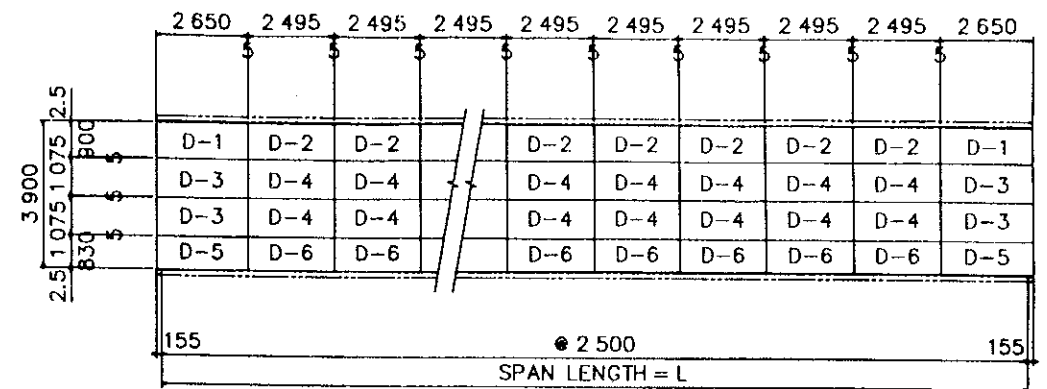


Dimensions in () indicate the movable bearing.

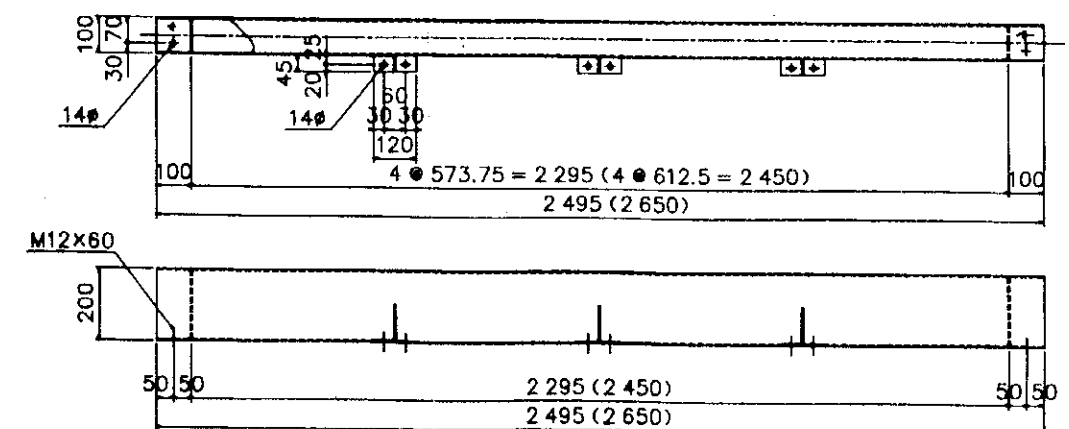
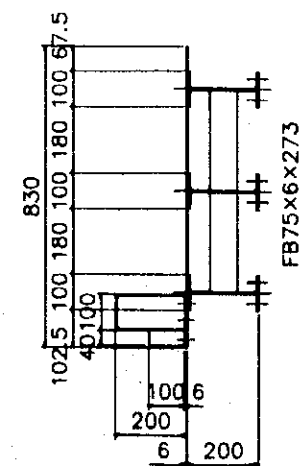
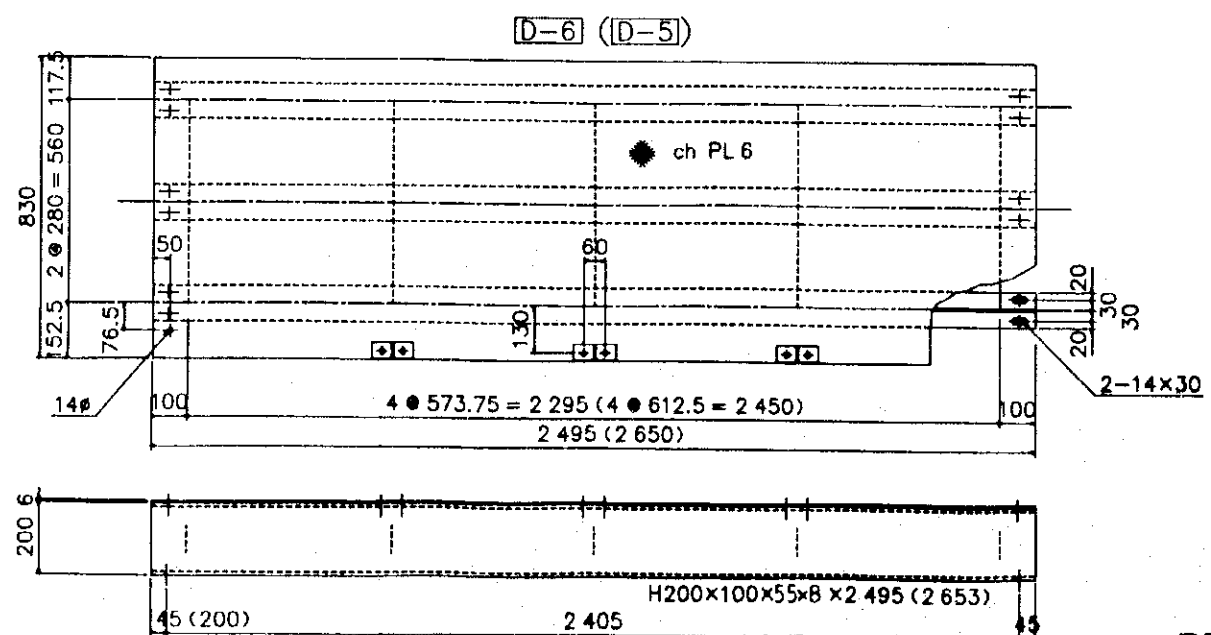
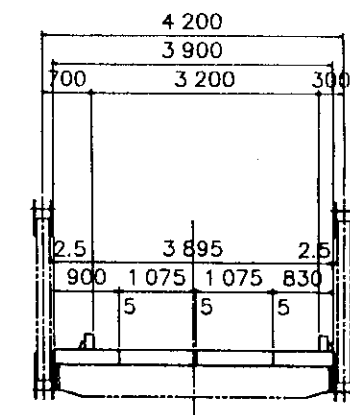


DECK PLATE
SCALE 1:10

MARKING DIAGRAM



CROSS SECTION



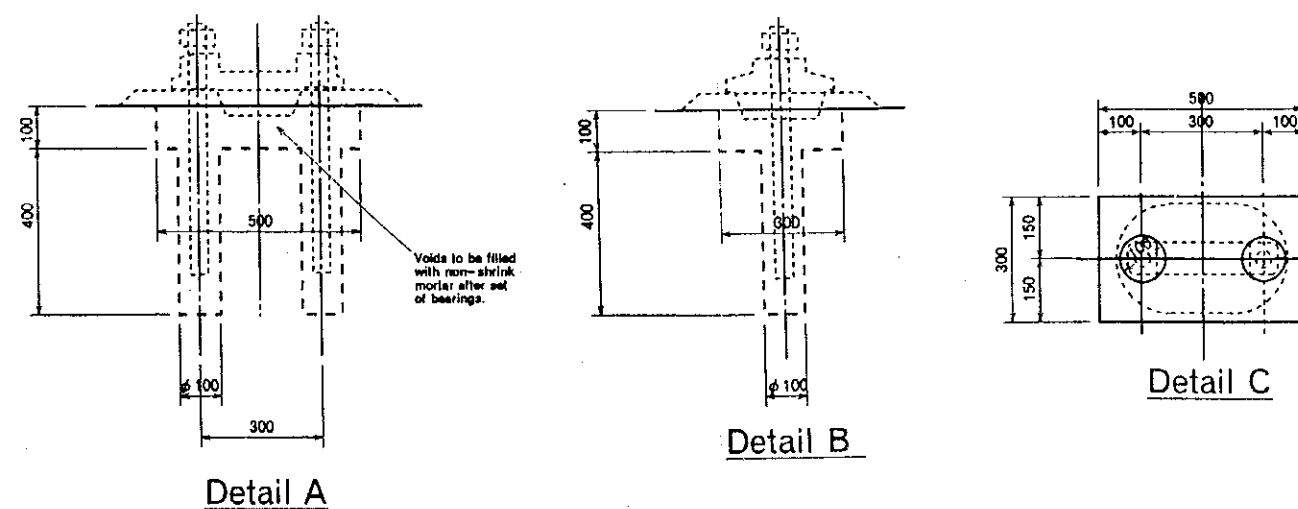
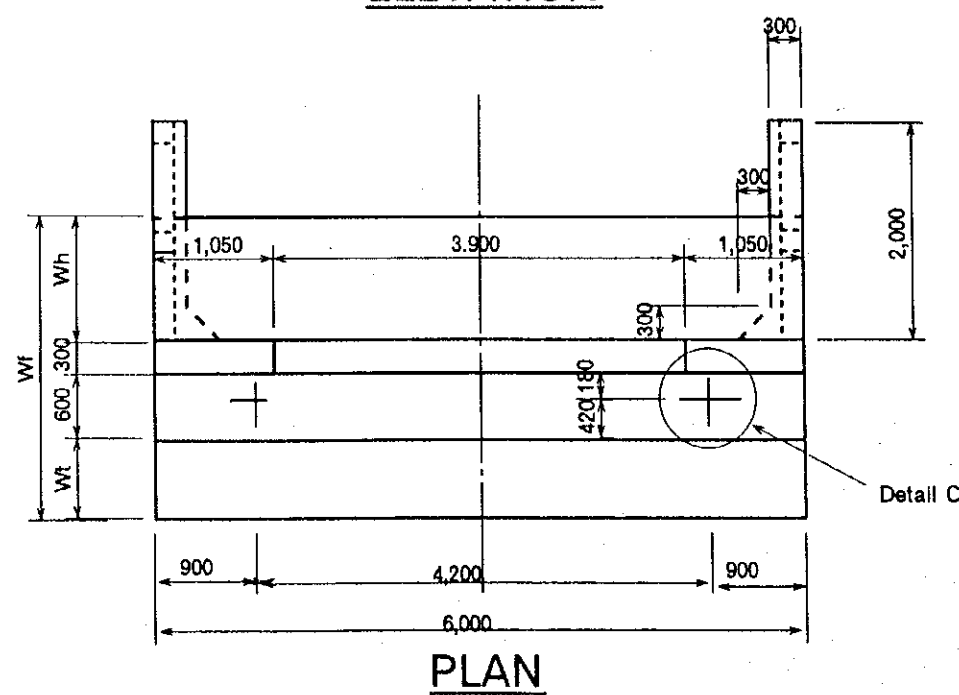
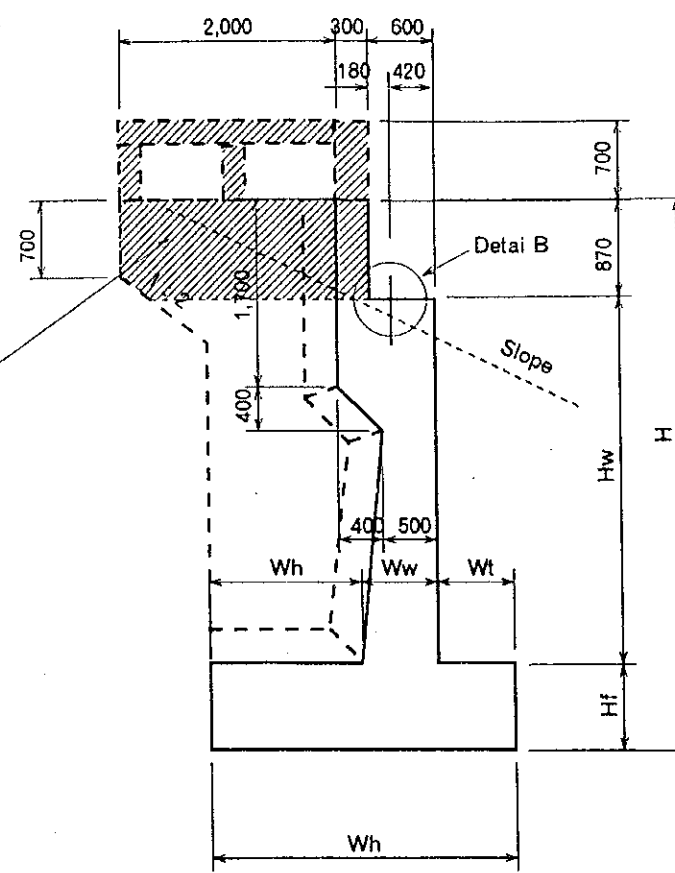
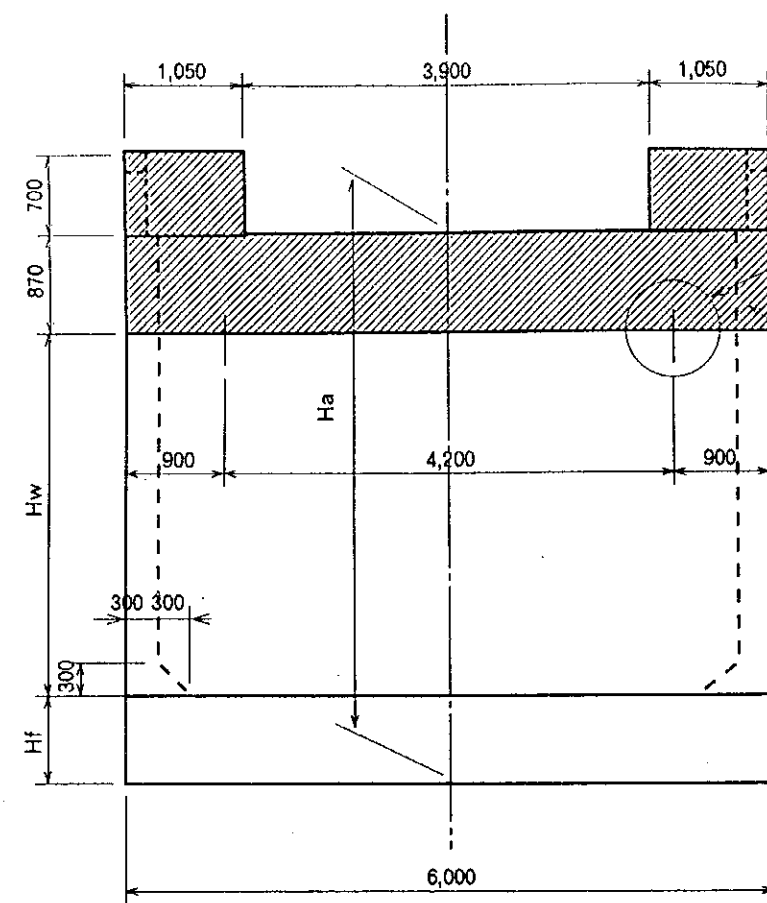
- 1- \square 200x100x4.5x2 495 (2 650)
- 2- \square 191x6x 91
- 3- \square 45x6x120
- 3- \square 40x6x100
- 8-B.N. M12x60

NOTE

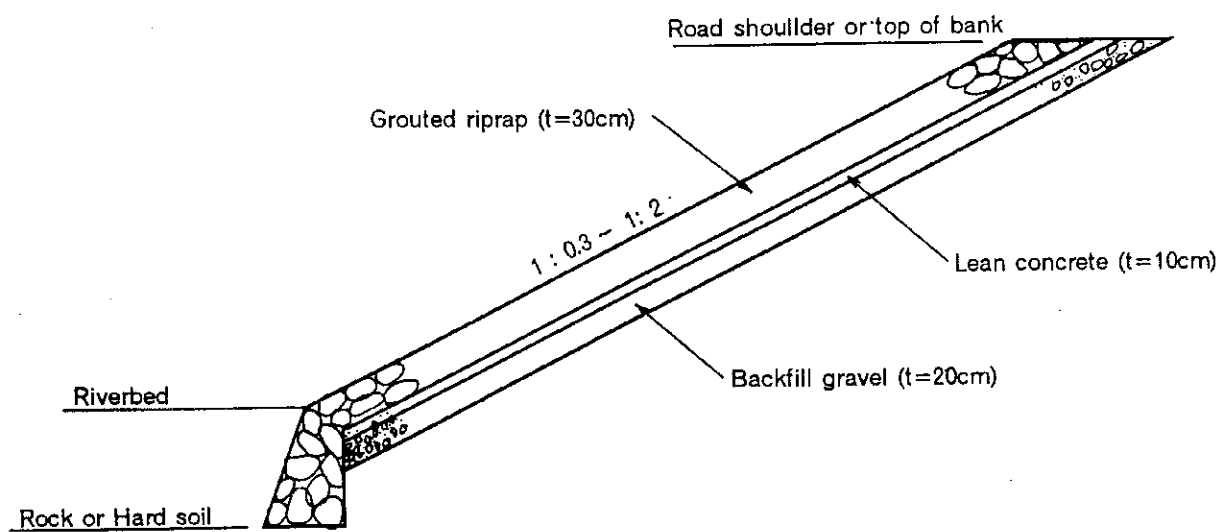
1. MATERIAL STANDARD NOT DESCRIBED
IS JIS G3101 SS400

2. DECK PLATE SHALL BE GALVANIZED

DECK SLAB PANELS



STANDARD ABUTMENT



STANDARD REVETMENT

