6/IX

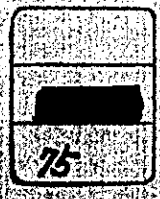
PEOPLE'S REPUBLIC OF BANGLADESH

STUDY REPORT
ON
JAMUNA RIVER BRIDGE CONSTRUCTION PROJECT
ACCESS RAILWAY
(FIRST STAGE)

MARCH 1975

JAPAN INTERNATIONAL COOPERATION AGENCY

PACIFIC CONSULTANTS INTERNATIONAL



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ABBREVIATION AND UNIT

MOC	Ministry of Communications
MFCWRP	Ministry of Flood Control, Water Resources and Power
BWDB	Bandgladesh Water Development Board
BIWTA	Bangladesh Inland Water Transport Authority
SOB	Survey of Bangladesh
Bangladesh	The People's Republic of Bangladesh
Jamuna River	The Brahmaputra-Jamuna River

Prefeasibility Report	Prefeasibility Report on Jamuna River Bridge Construction Project prepared by the Japanese Government Study Team for the Overseas Technical Cooperation Agency, Japan in March 1973.
Inception Report	Inception Report on Feasibility Study for Jamuna River Bridge Construction Project submitted by the Overseas Technical Cooperation Agency, Japan

DHWL	Design High Water Level
GL	Ground Level
WL	Water Level

HWL	High Water Level
LWL	Low Water Level
PWD	Public Works Department
RL	Reduced Level

m	Meter
s, sec	Second
cm	Centimeter
km	Kilometer
cms	Cubic Meter Per Second
kg	Kilogram
t, ton	Ton (Metric)
f, ft	Foot
cfs	Cubic Foot Per Second
in	Inch
yd	Yard
mi	Mile
ac	Acre
hr	Hour
yr	Year
lb	Pound
sq	Square
cu	Cubic
max	Maximum
min	Minimum

B	Width
H	Water Depth
I	Slope
R	Mean Water Depth
W	Water Width
L, l	Length
A	Water Area
Q	Discharge
v	Velocity
n	Coefficient of Roughness

1 in. = 2.54 cm

1 ft. = 0.305 m

1 yd. = 0.914 m

1 mi. = 1.609 km = 5.280 ft.

1 sq. ft. = 0.0929 m^2

1 cu. ft. = 0.0283 cub.m.

1 cfs. = 0.0283 m^3/s

1 ac. = 0.4 ha. = 0.004 sq.km

1 TAKA = ¥ 3 6,

C O N T E N T S

SUMMARY OF ACCESS RAILWAY

1) Site Investigation

The Railway Team stayed in Bangladesh about 40 days from January 18, 1974. They made every effort to make an inventory of Bangladesh railways, getting acquainted with natural features, the conditions of the people and topographic features of the country, conducting a reconnaissance survey of the areas for the proposed access railway lines and making an investigation of railway structures and operations of the existing railway.

During their stay, they visited the Chittagong Railway Headquarters, and had several productive discussions with the competent officers concerned.

The above findings and information have been incorporated into this access railway planning.

2) Essentials of Criteria

As the result of the elaboration, the following main criteria have been adopted for this study:

Gauge:	broad (5' - 6")
Design load:	axial load of 22.5 tons (based on Broad Gauge Standard Loading of 1926)
Track:	single
Gradient:	maximum = 1 in 200 (for short distance only)

Curve:	minimum radius = 1,000 meters
Top of fill sub-grade:	over 3' - 00" above H.W.L.
Width of fill sub-grade:	20' - 00"
Track structure:	50 kg rail (60 lb/yard), wood sleeper and ballast base
Train speed:	maximum: 96 km/hour (60 miles/h.) average: app. 54 km/hour (34 miles/h.)
Signalling:	centralized traffic control (CTC)

3) Route Location

Each proposed access railway line connecting the existing railway to the bridge site has been carefully studied for its route location on the shortest distance basis. Economical consideration has also been given to the route location of each access railway that would eventuate in a connection to Dacca in cooperation with the future rail network and improvement plans of Bangladesh Railway.

(1) Bahadurabad route

This route will be about 38 km (23.7 miles) long, diversing from Velurpara Station on the existing Santahar - Bonarpara line (meter gage) on the left side of the river. However, since the proposed link will be a broad gage line, it will be necessary to lay a broad-gage line alongside of the existing meter-gage line for about 62 km (38.8 miles) from Velurpara Station down to Santahar Station which has the main transhipment yard from meter to broad gage.

Furthermore, on the left side of the river, an improvement of the

existing line must be considered. The improvement work includes the transition of the existing meter gage line to the broad gage line from Durmut Station to Dacca Station.

Total length of the transition work is about 140 km (88 miles).

(2) Gabargaon route

This route will diverge from Bogra Station on the right bank, terminating at Jafar Shafee on the existing Jamalpur - Jagannathganj line (meter gage) on the left side, with the total track length of about 55 km (35 miles). In a similar fashion to the Bahadurabad site, it will be necessary to construct a broad gage line alongside of the existing meter gage line for approximately 40 km (25 miles) between Bogra Station and Santahar Station, and also to provide the improvement work in a similar fashion to the Bahadurabad route on the left side of the river. Total length of this improvement work is about 140 km (88 miles).

(3) Sirajganj route

This route will diverge from Salop Station on the existing Sirajganj branch line (broad gage) on the right bank, crossing the Jamuna River and pass through Tangail on the left bank. This route will run further toward southeast via Mirzapur and Kaliakul connecting with the existing meter gage line in the vicinity of Tungi.

For this plan, it will be necessary to build a main station in Tangail and Azampur to the north of the new airport complex between

Dacca and Tungi. The total length of the new line will be 114 km (71 miles).

(4) Nagarbari site

This route will diverge from Gooakhora Station on the existing Sirajganj branch line (Broad gage) on the right bank, crossing the Jamuna River and other major rivers, Baral, Dhaleswari on the left bank.

In a similar fashion to Sirajganj route, this route will terminate at Azampur Station, on the Dacca - Tungi line. This route will be the longest among the four with the total length of about 120 km (75 miles).

Elevation of the access railways at every site was determined so as to secure a minimum free-board of three feet above high water level throughout the routes.

4) Gauge and Track

The access railway has a single broad gauge track (5' - 6") line, which is believed to meet Bangladesh transportation needs in the far distant future. However, a provision will be made in the bridge foundation and the super-structure for putting in a double track at some future date when traffic volume and operations justify it. Since such a provision requires a huge amount of initial cost, careful overall consideration will be given together with the engineering study, when the future traffic volume has finally been predicted. It would not be too late to discuss the double gauge track in the bridge when we have proceeded to the second stage after selection of

the proposed bridge site.

5) Transhipment Facilities

No transhipment facilities from meter gauge to broad gauge will be provided, because each access railway has been planned on the assumption that uniform gauge lines from North Bengal through to Dacca would be provided in the future.

6) Structure Specifications

Details of the structure specifications necessary for the railway design will follow the "Code of Practice for Engineering Department of Bangladesh Railway" lest there should be any interference with the rail operations and safety after the completion of the bridge project.

7) Gradient

Gradient 1 in 200 has been decided as the maximum allowable. The length of the graded approach sections to the Jamuna bridge will be over three kilometres which is supposed to be too long from the point of view of current rail operations in Bangladesh. Therefore, we have agreed to adopt a flatter gradient than 1 in 300 for the approach sections only, in line with the request made by the Bangladesh Government at the Tokyo meeting.

However, with the possible growing performance of recruited locomotives in the future, the gradient 1 in 200 would be more desirable in view of the reduction of the construction cost.

CHAPTER 1

INTRODUCTION

1-1. General

The purpose of the study included in the Jamuna River Bridge Construction Project is to provide the optimum planning of the access railway line connecting the existing railway to the bridge site in order that the proposed Jamuna bridge would discharge the high functions of a railway bridge across Jamuna River which divides the country into the east and the west regions.

Through the four alternative bridge sites:

No. 1 : Bahadurabad

No. 2 : Gabargaon

No. 3 : Sirajganj, and

No. 4 : Nagarbari

Four railway links connecting the east and the west regions have been elaborated. Each route is to examined from the point of location, structure specifications, alignment, length, number of structures, transportation volume, railway operations and safety, relationship with the future plans of Bangladesh Railway and construction cost.

The study work in the first stage, for the railway sector covers the selection of the optimum access railway based upon the

priority ratings of the four access railway links, providing all necessary data for determining the optimum bridge site.

1-2. Site Investigation

The Railway Team stayed in Bangladesh about 40 days from the middle of January 1974 and made a precise investigation of the railway sections of Bangladesh Railway relevant to the Jamuna bridge project.

The track and structure of the railway systems were found to be generally poor and the maintenance scarce. Especially in the station, the main track lines and side track lines were in very bad condition and maintenance was poor. From the point of view of operation and safety, there were many undersirable track layouts such as double slip switch.

The Team visited the transhipment yard of Santahar Station where they found the facilities not fully operated and a considerable part idle. Most of the lines including broad and metre gauge are of single track and seem to have sufficient carrying capacity. The Team judged that, with the possible increase of transportation volume in the future the train frequency of more than 100 in two way directions could be maintained if an automatic signal device for single track and well located through-type stations were provided.

The introduction of the CTC (centralized traffic control) system which integrates the operation instruction and the signal handling

will contribute to the modernization of railway transportation.

Railway electrification will bear full fruit in the reinforcement of transportation and the modernization of motive power. Fortunately this country is expected to have abundant natural gas resources. With the development of thermal power generation, railway electrification which produces high efficiency in motive power will be hopefully promoted.

CHAPTER 2

PLANNING OF ACCESS RAILWAY

2-1. Gauge

The Jamuna river line demarcates the area of the broad gauge (5' - 6") in the west from the region of metre gauge (1.0 m) to the east with a few exceptions to the broad gauge in the west. The connecting operation of metre and broad gauge lines takes place in the transhipment yard of Santahar Station.

With the completion of the Jamuna bridge, the two railway networks in the east and the west will be integrated into one single network. The problem of selecting the size of the gauge for the access railway arose but the broad gauge track has been decided for the study of all the four access railways, taking into account the future improvement plans of Bangladesh Railway.

No new transhipment facilities shall be provided for this access railway study on the assumption that a uniform gauge line from North Bengal through to Dacca will be constructed by the Government in the future.

The access railways of No. 1 and No. 2 routes originate from Santahar Station with a broad gauge line, crossing Jamuna River and terminate at the respective stations on the nearest existing metre gauge line from the river. The planning of these access railways should be incorporated into the future plans of Bangladesh Railway

in order to maintain speedy transportation without the trouble of transhipment.

The access railways of No. 3 and No. 4 routes diverge from the existing broad gauge line in the west and terminate at Dacca with a broad gauge line. There is no problem of transhipment through to Dacca.

2-2. Fixed Points

The starting point (00 km 000 m) of each access railway shall be at the center of the proposed connecting station of the existing railway line on the right side of Jamuna River and the terminating point at the center of the connecting station of the proposed existing railway line on the opposite bank side.

2-3. Length

The length of the access railway shall be the overall length from the starting point to the terminating point, including the bridge sections. In the case of the study of No. 1 and No. 2 routes where the construction of the new broad gauge line alongside the existing metre gauge is regarded as necessary, the length of the required broad gauge line shall be indicated separately.

However, for the estimation of the construction cost of each access railway, the earthwork and land acquisition of the bridge

proper and the graded approach section to the Jamuna bridge shall be excluded in this study but included in STUDY OF BRIDGE WORKS.

2-4. Level

The G.T.S. unit is used for the altitutde throughout the profile design work:

G.T.S. = P.W.D. - 1.5 ft

2-5. Gradient and Curve

The maximum gradient for the access railway is 1 in 200, and the minimum curve radius 1,000 metres. The length of the graded approach sections to the Jamuna bridge will be several kilometers. A flatter gradient is to be adopted for the Jamuna river sections only, according to the request of the Bangladesh Government at the Tokyo meeting.

The railway Team consider that the provision of the gradient 1 in 200 would be more desirable from the economical point of view, as it is envisaged that the recruited locomotives of the country will give better performance in the future and that the gradient will not greatly affect train operation.

However, in the second stage, the provision of flatter gradients 1 in 300 and 400 will be elaborated, based on the study of locations of through-type stations resulting from the predicted future traffic volume.

2-6. Track

Meeting the estimated Traffic volume for 50-years future by the traffic study, the railway team has evaluated the carrying capacity of the line for the volume. It can be envisaged that even single track transportation would meet the future needs across Jamuna River.

However, if the traffic study reveals the necessity of double track in later years, the provision of through-type stations with easy reduction of the distance between stations and of double track from the proposed single track can be easily kept for the sections of the access railway except the section of Jamuna River which is much longer than the others. For these sections the carrying capacity can be easily reinforced.

On the other hand, however, it will be very difficult to improve the river section in later years in order to increase the carrying capacity to meet increasing transportation demands. It is therefore necessary to keep the cross-sectional space for the future provision of double track on the bridge.

As such a provision requires a huge amount of initial cost, careful overall consideration is to be given to other fields of the project study, when future traffic has finally been predicted. This problem will be studied in the second stage after selection of the optimum bridge site.

2-7. Signalling

The information concerning the train operations in the specified operation sections is concentrated into the single control office and indicated for the implementation of speedy and accurate instructions. The centralized traffic control (CTC) system will be adopted for this study in order to directly control the direction of the trains in the station and to integrate train instruction and signal handling.

Manual signalling will be sufficient for the near future since railway modernization has not been greatly developed. The time will come when provision of the CTC system will be necessary for the future development of the railway modernization of the country. A rough estimate for the CTC device will be included in the construction cost.

CHAPTER 3

SPECIFICATIONS OF RAILWAY DESIGN

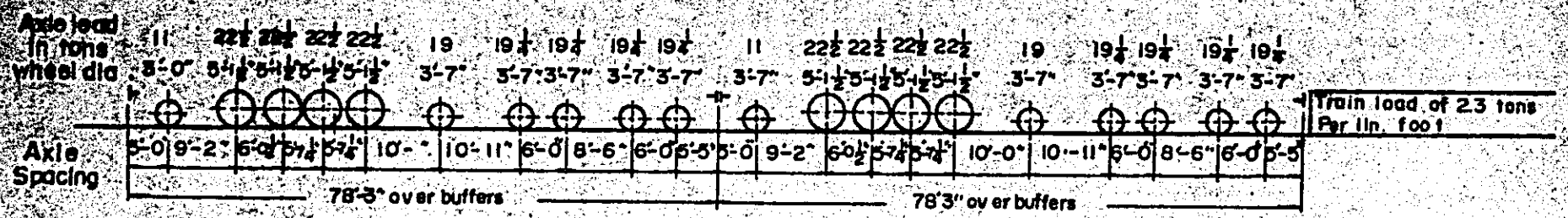
Based on the guideline to the railway planning in the preceeding section, design specifications of the new railway line have been studied and the summary of the main criteria to be adopted for the study is as follows:

Gauge:	Broad (5' - 6")
Track:	Single
Gradient:	Maximum = 1 in 200 (for short distance only)
Curve:	Minimum Radius = 1,000 metres
Top of fill sub-grade:	Over 3' - 00" above H.W.L.
Width of fill sub-grade:	20' - 00"
Design load:	Axial load of 22.5 tons based on Broad Gauge Standard Loading of 1926. (Ref. Fig. 1)
Track structure:	90 lb/yard (= 50 kg/m) rail, wood sleeper and (1,375 pcs/km) ballast base
Train speed:	Maximum = 96 km/hour (60 miles/h.)
	Average = app. 54 km/hour (34 miles/h.)
Typical cross-section of earthwork:	Ref. Fig. 2 in attached sheet
Typical cross-section of track structure:	Ref. Fig. 3 in attached sheet
Signalling:	Centralized Traffic Control (CTC)

Details of specifications will conform to the "Code of Practice for Engineering Department of Bangladesh Railway".

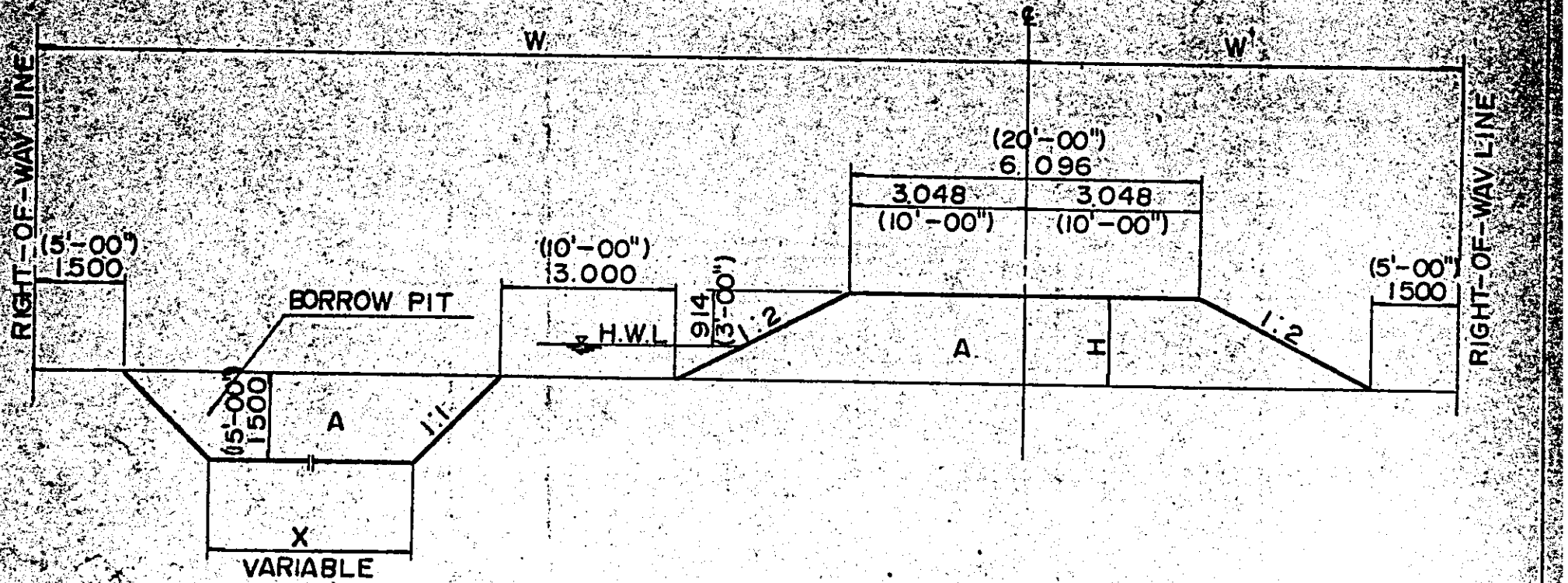
BROAD GAUGE STANDARD LOADINGS OF 1926

AXIAL LOAD OF 22.5 TONS



TYPICAL CROS-SECTION OF RAIL WAY EARTHWORK

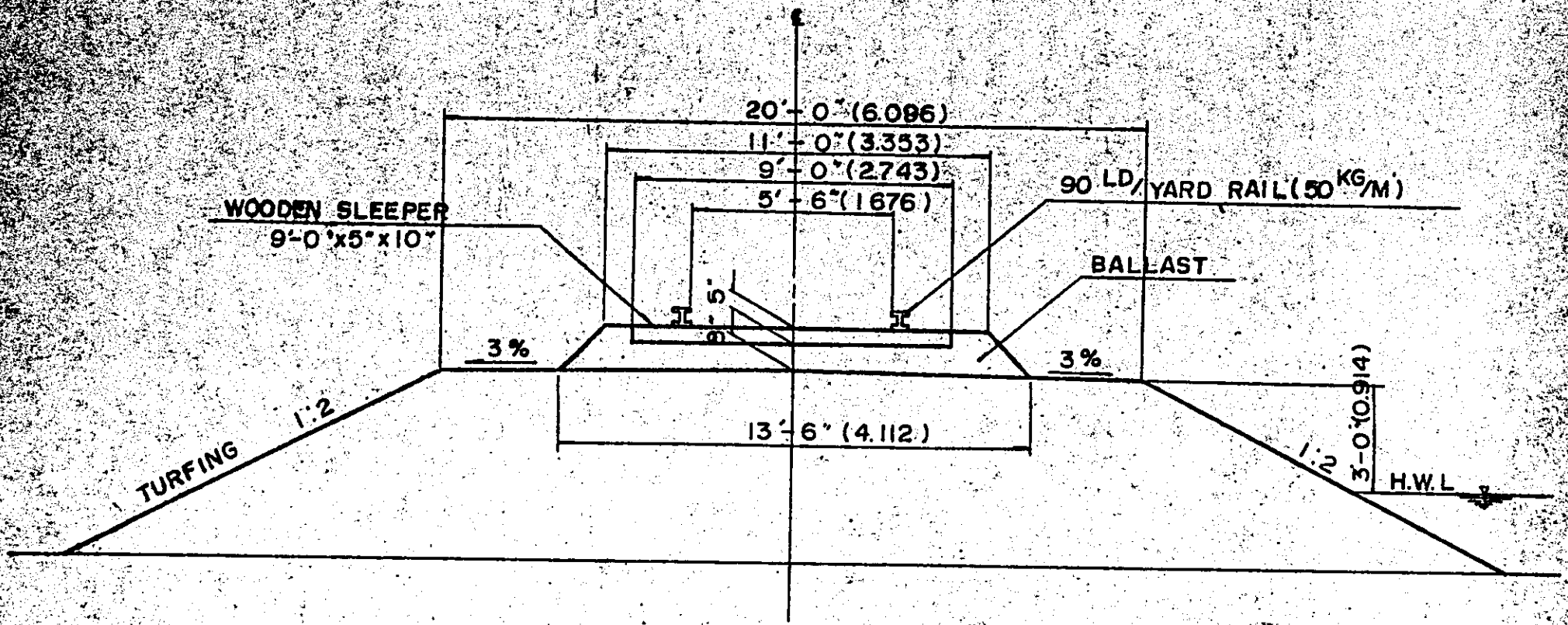
Scale 1/100



RIGHT-OF-WAY = W+W'

TYPICAL CROS-SECTION OF RAILWAY TRACK

SCALE 1/50



CHAPTER 4

ROUTE LOCATION

4-1. No. 1 Route (Bahadurabad)

This is the northernmost line among the four access railways. The route is about 38 km (24 miles) long, diverging from Belurpara Station on the existing Santahar - Bonarpara line (metre gauge) on the right side of Jamuna River, running eastward parallel to the existing line about 4 km, crossing Bangali River after turning to the right, and reaching the Jamuna Bridge at point 17 km. The route continues almost straight as far as point 32 km and terminates at Durmut Station on the existing Bahadurabad - Jamalpur line (metre Gauge) on the left side of the river.

Since the proposed link is a broad gauge line, it will be necessary in the future to lay a broad gauge line from Durmat through to Dacca via Jamalpur. However, this gauge widening project shall be left to the future improvement plans of the Bangladesh Railway and in this comparative study of the routes, Durmat will be the terminating station. The existing line on the right side is also of metre gauge and a broad gauge line is to be constructed alongside the existing metre gauge line from Velurpara Station through to Santahar Station. The required length is about 62 km (39 miles).

4-2. No. 2 Route (Gabargaon)

This route diverges from Bogra Station on the existing Santahar

- Bonarpara line (metre gauge) on the right side of Jamuna River, crossing Karatoya River, turning to the east at point 3 km and running straight as far as point 20 km and reaches the Jamuna bridge at point 30 km after crossing Bangali River.

As point 48 km the route crosses Jhinai River, turning to the left at point 54 km and terminates at Jafar Shafee Station on the existing Jamalpur - Jagannathganj line (metre gauge) on the left side, with a total track length of about 55 km (34 miles).

As in the case of No. 1 route, the proposed bridge site of No. 2 route is very near to the existing metre gauge line on either side of Jamuna River and the provision of transhipment facilities of metre and broad gauge lines would be required without gauge widening of the existing lines.

Smooth and speedy movement of goods between the east and the west regions is one of the fundamental purposes of the Jamuna River Bridge Construction Project. The provision of transhipment facilities will not be desirable from the point of view of railway operations. Therefore, a uniform gauge line shall be provided form North Bengal through to Dacca with no provision of transhipment facilities.

On the right side, a broad gauge line shall be constructed alongside the existing metre gauge line from Bogra through to Santahar. On the left side, the terminating station shall be Jafar Shafee where Bangladesh Railway would take over the broad gauge

line through to Dacca in future.

4-3. No. 3 Route (Sirajganj)

This route diverges from Salap Station on the existing Ishurdi - Sirajganj line (broad gauge), running eastward and reaches Jamuna River at point 13 km after crossing Harasagar River. And also, it reaches Dhaleswari River at point 23 km, reaching Tangail at point 2 km after running southward. But this river is blockaded by the highway embankment. A new station is to be built at Tangail.

The route runs further down south, turning to the east after crossing Futjani River and at point 67 km it reaches Mirzapur. The route proceeds eastward, approaching the existing main highway and at point 96 km it crosses Turag River after reaching Kaliakair. The route runs southward and terminates at the proposed Azampur Station after crossing Tungi River. The new station is to be built on the existing railway line between Dacca and Tungi, to the north of the proposed airport complex. The total track length is about 114 km (71 miles).

According to the plans of the Government a broad gauge line will be constructed from Azampur through to Dacca and a transhipment yard provided at New Dacca Station (Kamalpur). With this route broad gauge line transportation would be maintained from North Bengal through to Dacca.

4-4. No. 4 Route (Nagarbari)

This is the southernmost line among the four access railways. The route diverges from Gooakhara Station on the existing Ishurdi - Sirajganj line (broad gauge) on the right bank, running almost straight as far as point 30 km after turning to the right and crosses Baral River, reaching Jamuna River at point 41 km. The route crosses Dhaleswari River at point 70 km and runs eastward, crossing Turag River, and terminating at Azampur between Dacca and Tungi. The location of Azampur Station and the connection system through to Dacca are similar to No. 3 route. The total track length is about 120 km (75 miles), the longest line among the four access railways.

Table 4-1-1

BRIDGES OF ACCESS RAILWAY

No. of Site	Location Kilometre	Name of the River	Class A : L >100m Running Length(m)	Class B : L <100m Running Length(m)	Class C : Spillway Running Length(m)
No. 1 Route BAHADURABAD	From VELURPARA Station				
	0^k 800^m			3 x 30.00 90m	
	7 700	Bangali	300m		
	12 600	"	200		
	19 900	Jamuna			
	28 100			3 x 30.00 90	
	30 300				8 x 5.00 40
	34 000			3 x 30.00 90	
	The Whole Sections				500
Total			500	270	540
Construction Alongside Existing Metre Gauge Total:			500	300	880
Grand Total			1,000m	570m	1,420m
			L = 2,990 m		

Table 4-1-2

BRIDGES OF ACCESS RAILWAY

No. of Site	Location Kilometre	Name of the River	Class A : L >100m Running Length(m)	Class B : L < 100m Running Length(m)	Class C : Spillway Running Length(m)
No. 2 Route GABARGAON	From BOGRA Station,				
	0^{k} 900^{m}	Karatoya	100^{m}		
	6 200			60^{m}	
	12 500			60	
	16 900			60	
	18 500	Bangari	150		
	21 200	"	100		
	32 900	Jamuna			
	48 600	Jhinai	400		
	49 400		150		
	50 700		150		
	The Whole Sections				430
Total			1,050	180	430
Construction Alongside Existing Metre Gauge	Total		300	100	460
Grand Total			1,350m	280m	890m
			L = 2,520 m		

Table 4-1-3

BRIDGES OF ACCESS RAILWAY

No. of Site	Location Kilometre	Name of the River	Class A : L > 100m Running Length(m)	Class B : L < 100m Running Length(m)	Class C : Spillway Running Length(m)
No. 3 Route SIRAJGANJ	From SALAP Station				
	1^{k} 600^{m}				16 x 5.00 80^{m}
	3 400				4 x 5.00 20
	8 100			1 x 30.00 30	
	8 900	Hurasagar	100^{m}		
	15 600	Jamuna			
	33 600			1 x 30.00 30	
	35 400			1 x 30.00 30	
	44 700	Lohajang	100		
	55 000	Futjani	200		
	58 900			1 x 20.00 20	
	63 500			1 x 20.00 20	
	68 300	Bansi	100		

No. of Site	Location Kilometre	Name of the River	Class A : L >100m Running Length(m)	Class B : L <100m Running Length(m)	Class C : Spillway Running Length(m)
No. 3 Route SIRAJGANJ	70 400			1 x 20.00 20	
	71 500			1 x 20.00 20	
	73 800			1 x 30.00 30	
	75 700			1 x 30.00 30	
	77 700				12 x 5.00 60
	77 900			1 x 30.00 30	
	78 900				3 x 5.00 15
	79 300		200		
	80 100				12 x 5.00 60
	81 000			2 x 30.00 60	
	96 600	Turag	300		
	104 000			1 x 20.000 20	
	108 200			1 x 20.00 20	
	110 300	Tungi	300		
	The Whole Sections				1,895
	Total:		1,300m	360m	2,130m
			L = 3,790 m		

Table 4-1-4

BRIDGES OF ACCESS RAILWAY

No. of Site	Location Kilometre	Name of the River	Class A : L >100m Running Length(m)	Class B : L < 100m Running Length(m)	Class C : Spillway Running Length(m)
No. 4 Route NAGARBARI	From GOOAKHARA Station				
	$1^{k}\ 000^{m}$				30 x 5.00 150
	14 800	Chikunai	100		
	15 400	Rukunai	200		
	16 300			1 x 20.00 20	
	19 000			1 x 20.00 20	
	30 900	Baral	600		
	32 200			3 x 30.00 90	
	32 800	Hurasagar	300		
	37 700				16 x 5.00 80
	37 900				6 x 5.00 30
	43 300	Jamuna			
	57 700	Old Dhaleswari		200	
	61 500				10 x 5.00 50

No. of Site	Location Kilometre	Name of the River	Class A : L>100m Running Length(m)	Class B : L<100m Running Length(m)	Class C : Spillway Running Length(m)
No. 4 Route NAGARBARI	64 800			2 x 30.00 60	
	67 200			1 x 30.00 30	
	68 400	Dhaleswari	250		
	69 600	"	900		
	71 800				10 x 5.00 50
	77 700		100		
	78 900			1 x 30.00 30	
	79 300			1 x 30.00 30	
	82 600			1 x 20.00 20	
	86 100			1 x 20.00 20	
	87 100			1 x 20.00 20	
	99 900	Bansi	250		
	113 600	Turag	150		
	115 000			1 x 20.00 20	
	The Whole Sections				1,340
	Grand Total		3,050m	360m	1,700m
			L = 5,110 m		

Table 4-2-1

RAILWAY STATION

No. 1 Route

Location Kilometer	Distance	Name of Station	Land	Earth-work	Siding	Remarks
km	km		m^2	m^3	m	
0		Velurpara	30,900	10,800	1,500	Existing
	6.0					
6.0		Baniabari	22,200	15,000	1,000	New Construction
	8.0					
14.0		Nalchhia	22,200	19,400	1,000	"
	12.0					
26.0		Raiapur	22,200	19,400	1,000	"
	12.1					
38.1		Durmat	30,900	10,800	1,500	Existing
		Total:	128,400	75,400	6,000	
		Velurpara				Construction Broad Gauge
	6.8					
		Sukanpukur			1,000	"
	5.6					
		Gabralis			1,000	"
	9.6					
		Bogra			3,000	"
	10.4					
		Kahaloo			1,000	"
	8.4					
		Talora			1,000	"
	4.8					
		Altafnagar			1,000	"
	5.6					
		Nasaratpur			1,000	"
	2.8					
		Adamdighi			1,000	"
	7.2					
		Santahar				Existing
		Total:			10,000	

Table 4-2-2

RAILWAY STATION

No. 2 Route

Location Kilometer	Distance	Name of Station	Land	Earth-work	Siding	Remarks
km	km		m^2	m^3	m	
0	9.0	Bogra	2,900	1,100	1,500	Existing
9.0	11.0	Gurtup	18,600	21,600	1,000	New Construction
20.0	7.0	Dukhin	18,600	21,600	1,000	"
27.0	11.8	Chandanbisa	18,600	21,600	1,000	"
38.8	8.2	Khilkati	18,600	21,600	1,000	"
47.0	8.0	Fakirerpara	19,400	22,700	1,000	"
55.0		Jafar Shafee	26,600	7,500	1,500	Existing
		Total:	123,300	117,700	8,000	
		Bogra				Construction Broad Gauge
	10.4	Kahaloo			1,000	"
	8.4	Taloras			1,000	"
	4.8	Altafnagar			1,000	"
	5.6	Nasaratpur			1,000	"
	2.8	Adamdighi			1,000	"
	7.2	Santahar				Existing
		Total:			5,000	

Table 4-2-3

RAILWAY STATION

No. 3 Route

Location Kilometer	Distance	Name of Station	Land	Earth-Work	Siding	Remarks
km	km		m^2	m^3	m	
0	10.0	Salap	20,200	11,800	1,500	Existing
10.0	12.0	Shamspul	40,600	41,800	1,000	New Construction
22.0	9.0	Beripatal	15,800	17,200	1,000	"
31.0	10.5	Bara Basalia	13,000	13,000	1,000	"
41.5	11.0	Tangail	115,800	117,200	3,000	"
52.5	7.0	Delduar	14,400	15,000	1,000	"
59.5	8.0	Jamurki	11,000	10,200	1,000	"
67.5	8.5	Mirzapur	13,000	13,000	1,000	"
76.0	6.0	Gazaria	9,000	7,000	1,000	"
82.0	12.0	Kaliakair	14,800	15,700	1,000	"
94.0	9.0	Baimat	7,200	4,400	1,000	"
03.0	11.0	Gachha	11,900	11,300	1,000	"
14.0		Azampur	5,800	2,200	1,500	" near Tungi
		Total:	292,500	279,800	16,000	

Table 4-2-4

No. 4 Route

RAILWAY STATION

Location Kilometer	Distance	Name of Station	Land	Earth-work	Siding	Remarks
km	km		m^2	m^3	m	
0	10.0	Gooakhra	9,700	11,300	1,500	Existing
10.0	10.5	Chithalia	13,000	13,000	1,000	New Construction
20.5	7.5	Nagdemra	9,800	8,100	1,000	"
28.0	9.0	Patghari	14,400	15,000	1,000	"
37.0	13.0	Barnia	62,800	46,000	1,000	"
50.0	9.5	Hatail	65,000	48,600	1,000	"
59.5	7.0	Tengripara	14,400	15,000	1,000	"
66.5	11.5	Madhupur	14,000	14,500	1,000	"
78.0	11.0	Bahro	15,800	17,200	1,000	"
89.0	9.0	Naohatta	18,800	21,600	1,000	"
98.0	11.0	Dhamrai	18,300	21,000	1,000	"
109.0	11.0	Sadarpur	7,200	4,400	1,000	"
120.0		Azampur	3,600	2,200	1,500	" near Tungi
		Total:	266,800	237,900	14,000	

CHAPTER 5

COST OF CONSTRUCTION

The comparison of the rough construction cost of the four access railways has been shown below.

No. 1 route is the most economical, followed by No. 2 route. For transportation without transhipment facilities through to Dacca, gauge widening improvement is to be implemented from the respective terminating stations through to Tungi (Azampur) via Jamalpur and Mymensingh.

The length of the widening improvement to broad gauge amounts to 124 km for both No. 1 and No. 2 routes and the widening cost can be roughly estimated at:

4,000,000 taka/km 124 km = 496,000,000 taka

assuming the widening cost per kilometre be a half of the normal construction cost.

Therefore, No. 3 route is the most economical, if the future railway network of the country is to be considered.

Rough Cost Comparison

Cost (1,000 taka)

Route	New Construction	Gauge Widening	Total	Priority Order
No. 1	727,000	496,000	1,223,000	3
No. 2	727,000	496,000	1,223,000	3
No. 3	884,000	---	884,000	1
No. 4	1,003,000	---	1,003,000	2

Rough Construction Cost of Access Railways

TABLE 5 — 1 — 1

Item	Unit	No. 1 Route Bahadurabad	No. 2 Route Gabragaon	No. 3 Route Sirajganj	No. 4 Route Nagarbari	Remarks
Earthwork	1,000 TAKA	207,000	238,000	270,000	320,000	includes land acquisition
	1,000 YEN	(7,460,000)	(8,560,000)	(9,720,000)	(11,500,000)	
Bridge and Culverts	1,000 TAKA	78,000	73,000	99,000	153,000	includes spillway
	1,000 YEN	(2,840,000	(2,650,000)	(3,600,000)	(5,620,000)	
Track laying	1,000 TAKA	244,000	227,000	273,000	280,000	
	1,000 YEN	(8,850,000)	(8,240,000)	(9,920,000)	(10,220,000)	
Operation facilities	1,000 TAKA	198,000	189,000	242,000	250,000	include Stations, lighting, power, telecommunication, signalling, acommodation and other buildings
	1,000 YEN	(7,150,000)	(6,750,000)	(8,760,000)	(8,960,000)	
Total	1,000 TAKA	727,000	727,000	884,000	1,003,000	
	1,000 YEN	(26,300,000)	(26,200,000)	(32,000,000)	(36,300,000)	
Total route length	Mile	63	59	71	75	
	Km	(100)	(95)	(114)	(120)	

Table 5-2-1

CONSTRUCTION QUANTITY

No. 1 Route

BAHADURABAD

Item	Unit	New Construction Section		Construction Alongside Existing Lines		Total	Remarks
		Lines	Station	Lines	Station		
Total Length of Line	km	38	-	62	-	100	
Area of Land Acquisition	1000 m^2	2,260	128	2,290	130	4,808	Excludes graded approach section Jamuna bridge
Earthwork up to Formation	1000 m^3	2,016	76	1,975	75	4,142	"
Bridge Running Length							
Class A: L >100m	m	500	-	500	-	1,000	
Class B: L <100m	m	270	-	300	-	570	
Class C: Spillway	m	540	-	880	-	1,420	
Total	m	1,310	-	1,680	-	2,990	
Track Laying	km	38	6	62	10	116	
Station	nos	-	5	-	8	13	Includes originating & terminating station

Table 5-2-2

CONSTRUCTION QUANTITY

No. 2 Route

GABARGAON

Item	Unit	New Construction Section		Construction Alongside Existing Lines		Total	Remarks
		Lines	Station	Lines	Station		
Total Length of Line	km	55	-	40	-	95	
Area of Land Acquisition	1000 m^2	3,418	124	1,505	55	5,102	Excludes graded approach section Jamuna bridge
Earthwork up to Formation	1000 m^3	3,210	118	1,390	50	4,759	"
Bridge Running Length							
Class A: L >100m	m	1,050	-	300	-	1,350	
Class B: L <100m	m	180	-	100	-	280	
Class C: Spillway	m	430	-	460	-	390	
Total	m	1,660	-	860	-	2,520	
Track Laying	km	55	8	40	5	108	
Station	nos	-	7	-	5	12	Includes originating & terminating station

Table 5-2-3

CONSTRUCTION QUANTITY

No. 3 Route

SIRAJGANJ

Item	Unit	New Construction Section		Construction Alongside Existing Lines		Total	Remarks
		Lines	Station	Lines	Station		
Total Length of Line	km	114	-			114	
Area of Land Acquisition	1000 m^2	6,129	293			6,422	Excludes graded approach section Jamuna bridge
Earthwork up to Formation	1000 m^3	5,119	280			5,399	"
Bridge Running Length							
Class A: L >100m	m	1,300	-			1,300	
Class B: L <100m	m	360	-			360	
Class C Spillway	m	2,130	-			2,130	
Total	m	3,790	-			3,790	
Track Laying	km	114	16			130	
Station	nos	-	13			13	Includes originating & terminating station

Table 5-2-4

CONSTRUCTION QUANTITY

No. 4 Route

NAGARBARI

Item	Unit	New Construction Section		Construction Alongside Existing Lines		Total	Remarks
		Lines	Station	Lines	Station		
Total Length of Line	km	120	-			120	
Area of Land Acquisition	1000 m^2	6,932	267			7,199	Excludes graded approach section Januma bridge
Earthwork up to Formation	1000 m^3	6,147	238			6,385	"
Bridge Running Length							
Class A: L >100m	m	3,050	-			3,050	
Class B: L <100m	m	360	-			360	
Class C: Spillway	m	1,700	-			1,700	
Total	m	5,110	-			5,110	
Track Laying	km	120	14			134	
Station	nos	-	13			13	Includes originating & terminating station

Table 5-3-1

ROUGH ESTIMATE OF CONSTRUCTION COST
FOR ACCESS RAILWAY

Site No. 1 — Broad Gauge

Nomination — Single Track

TOTAL LENGTH 100 km (63 miles)

BAHADURABAD

Construction Item	Unit	Quantity	Unit Cost TAKA	Cost 1000 TAKA	Remarks
EARTHWORK	1,000 M^3	4,142	50,000	207,100	Includes Right-of-way
BRIDGE	M	2,990	26,000	77,740	Includes spillway bridge
TRACK LAYING	KM	116	2,100,000	243,600	
OPERATION FACILITIES	LS			198,560	Includes Station, Lighting, Power, Telecommunication, Signalling, Accommodation and other building.
TOTAL*				727,000	

Note: * Excludes Administration and Overhead Charge.

Table 5-3-2

ROUGH ESTIMATE OF CONSTRUCTION COST
FOR ACCESS RAILWAY

Site No. 2 — Broad Gauge

Nomination — Single Track

TOTAL LENGTH 95 km (59 miles)

GABARGAON

Construction Item	Unit	Quantity	Unit Cost TAKA	Cost 1000 TAKA	Remarks
EARTHWORK	1000 M^3	4,759	50,000	237,950	Includes Right-of-way
BRIDGE	M	2,520	29,000	73,080	Includes Spillway Bridge
TRACK LAYING	KM	108	2,100,000	226,800	
OPERATION FACILITIES	LS			189,170	Include Station, Lighting, Power, Telecommunication, Signalling, Accommodation and other building
TOTAL *				727,000	

Note: * Excludes Administration and Overhead Charge.

Table 5-3-3

ROUGH ESTIMATE OF CONSTRUCTION COST
FOR ACCESS RAILWAY

Site No. 3 Broad Gauge

Nomination Single Track

TOTAL LENGTH 114 km (71 miles)

SIRAJGANJ

Construction Item	Unit	Quantity	Unit Cost TAKA	Cost 1000 TAKA	Remarks
EARTHWORK	1000 M^3	5,399	50,000	269,950	Includes Right-of-way
BRIDGE	M	3,790	26,000	98,540	Includes Spillway Bridge
TRACK LAYING	KM	130	2,100,000	273,000	
OPERATION FACILITIES	LS			242,510	Include Station, Lighting, Power, Telecommunication, Signalling, Accommodation and other building
TOTAL *				884,000	

Note: * Excludes Administration and Overhead Charge.

Table 5-3-4

ROUGH ESTIMATE OF CONSTRUCTION COST
FOR ACCESS RAILWAY

Site No. 4 Broad Gauge

Nomination Single Track

TOTAL LENGTH 120 KM (75 miles)

NAGARBARI

Construction Item	Unit	Quantity	Unit cost TAKA	Cost 1000 TAKA	Remarks
EARTHWORK	1000 M^3	6,385	50,000	319,250	Includes Right-of-way
BRIDGE	M	5,110	30,000	153,300	Includes Spillway Bridge
TRACK LAYING	KM	134	2,100,000	281,400	
OPERATION FACILITIES	LS			249,050	Include Station, Lighting, Power, Telecommunication, Signalling, Accommodation and other building
TOTAL *				1,003,000	

Note: * Excludes Administration and Overhead Charge.

Table 5-4-1-1 ROUGH ESTIMATE OF CONSTRUCTION COST FOR RAILWAY LINKS

Site No. 1
Nomination BAHADURABAD NEW CONSTRUCTION SECTION Broad-gauge Single-track
Cost: TAKA 314,000,000 TOTAL LENGTH 38 KM

Construction Item	Description	Unit	Quantity	Unit Cost (TAKA)	Cost (TAKA)	Remarks
Right-of-way						
	Land acquisition	1000 m^2	2,388	3,600	8,596,000	Tracts for station included
	Buildings on the ground				2,580,000	30% of land acquisition
Earthwork						
	Earth-fill	1000 m^3	2,092	45,000	94,140,000	Includes finishing operations, earthwork for station
Bridges & Culverts						
	Class A: L >100m	m	500	36,000	18,000,000	Truss beam
	Class B: L <100m	m	270	25,000	6,750,000	Prestressed concrete beam
	Class C: (Culvert)	nos	54	200,000	10,800,000	Include reinforced concrete pipe ℓ=10m
Track laying						
	Rails, sleepers ballast, etc.	km	44	2,100,000	92,400,000	Includes station siding
Station						
	Minor station	nos	5	2,800,000	14,000,000	Include buildings & necessary facilities
	Major station	nos				- do -
Lighting & Power		km	38	610,000	23,180,000	
Telecommunication		km	38	444,000	16,872,000	
Signalling		km	38	556,000	21,128,000	C.T.C. to be equipped
Accommodation & other buildings					5,554,000	Accommodation etc 2% of the sub-total cost
Grand Total					314,000,000	

Construction cost per Km 8,300,000

Table 5-4-1-2 ROUGHT ESTIMATE OF CONSTRUCTION COST FOR RAILWAY LINKS

Site No. 1
Nomination BAHADURABAD CONSTRUCTION ALONGSIDE EXISTING METER GAUGE
Cost: TAKA 413,000,000 TOTAL LENGTH 62 KM

Broad-gauge
Single-track

Construction Item	Description	Unit	Quantity	Unit Cost (TAKA)	Cost (TAKA)	Remarks
Right-of-way						
	Land acquisition	1000 m^2	2,420	3,600	8,712,000	Tracts for station included
	Buildings on the ground				2,600,000	30% of land acquisition
Earthwork						
	Earth-fill	1000 m^3	2,050	45,000	92,250,000	Includes finishing operations, earthwork for stations
Bridge & Culverts						
	Class A: L >100m	m	500	36,000	18,000,000	Truss beam
	Class B: L <100m	m	300	25,000	7,500,000	Prestressed concrete beam
	Class C: (Culvert)	nos	88	200,000	17,600,000	Include reinforced concrete pipe ℓ=10m
Track laying						
	Rails, sleepers ballast, etc.	km	72	2,100,000	151,200,000	Includes station siding
Station						
	Minor station	nos	7	2,800,000	19,600,000	Includes buildings & necessary facilities
	Major station	nos	1	8,300,000	8,300,000	- do -
Lighting & Power		km	62	444,000	27,528,000	
Telecommunication		km	62	306,000	18,972,000	
Signalling		km	62	556,000	34,472,000	C.T.C. to be equipped
Accommodation & other buildings					6,266,000	Accommodation etc. 2% of the sub-total cost
Grand Total					413,000,000	

Construction cost per Km 6,700,000

Table 5-4-2-1 ROUGH ESTIMATE OF CONSTRUCTION COST FOR RAILWAY LINES

Site No. 2
Nomination GABARGAON NEW CONSTRUCTION SECTION Broad-gauge Single-Track
Cost: TAKA 467,000,000 TOTAL LENGTH 55 KM

Construction Item	Description	Unit	Quantity	Unit Cost (TAKA)	Cost (TAKA)	Remarks
Right-of-way						
	Land acquisition	1000 m^2	3,542	3,600	12,751,000	Tracts for station included
	Buildings on the ground				3,800,000	30% of land acquisition
Earthwork						
	Earth-fill	1000 m^3	3,319	45,000	149,355,000	Includes finishing operations, earthwork for stations
Bridges & Culverts						
	Class A: L > 100m	m	1,050	36,000	37,800,000	Truss beam
	Class B: L < 100m	m	180	25,000	4,500,000	Prestressed concrete beam
	Class C: (Culvert)	nos	43	200,000	8,600,000	Include reinforced concrete pipe ℓ=10m
Track laying						
	Rails, sleepers ballast, etc.	m	63	2,100,000	132,300,000	Includes station siding
Station						
	Minor station	nos	7	2,800,000	19,600,000	Include buildings & necessary facilities
--	Major station	nos				- do -
Lighting & Power		km	55	610,000	33,550,000	
Telecommunication		km	55	444,000	24,420,000	
Signalling		km	55	556,000	30,580,000	C.T.C. to be equipped
Accommodation & other buildings					9,744,000	Accommodation etc 2% of the sub-total cost
Grand Total					467,000,000	

Construction cost per Km 8,500,000

Table 5-4-2-2 ROUGH ESTIMATE OF CONSTRUCTION COST FOR RAILWAY LINES

Site No. 2 Broad-gauge
Nomination GABARGAON CONSTRUCTION ALONGSIDE EXISTING METER GAUGE Single-track
Cost: TAKA 360,000,000 TOTAL LENGTH 40 KM

Construction Item	Description	Unit	Quantity	Unit Cost (TAKA)	Cost (TAKA)	Remarks
Right-of-way						
	Land acquisition	1000 m^2	1,560	3,600	5,616,000	Tracts for station included
	Buildings on the ground				1,700,000	30% of land acquisition
Earthwork						
	Earth-fill	1000 m^3	1,440	45,000	64,800,000	Includes finishing operations, earthwork for stations
Bridges & Culverts						
	Class A: L >100m	m	300	36,000	10,800,000	Truss beam
	Class B: L < 100m	m	100	25,000	2,500,000	Prestressed concrete beam
	Class C: (Culvert)	nos	46	200,000	9,200,000	Include reinforced concrete pipe ℓ=10m
Track laying						
	Rails, sleepers ballast, etc.	km	45	2,100,000	94,500,000	Includes station siding
Station						
	Minor station	nos	5	2,800,000	14,000,000	Include buildings & necessary facilities
	Major station	nos				- do -
Lighting & Power		km	40	444,000	17,760,000	
Telecommunication		km	40	306,000	12,240,000	
Signalling		km	40	556,000	22,240,000	C.T.C. to be equipped
Accommodation & other buildings					4,644,000	Accommodation etc 2% of the sub-total cost
Grand Total					260,000,000	

Construction cost per Km 6,500,000

Table 5-4-3 ROUGH ESTIMATE OF CONSTRUCTION COST FOR RAILWAY LINES

Site No. 3
Nomination SIRAJGANJ NEW CONSTRUCTION SECTION Broad-gauge Single-track
Cost: TAKA 884,000,000 TOTAL LENGTH 114 KM

Construction Item	Description	Unit	Quantity	Unit Cost (TAKA)	Cost (TAKA)	Remarks
Right-of-way						
	Land acquisition	1000 m^2	6,422	3,600	23,119,000	Tracts for station included
	Buildings on the ground				6,940,000	30% of land acquisition
Earthwork						
	Earth-fill	1000 m^3	5,399	45,000	242,955,000	Includes finishing operations, earthwork for stations
Bridges & Culverts						
	Class A: L>100m	m	1,300	36,000	46,800,000	Truss beam
	Class B: L<100m	m	360	25,000	9,000,000	Prestressed concrete beam
	Class C: (Culvert)	nos	213	200,000	42,600,000	Include reinforced concrete pipe ℓ=10m
Track laying						
	Rails, sleepers ballast, etc.	km	130	2,100,000	273,000,000	Includes station siding
Station						
	Minor station	nos	12	2,800,000	33,600,000	Include buildings & necessary facilities
--	Major station	nos	1	8,300,000	8,300,000	- do -
Lighting & Power		km	114	610,000	69,540,000	
Telecommunication		km	114	444,000	50,616,000	
Signalling		km	114	556,000	63,384,000	C.T.C. to be equipped
Accommodation & other buildings					14,146,000	Accommodation etc 2% of the sub-total cost
Grand Total					884,000,000	

Construction cost per Km 7,800,000

Table 5-4-4 ROUGHT ESTIMATE OF CONSTRUCTION COST FOR RAILWAY LINKS

Site No. 4
Nomination NAGARBARI NEW CONSTRUCTION SECTION Broad-gauge Single-track
Cost: TAKA 1,003,000,000 TOTAL LENGTH 120 KM

Construction Item	Description	Unit	Quantity	Unit Cost (TAKA)	Cost (TAKA)	Remarks
Right-of-way						
	Land acquisition	1000 m^2	7,199	3,600	25,916,000	Tracts for station included
	Buildings on the ground				7,800,000	30% of land acquisition
Earthwork						
	Earth-fill	1000 m^3	6,385	45,000	287,325,000	Includes finishing operations, earthwork for stations
Bridges & Culverts						
	Class A: L >100m	m	3,050	36,000	109,800,000	Truss beam
	Class B: L <100m	m	360	25,000	9,000,000	Prestressed concrete beam
	Class C: (Culvert)	nos	170	200,000	34,000,000	Include reinforced concrete pipe ℓ=10m
Track laying						
	Rails, sleepers ballast, etc.	km	134	2,100,000	281,400,000	Includes station siding
Station						
	Minor station	nos	13	2,800,000	36,400,000	Include buildings & necessary facilities
--	Major station	nos				- do -
Lighting & Power		km	120	610,000	73,200,000	
Telecommunication		km	120	444,000	53,280,000	
Signalling		km	120	556,000	66,720,000	C.T.C. to be equipped
Accommodation & other buildings					15,189,000	Accommodation etc 2% of the sub-total cost
Grand Total					1,003,000,000	

Construction cost per Km 8,400,000

APPENDIX "1"

SUMMARY OF ACCESS RAILWAY LINES

(Table)

SUMMARY OF ACCESS RAILWAY LINES

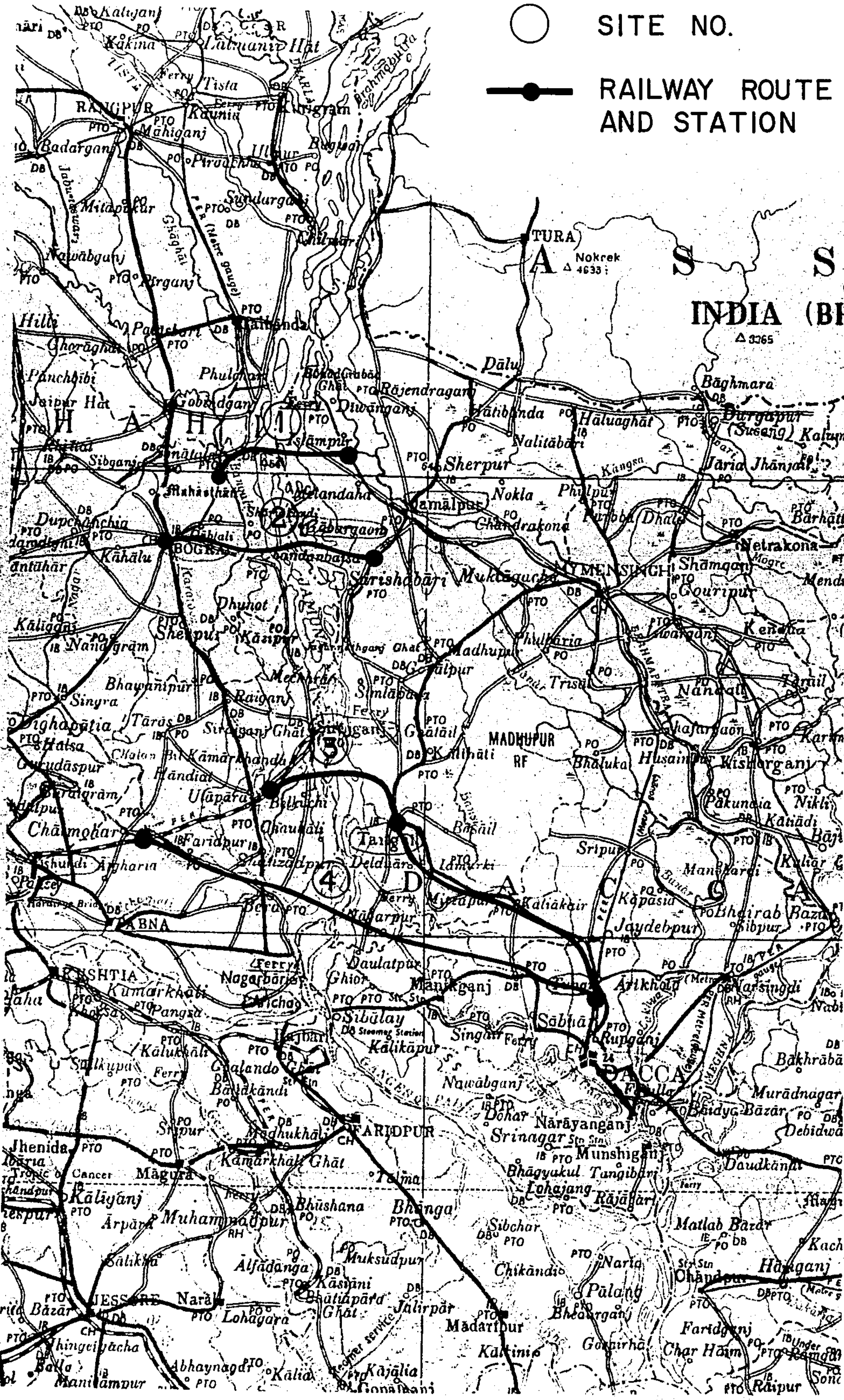
Site Number & Nomination		No. 1 Bahadurabad	No. 2 Gabargaon	No. 3 Sirajganj	No. 4 Nagarbari
Originating Station and its Location		Velurpara on Santahar - Bonarpara Line	Bogra on Santahar - Bonarpara Line	Salap on Ishurdi - Sirajganj Line	Gooakhara on Ishurdi - Sirajganj Line
Terminating Station and its Location		Durmat on Jamalpur - Bahadurabad Line	Jafar Shafee on Jamalpur - Jagannathganj Line	Azampur (or Tungi) on Dacca - Tungi Line	Azampur (or Tungi) on Dacca - Tungi Line
Total Length of Line (Km)		38 (24 miles)	55 (34 miles)	114 (71 miles)	120 (75 miles)
Gauge		Broad (5' - 6") 1,676 m	Broad (5' - 6") 1,676 m	Broad (5' - 6") 1,676 m	Broad (5' - 6") 1,676 m
Number of Tracks		Single	Single	Single	Single
Major Station		--	--	Tangail Station	--
Number of Minor Stations		3	5	11	12
Allowable Maximum Gradient		5/1,000	5/1,000	5/1,000	5/1,000
Minimum Curve (meters)		R=1,000	R=1,000	R=1,000	R=1,000
Bridge Running Length (m)	Class A: L > 100 m	500 (1640^f)	1,050 (3,450^f)	1,300 (4,270^f)	3,050 (10,000^f)
	Class B: L < 100 m	270 (890^f)	180 (590^f)	360 (1,180^f)	360 (1,180^f)
Earthwork up to Formation (m^3)		2,100,000	3,300,000	5,400,000	6,400,000
Area of Land Acquisition (m2)		2,400,000	3,500,000	6,400,000	7,200,000
Length of New Broad Gauge Line alongside the Existing Meter Gauge		62 km (39 miles) Station: Velurpara to Santahar	40 km (25 miles) Station: Bogra to Santahar	18 km (11.3 miles) Station: Azampur (or Tungi) to Dacca (Kamalpur)	18 km (11.3 miles) Station: Azampur (or Tungi) to Dacca (Kamalpur)

APPENDIX "2"

GENERAL PLAN OF ACCESS RAILWAY LINES

(Figure)

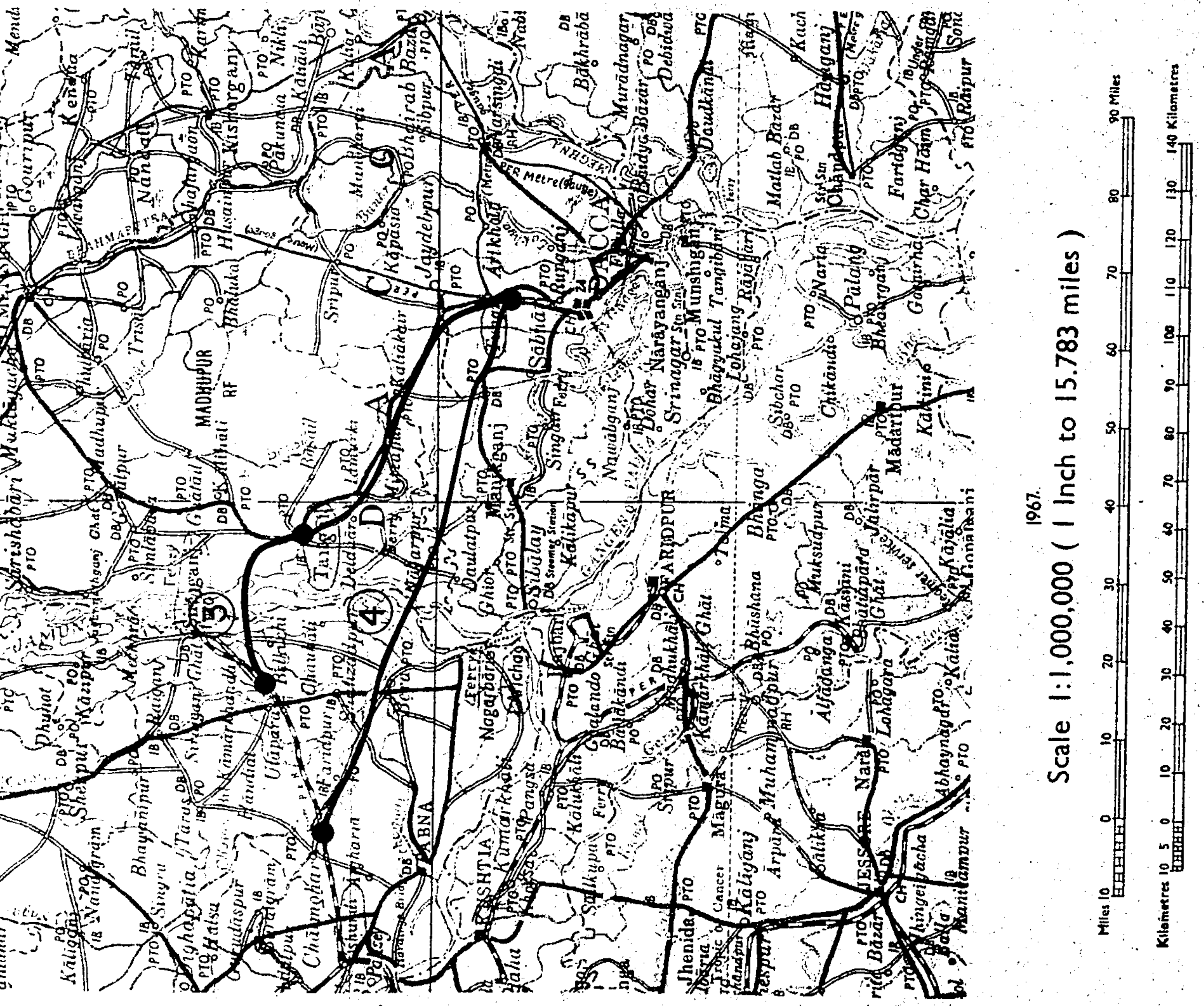
BANGLADESH
SHOWING COMMUNICATIONS



1967.

Scale 1:1,000,000 (1 Inch to 15.783 miles)

Miles 10 0 10 20 30 40 50 60 70 80 90 Miles



G.T.S. DATUM LEVEL

JAPAN INTERNATIONAL COOPERATION AGENCY

PEOPLE S REPUBLIC OF BANGLADESH

JAMUNA RIVER BRIDGE PROJECT

GENERAL PLAN OF RAILWAY APPROACH LINES

SCALE : 1/1000 000

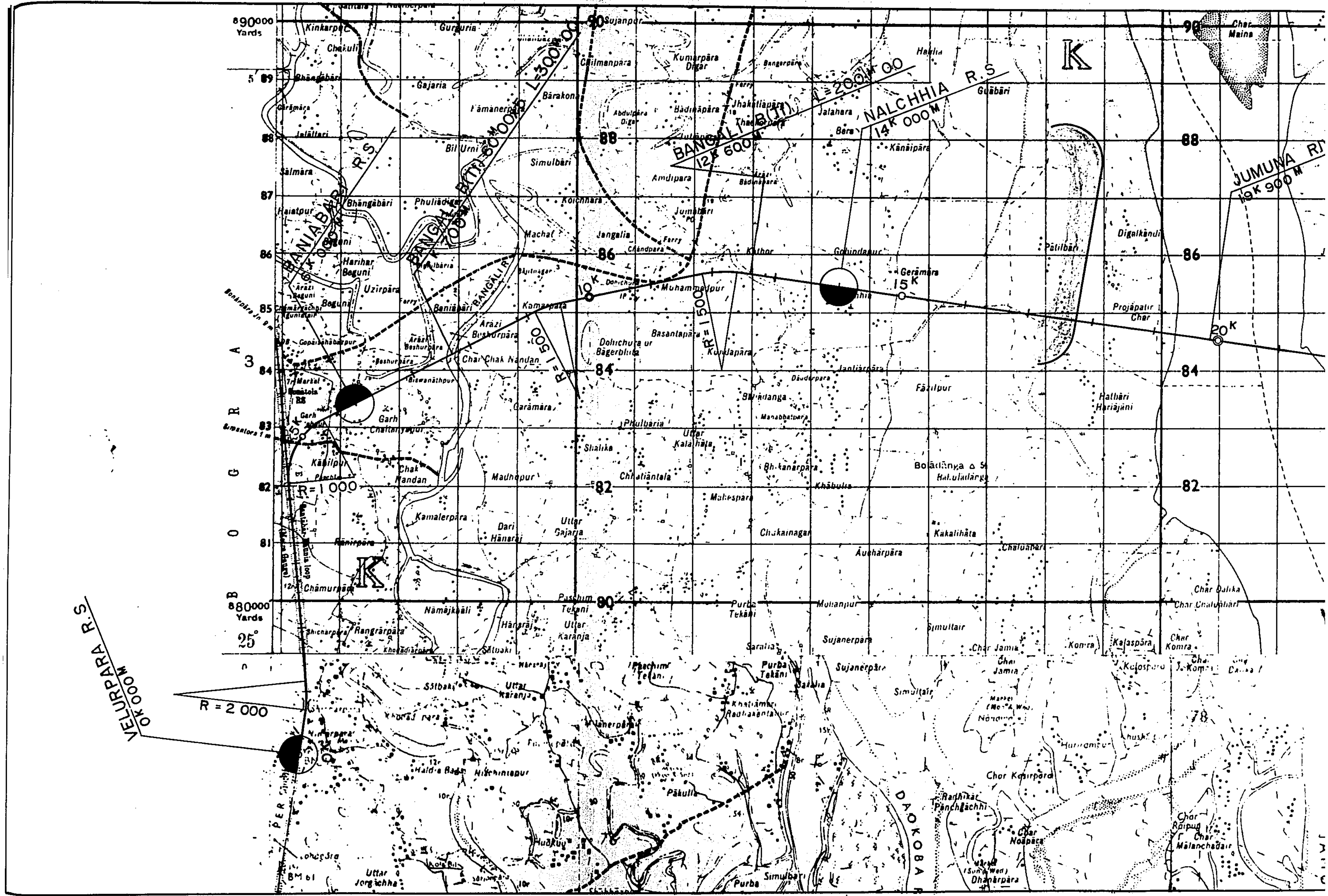
Drawn	Date
Approved	Date
PACIFIC CONSULTANTS INTERNATIONAL	Fig 4

APPENDIX "3"

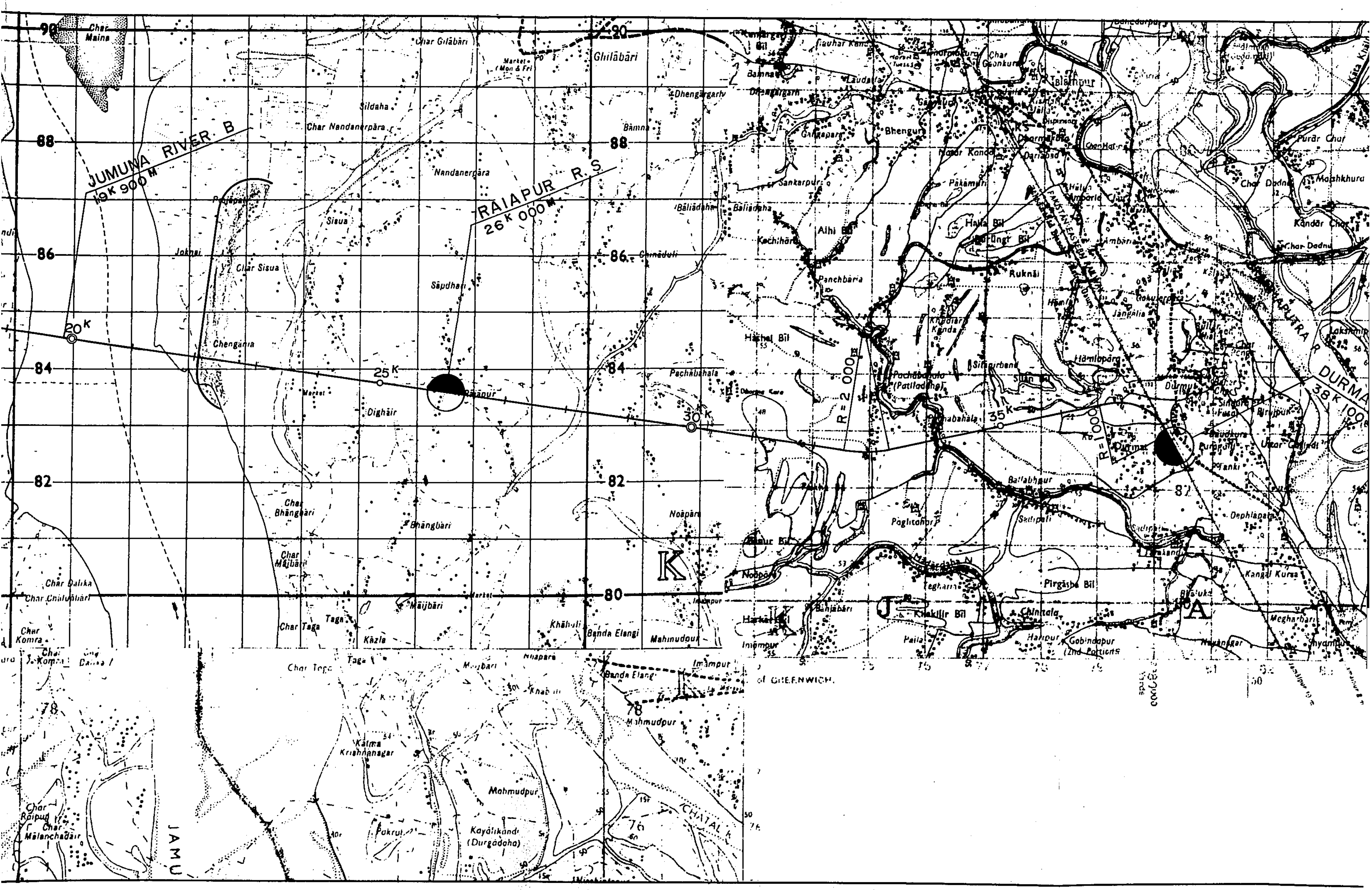
RAILWAY HORIZONTAL ALIGNMENT

ROUTES FOR NO. 1, NO. 2, NO. 3 AND NO. 4

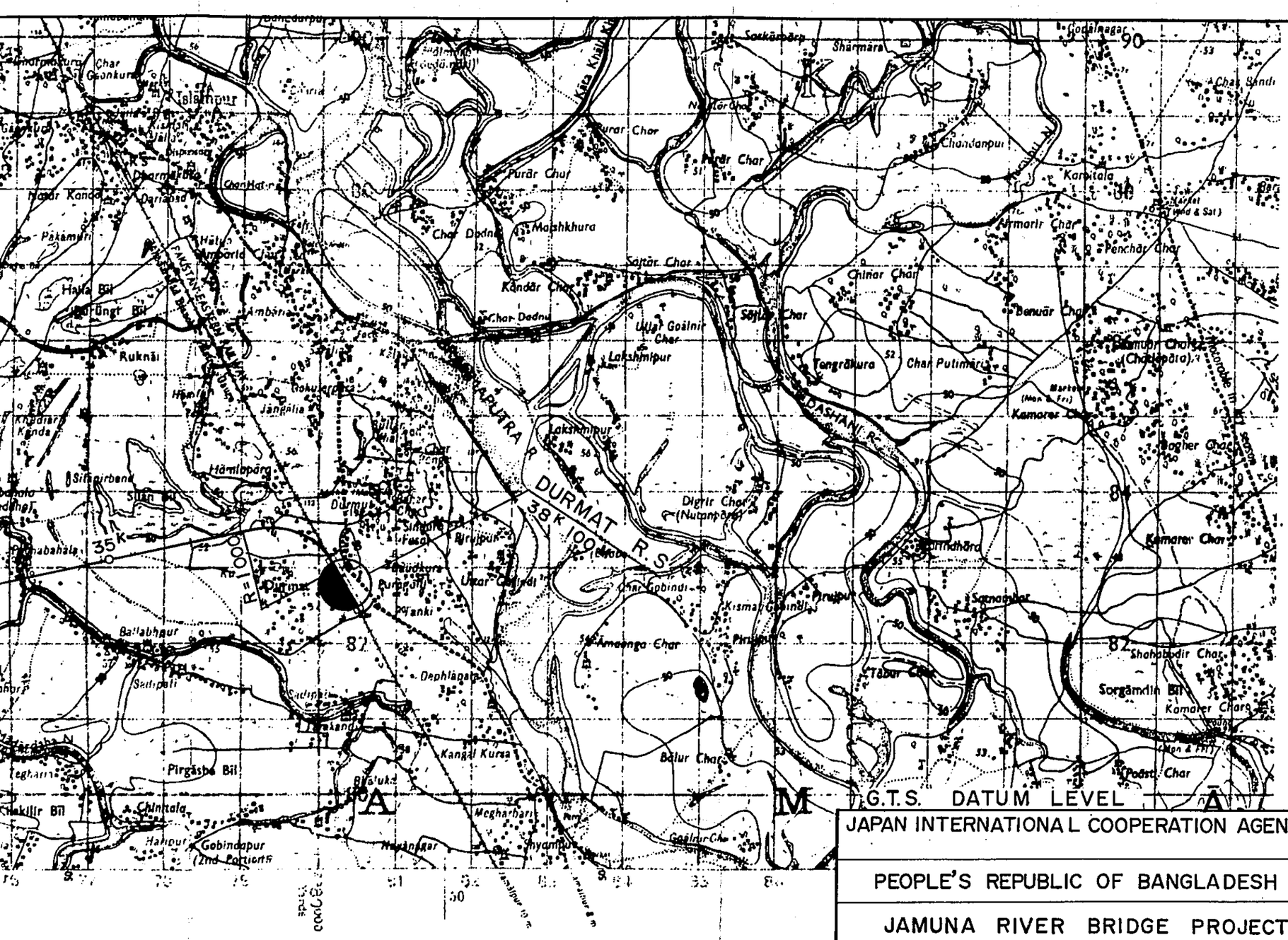
(Figures)



BANIABARI R.S
6K 000M
BANGALI B(T) L=300M00
BANGALI B(T) L=200M00
BANGALI R
12K 600M
NALCHHIA R.S
14K 000M
JUMUNA R
19K 900M
VELURPARA R.S
0K000M
R = 2 000
R=1 000
R=1 500
R=1 500
10K
15K
20K
K
K
890000 Yards
880000 Yards
25°
BOGRA
Kinkarpur
Chakuli
Gurguria
Sujanpur
Gajaria
Chilmanpara
Barakona
Kumarpara Digar
Badinapara
Jhakatiapara
Jalahara
Bera
Kanaipara
Guabari
Simulbari
Bil Urni
Amdipara
Salmara
Koichhara
Bhangabari
Phuliadiga
Jumabari
Machal
Jangalia
Kathor
Gobindapur
Geramara
Digalkandi
Patilbari
Harihar Beguni
Uzirpara
Beniabari
Kamarpara
Muhammadpur
Basantapara
Projapatir Char
Kundapara
Dolichura or Bagerbhita
Char Chak Nandan
Garamara
Garh
Chaitanyapur
Phulbaria
Uttar Kalahata
Shalika
Chhatiantala
Bhikanarpara
Khabulia
Fazilpur
Hathari Hariajani
Madhupur
Chak Nandan
Mahespara
Kamalerpara
Dari Hanarai
Uttar Gajaria
Chakainagar
Kakalihata
Aucharpara
Chaluabari
Char Dalika
Char Chaluabari
Ranirpara
Chamurpara
Namajkhali
Paschim Tekani
Purba Tekani
Mohanpur
Simultair
Sujanerpara
Hansraj
Uttar Karanja
Rangrarpara
Komra
Kalaspara
Char Komra
Saltbari
Char Jamia
Nischintapur
Pakulia
Chor Kairpara
Ranhikar Panchgachhi
Char Noapara
Dhanarpara
DAOKOBA R
Char Raipur
Char Malanchadair
Uttar Jorgachha
Purba Simulbari
BM 61

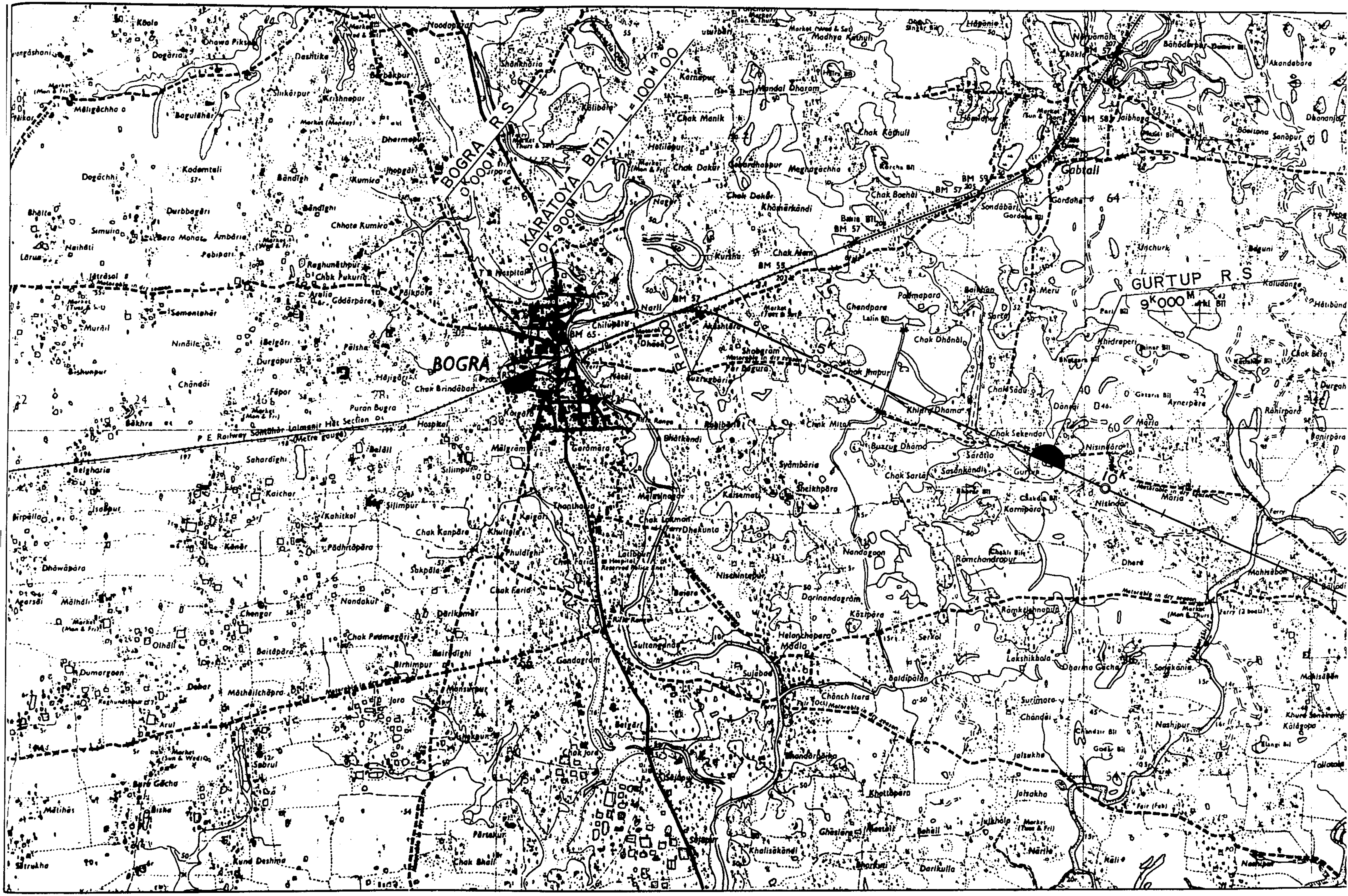


JUMUNA RIVER B
19K 900M
RAIAPUR R.S
26K 000M
20K
25K
30K
35K
38K 100
R = 2 000
R = 1 000
DURMA
K
A
Char Maina
Char Gilābāri
Ghilābāri
Sildaha
Char Nandanerpāra
Nandanerpāra
Dhengargarh
Bāmna
Sisua
Jokhai
Char Sisua
Sāpdhari
Chengānia
Dighāir
Char Bhāngbāri
Bhāngbāri
Char Majbāri
Char Dalika
Char Chilmābāri
Char Komra
Char Taga
Taga
Kāzla
Māijbāri
Khāluli
Banda Elangi
Mahmudpur
Noapāra
Pachabahala
Bāliādaha
Kachihāra
Alhi Bil
Panchbāria
Hāshel Bil
Bhengura
Gangapara
Sankarpur
Pakamuri
Ruknāi
Ambaria
Hāmlapāra
Durmut
Ballabhpur
Poglitohor
Pirgāsha Bil
Chintala
Gobindapur
Kangal Kursa
Megharbari
Deplhānga
Uttar Gadhai
Kandar Char
Char Dodna
Purār Char
Islāmpur
Imampur
Char Taga
Kātma Krishnanagar
Mohmudpur
Kayālikandi (Durgādaha)
Pokrul
Char Raipur
Char Malanchadair
JAMU
CHATAL
OF GREENWICH
90
88
86
84
82
80
78
76

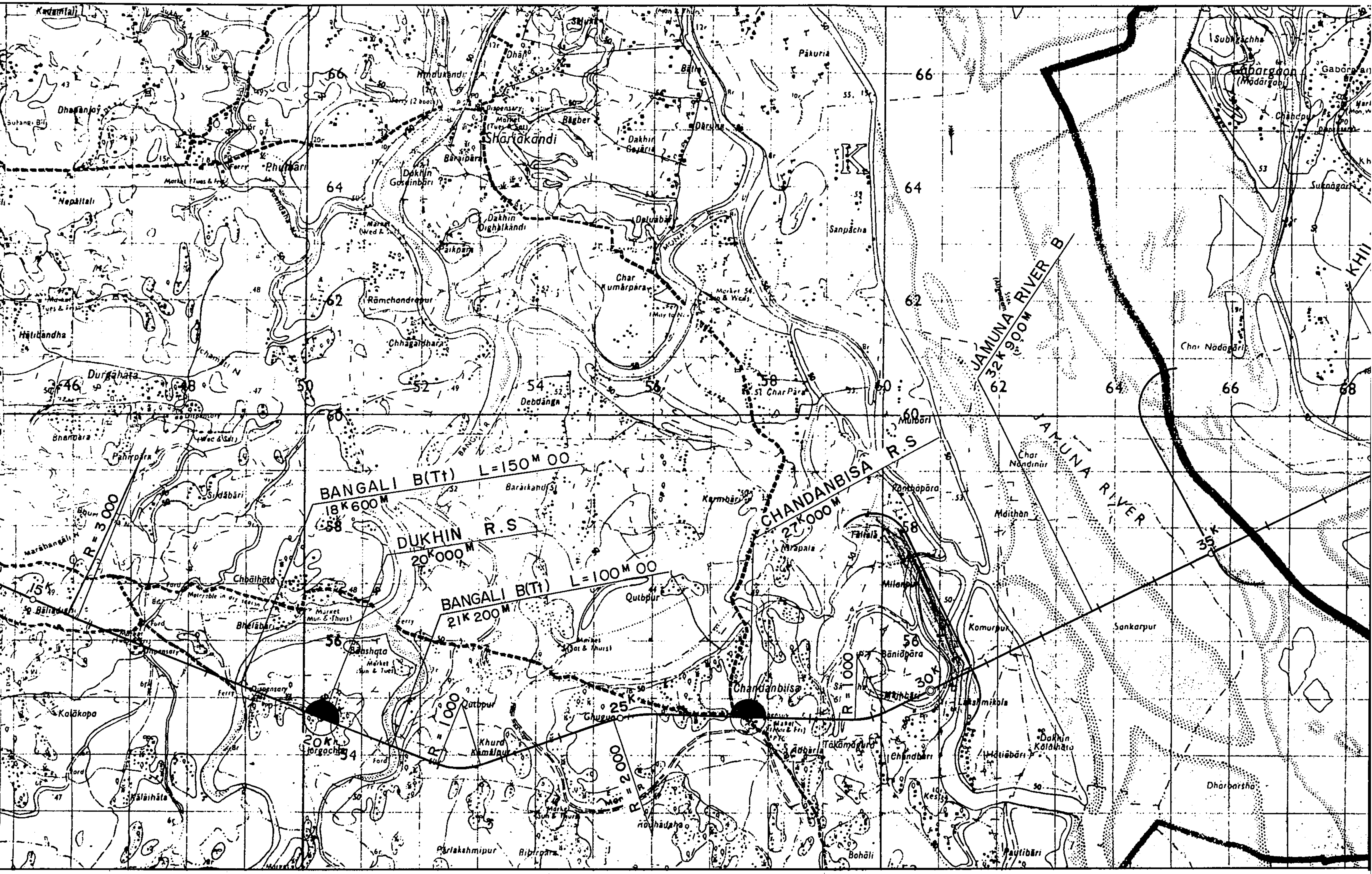


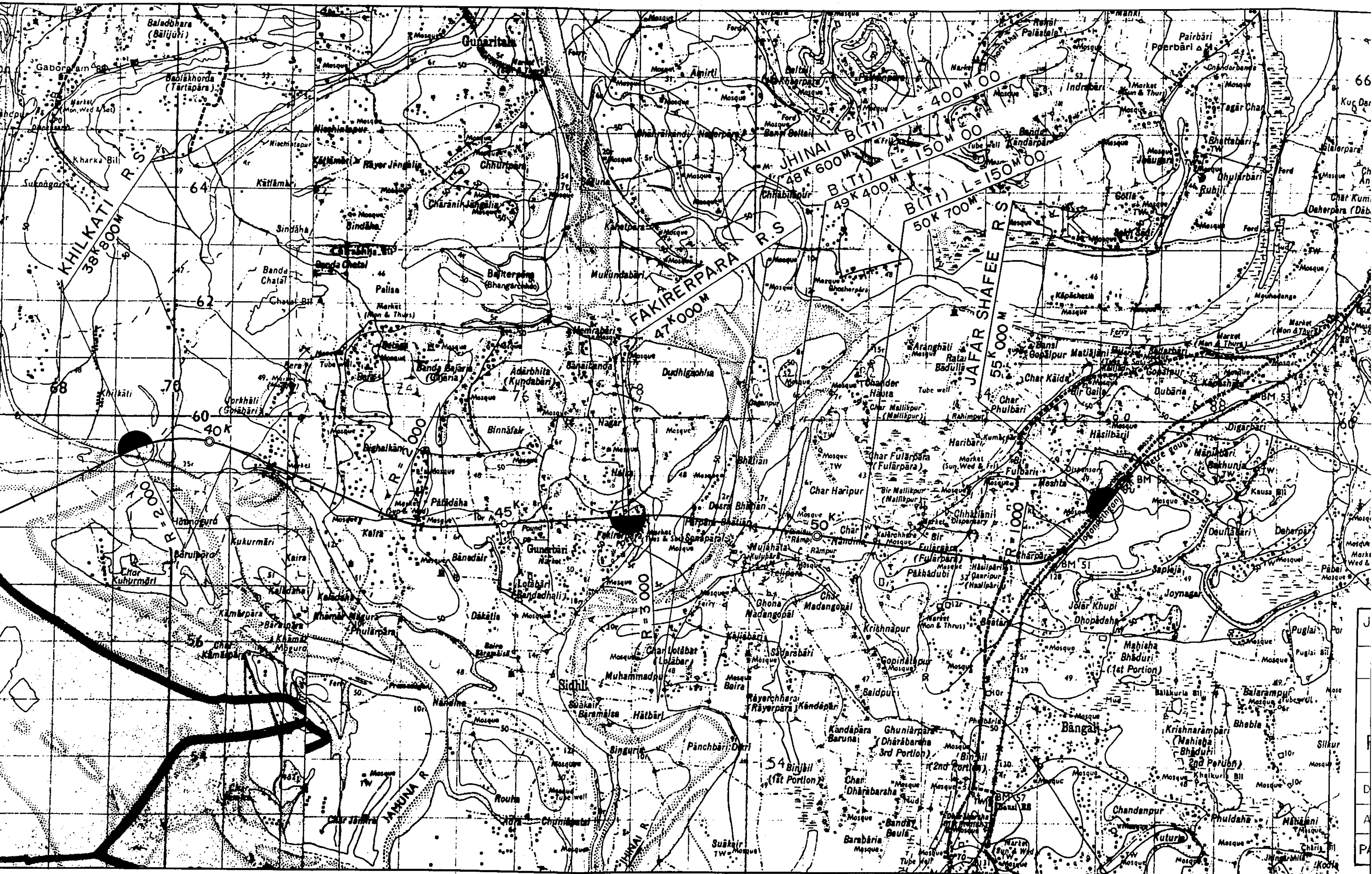
G.T.S. DATUM LEVEL

JAPAN INTERNATIONAL COOPERATION AGENCY	
PEOPLE'S REPUBLIC OF BANGLADESH	
JAMUNA RIVER BRIDGE PROJECT NO. 1 SITE (BAHADRABAD) RAILWAY HORIZONTAL ALIGNMENT SCALE 1/50 000	
Drawn	Date
Approved	Date
PACIFIC CONSULTANTS INTERNATIONAL	Fig 5

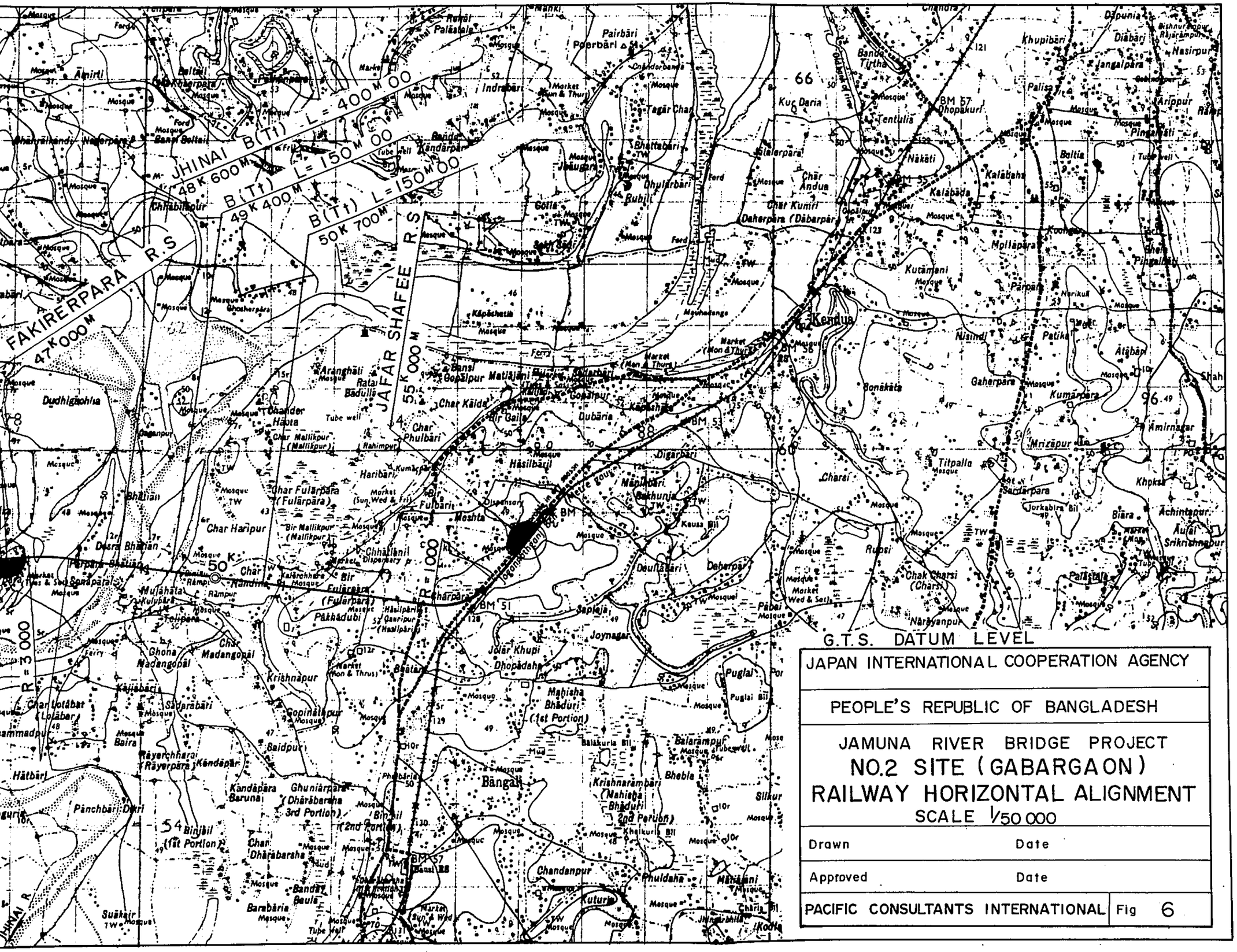


BOGRA
BOGRA R S
0K000M
KARATOYA B(T) L=100M00
0K900M
R=1000
5K
10K
GURTUP R S
9K000M
P. E. Railway Santahar Lalmanir Hat Section
(Metre gauge)
Gabtali
Gurtup
Chak Sekendar
Nisindara
Maria
Sondabari
Chak Kathuli
Madhya Kathuli
Chak Manik
Chak Dakar
Khamarkandi
Chak Bochai
Uthchurk
Padmapara
Chak Dhanai
Chak Jhapur
Khipra Dhama
Buzrug Dhama
Chak Sartaj
Sasankandi
Saratlo
Karnipara
Ramchandrapur
Dhare
Mohisabon
Ramkrishnapur
Kazipara
Servol
Lakshikola
Dharma Gacha
Chanch Itara
Baldipalan
Surimara
Chandai
Nashipur
Jalsakha
Khottapara
Ghaslara
Khalisakandi
Darikulla
Sajapur
Chak Jora
Belgari
Sujabad
Sultanganj
Gondogram
Madla
Nischintapur
Darinandogram
Nandogaon
Lalbazar
Chak Farid
Phuldighi
Khujtala
Thanthania
Malgram
Garomara
Sheikhpara
Syambarie
Kaisemati
Dhakunta
Bhatkandi
Nishindara
Hospital
Chak Brindaban
Puran Bogra
Hajigari
Palsha
Belgari
Durgapur
Chandai
Bishunpur
Murail
Ninaile
Samantahar
Jatrasol
Raghunathpur
Chak Pukuria
Godarpara
Pajkpara
T B Hospital
Chhote Kumira
Kumira
Bandigh
Bandighi
Jhopgari
Dhermapur
Baguliahar
Maligachha
Krishnapur
Slikarpur
Deshtika
Dogaria
Dhawa Piksha
Dogachhi
Kadamtali
Durbbagari
Simuira
Neihati
Larua
Bhaite
Ambaria
Pabipara
Sahardighi
Belghoria
Isabpur
Kaichar
Silimpur
Chak Kanpara
Padhripara
Kahitkol
Sakpala
Dhawapara
Kenar
Nandakur
Chengar
Mahali
Olhali
Baitapara
Chak Padmagari
Dumorgoan
Dabar
Mathailchapra
Birhimpur
Mansurpur
Arul
Sabrul
Bara Gacha
Bishe
Matihas
Kund Deshma
Partakur
Chak Bhali
Nootanpara
Narwamala
Bahadarbar
Akandabara
Mandal Dharam
Karnapur
Shankharia
Kalibala
Hatilapur
Gobardhanpur
Meghagachha
Nagar
Kursha
Chak Alam
Narli
Chilupara
Dhaoa
Shabgram
Buzrugbari
Natai
Akashtara
Ghandpara
Chak Sadu
Donqi
Aynerpara
Rahirpara
Khidraperi
Kaludanga
Hatibund
Chak Bera
Durgah
Kolagopa
Khura Sanakhand
Mahisaban
Sonakanie
Tollatola
Jaibhaga
Sonapur
Dhonanja
Marketable in dry season
Market (Mon & Thurs)
Ferry
Rifle Range
Reserved Police Lines
BM 65
BM 57
BM 55
BM 59
BM 58
40
42
60
64

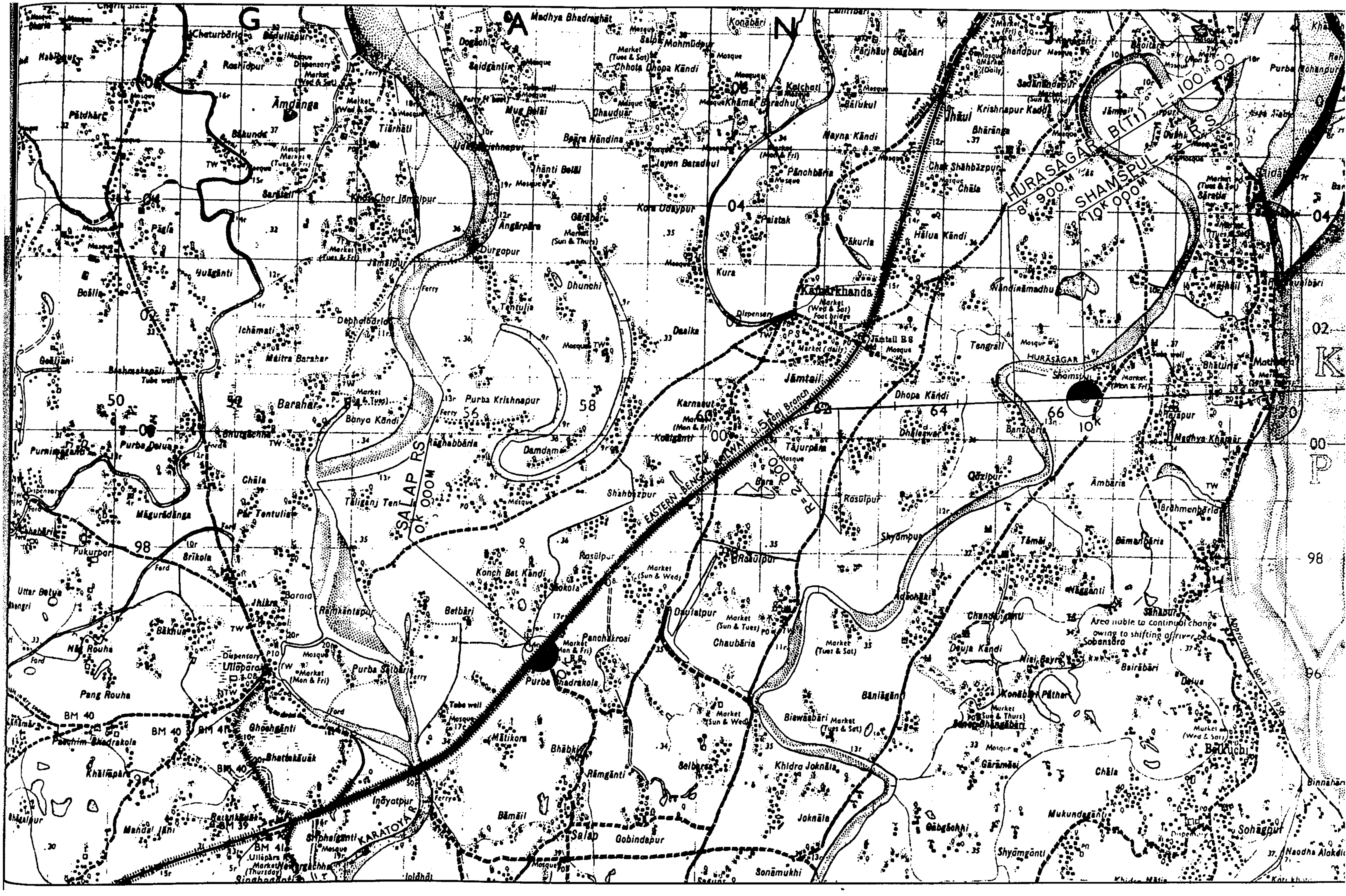

BANGALI B(Tt) L=150M 00
18K600M
DUKHIN R.S
20K000M
BANGALI B(Tt) L=100M 00
21K200M
CHANDANBISA R.S
27K000M
JAMUNA RIVER B
32K900M
JAMUNA RIVER
R=3000
R=1000
R=2000
15K
20K
25K
30K
35K
K
Shariakandi
Phulbari
Dhananjoy
Nepaltali
Hatibandha
Durgahata
Ramchandrapur
Chhagaldhara
Char Kumarpara
Debdanga
Char Para
Sanpacha
Pakuria
Bagber
Darune
Gabargaon
(Madargaon)
Char Nadagari
Char Nandinir
Mulbari
Kanthapara
Mdithan
Komurpur
Sankarpur
Dharbarsha
Dakhin Kalahata
Hatiabari
Lakshmikola
Banidpara
Chandbari
Takamagura
Chandanbisa
Ghugu
Qutbpur
Khurd Kamalpur
Baraikandi
Karmbari
Milanpur
Talfala
Sidabari
Chbalhata
Bhelabari
Banshata
Kalakopa
Kalaihata
Jorgacha
Parlakshmipur
Bibirpara
Bohali
Pautibari
Bhanpara
Pahirpara
Kadamtali
Subagachha
Chandpur
Suknagari
Dakhin Gosainbari
Dakhin Dighalkandi
Paikpara
Baraipara
Hindukandi
Dhap
Dakhin Gojaria
Daluabari



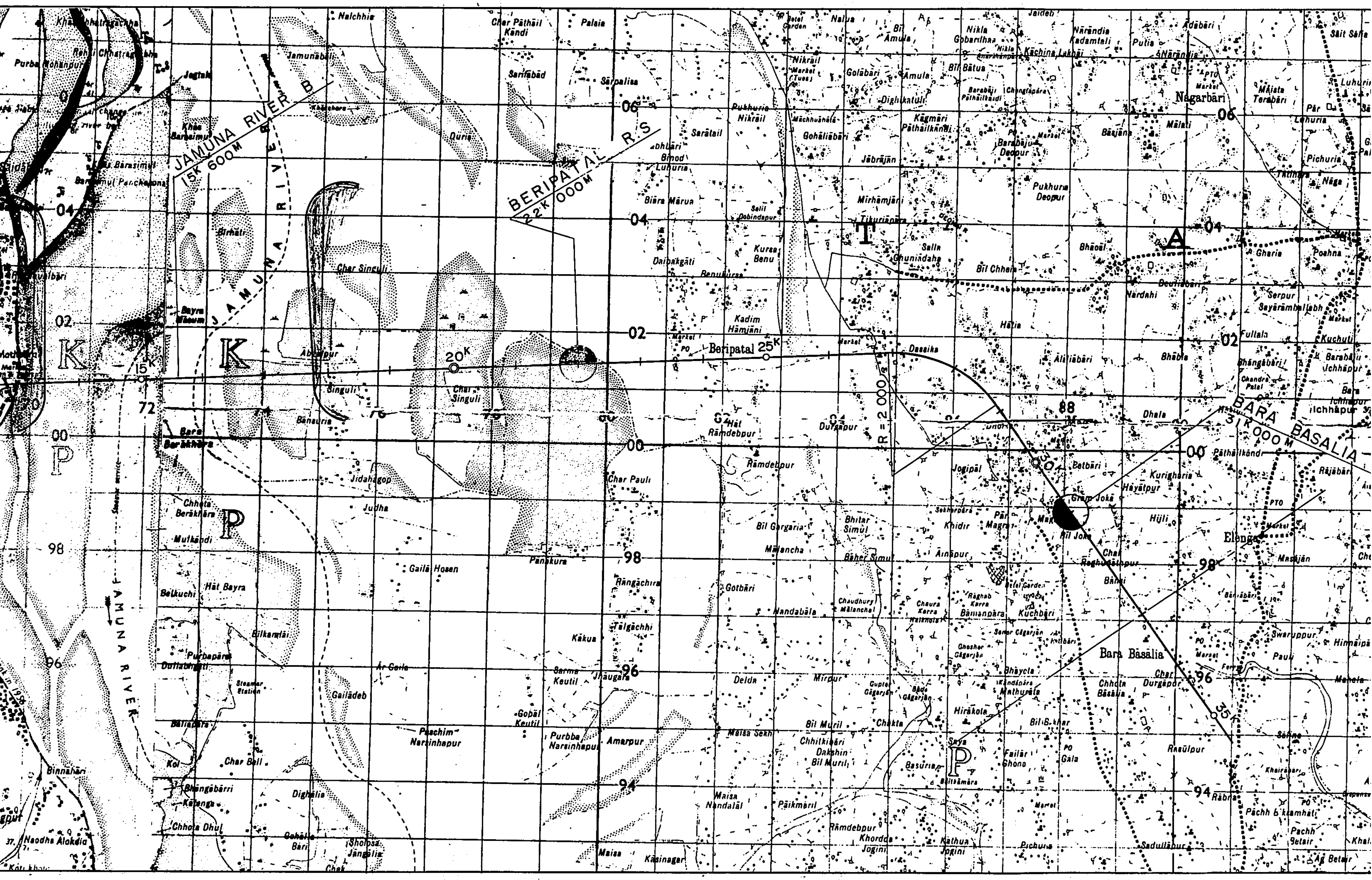
KHILKATI R.S
38K800M
FAKIRERPARA R.S
47K000M
JHINAI B(Tt) L=400M00
48K600M
B(Tt) L=150M00
49K400M
B(Tt) L=150M00
50K700M
JAFAR SHAFEE R.S
55K000M
40K
45K
50K
R=2000
R=1000
R=3000
R=1000
Guneritala
Gaborgram
Baladbhara (Balijuri)
Baulakhorda (Tartapara)
Nischintapur
Katlamari
Rayer Jangalia
Chhuripara
Charanir Jangalia
Sindaha
Banda Chatal
Chatal Bil
Palisa
Bajitarpara
Mukundabari
Kahetpara
Chhabilapur
Amirtil
Pairbari
Indrabari
Tagar Char
Bhattabari
Dhularbari
Kharka Bil
Suknagari
Khilkati
Dudhiganhisa
Adarbhita (Kundabari)
Binnafair
Banda Bajaria
Nagar
Bighalkandi
Patidaha
Kaira
Gunerbari
Fakirerpara
Bhatian
Char Haripur
Char Fularpara (Fularpara)
Haribari
Fulbari
Hasilbari
Manikbari
Digarbari
Dubaria
Char Phulbari
Kukurmari
Char Kukurmari
Baruipara
Kalidaha
Kamarpara
Khamar Magura
Phularpara
Dakatia
Lotabari
Sidhili
Muhammadpur
Char Lotabar
Sadarbari
Madangopal
Krishnapur
Gopinathpur
Jolar Khupi
Dhopadaha
Mahisha Bhaduri (1st Portion)
Bangali
Balarampur
Krishnarambari
Chandanpur
Phuldaha
Kuturia
Hatbari
Panchbari
Singuria
Binjbil (1st Portion)
Char Dharabarsha
Barabaria
Baira
Rayerchhara
Kandapara
Baidpur
Rouha
Char Jasira
JAMUNA R
JHINAI R
Saplaja
Joynagar
Puglai
Bheble
Daulatbari
Kausa Bil

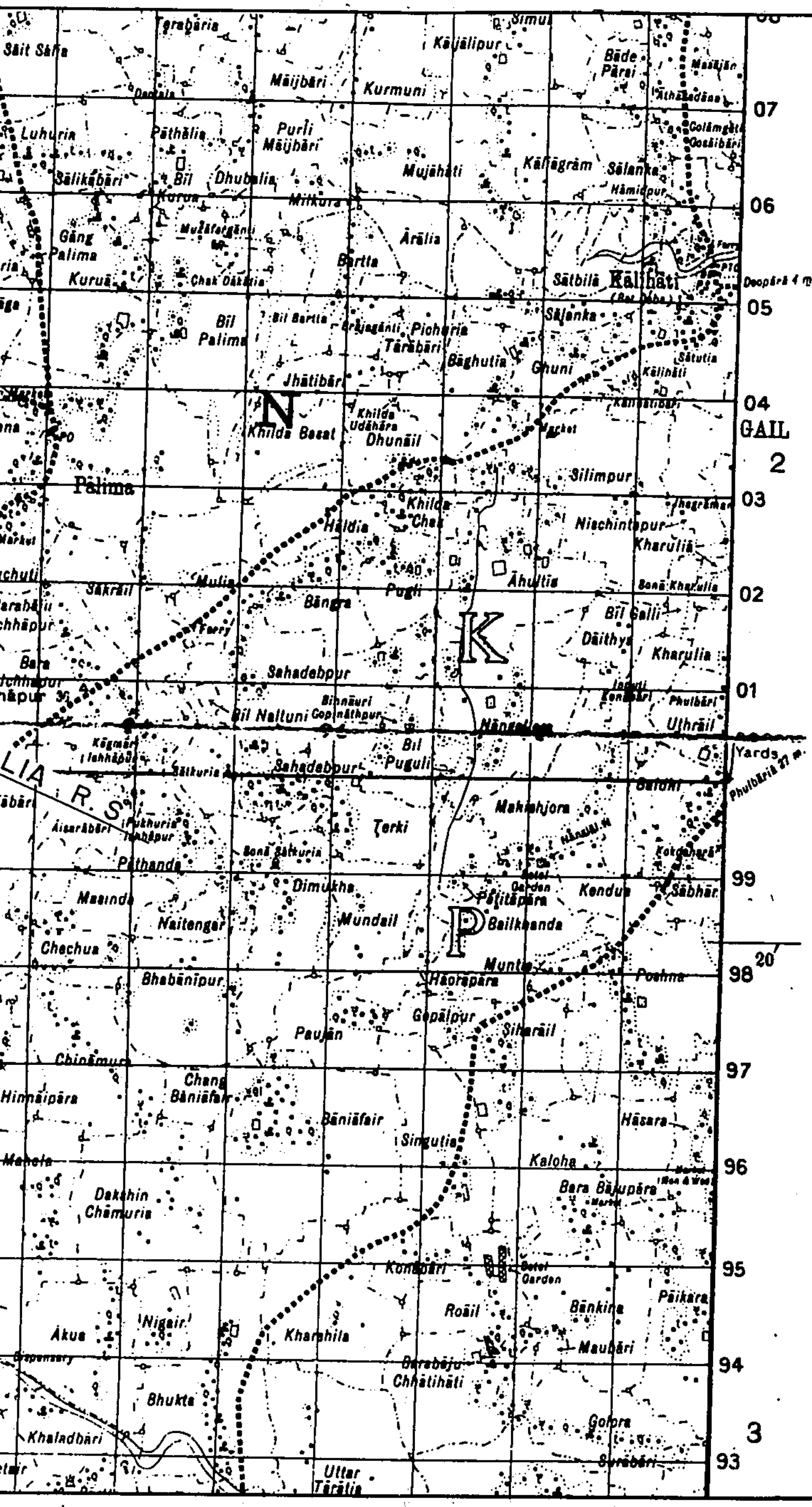


JAPAN INTERNATIONAL COOPERATION AGENCY	
PEOPLE'S REPUBLIC OF BANGLADESH	
JAMUNA RIVER BRIDGE PROJECT NO.2 SITE (GABARGAON) RAILWAY HORIZONTAL ALIGNMENT SCALE 1/50 000	
Drawn	Date
Approved	Date
PACIFIC CONSULTANTS INTERNATIONAL	Fig 6

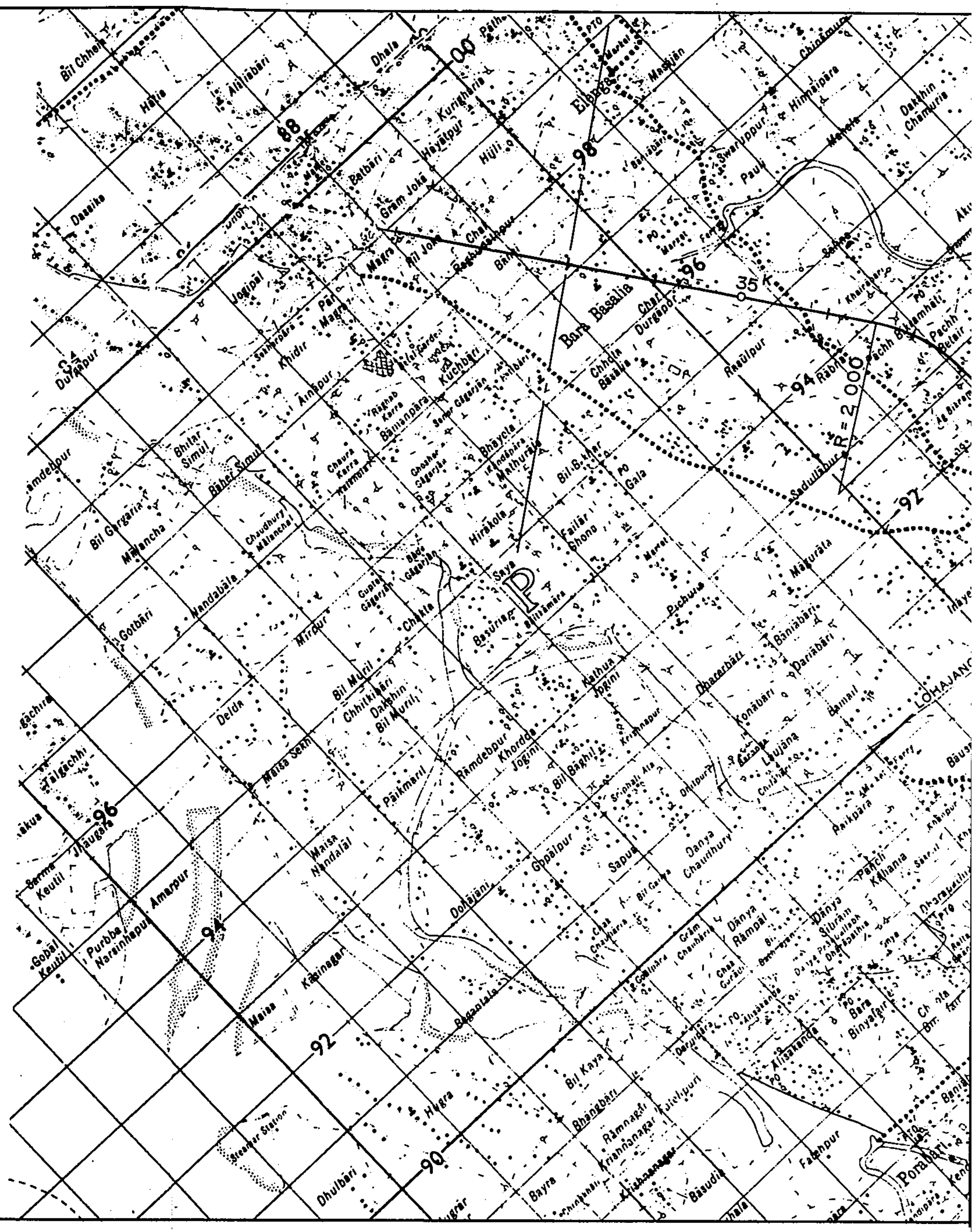


G
A
N
K
P
Madhya Bhadraghat
Konabari
Chaturbaria
Rashidpur
Amdanga
Tiarhati
Dogachi
Saidganti
Mug Belai
Jayen Batadhul
Parjhau Bagbari
Chhota Dhopa Kandi
Khamar Baradhul
Balukul
Jhaul
Sadanandapur
Krishnapur Kadi
Bharanga
Chak Shahbazpur
Chala
Halua Kandi
Panchbaria
Nayna Kandi
Kora Udaypur
Paistak
Pakuria
Kura
Kaimarkhanda
Jamtail R S
Jamtail
Tengrail
Nandinamadhu
HURASAGAR B(T) L=100 M 00
SHAMSPUL R S
8K 900 M
10K 000 M
HURASAGAR
Shamspur
Dhopa Kandi
Karnasut
Kodganti
Tajurpara
Dhaleswar
Banshbaria
Ambaria
Brahmanbaria
Kazipur
Rasulpur
Shyampur
Tamai
Bamanbaria
Naganti
Sahabur
Area liable to continual change owing to shifting of river bed
Sobansara
Bairabari
Dauja Kandi
Banjaganti
Biswasbari
Khidra Joknala
Joknala
Garamasi
Chala
Belkuchi
Mukundaganti
Sohagpur
Shyamganti
Gabgachhi
Sonamukhi
Gobindapur
Salap
Bamail
Ramganti
Bhabki
Matikora
Inayatpur
Purba Bhadrakola
Panchakrosi
Chaubaria
Daulatpur
Betbari
Konch Bat Kandi
Sokola
Rasulpur
Shahbazpur
EASTERN BENGAL RAILWAY S(5 K Sirajganj Branch
Purba Krishnapur
Damdama
Raghabbaria
Banya Kandi
SALAP R S
0K 000 M
Dhunchi
Tentulia
Daalka
Angarpara
Durgapur
Jamalpur
Dapholbaria
Ichamati
Maitra Barshar
Barahar
Bhutgachha
Purba Delua
Chala
Par Tentulia
Magurdanga
Pukurpar
Brikola
Jhikra
Ullapara
Ghoshganti
Bhattakuak
Pang Rouha
Nai Rouha
Bakhua
Rajnikantapur
Purba Saibari
Paschim Bhadrakola
Khalmpara
Mandal Jani
Bhagalpur
Singhaganti
KARATOYA R
Purnimaganti
Pagla
Hulganti
Boalia
Patdhara
Sarisati
Uttar Betua
Approximate bank in 1958
Madhya Khamar
Hatipur
Bhaturia
Purba Mohanpur
Binnahari
Naodha Alokdia

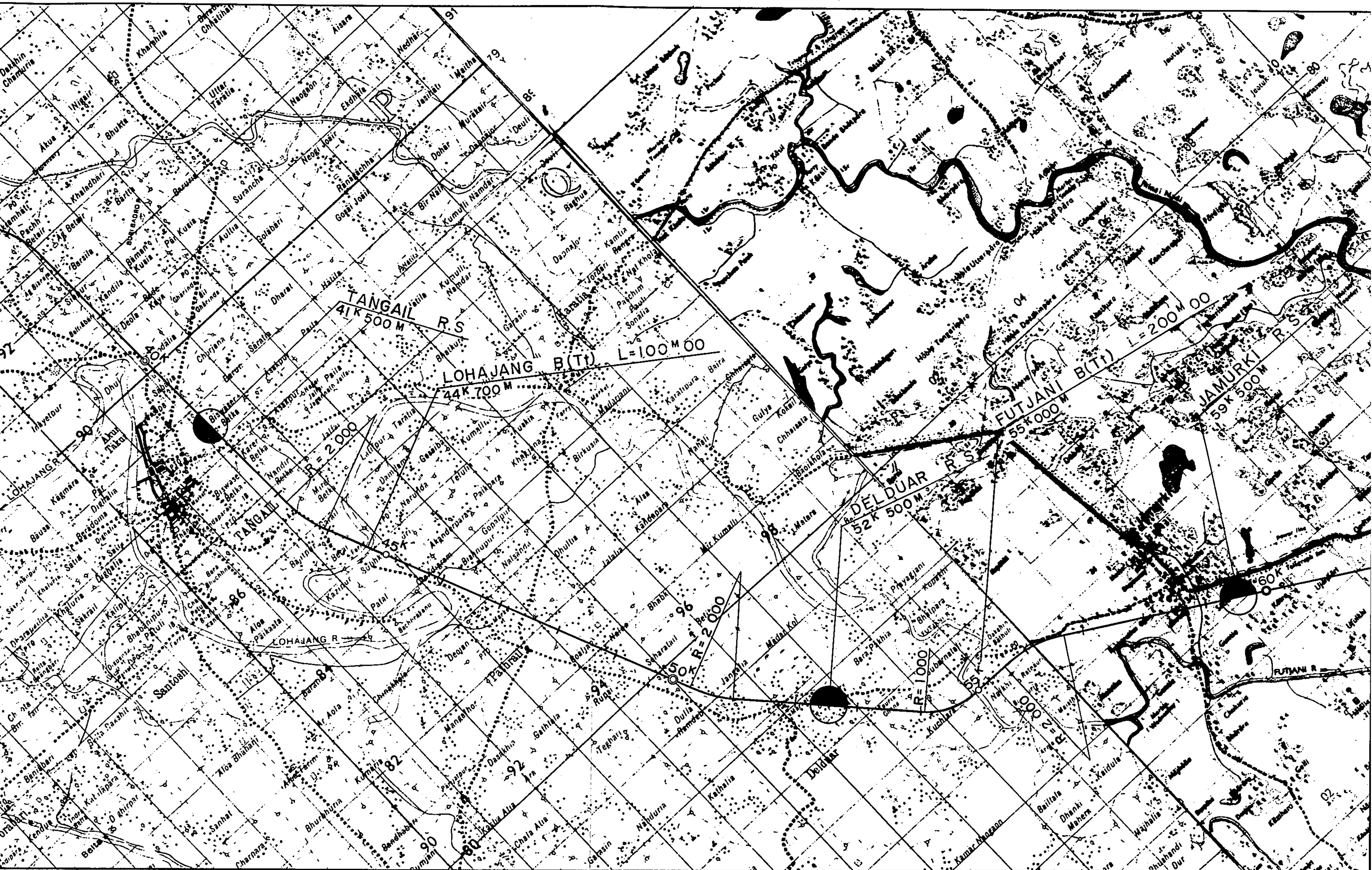

JAMUNA RIVER B
15K 600M
BERIPATAL R.S
22K 000M
BARA BASALIA
31K 000M
JAMUNA RIVER
JAMUNA RIVER
R = 2 000
K
K
P
P
P
T
A
Beripatal
Bara Basālia
Nagarbāri
Elenga
Nalchhia
Char Pāthāil Kāndi
Palsia
Jamunabāri
Sarifābād
Sārpalisa
Quria
Birhātr
Char Singuli
Singuli
Char Singuli
Ābdalpur
Bānauria
Jidahagop
Judha
Gailā Hosen
Pankura
Rāngāchira
Gotbāri
Hāt Rāmdebpur
Rāmdebpur
Durgapur
Char Pauli
Bil Gargaria
Mālancha
Bhitar Simul
Bāher Simul
Nandabāla
Tālgachhi
Kākua
Deldn
Mirpur
Bil Muril
Chakta
Hirākola
Dakshin Bil Muril
Amarpur
Purbba Narsinhapur
Paschim Narsinhapur
Gailādeb
Ār Gaila
Kol
Char Bali
Binnahāri
Chhota Dhul
Dighalia
Maisa
Kāsinagar
Khordda Jogini
Kathua Jogini
Rāmdebpur
Pāikmaril
Maisa Nandalāl
Belkuchi
Hāt Bayra
Mufkandi
Chhota Berākhāra
Bara Berākhāra
Bayra
Khas Barasimul
Barasimul (Panchakona)
Purba Mohanpur
Jagtala
Kadim Hāmjāni
Renukursa
Daibakgāti
Kursa Benu
Biāra Mārua
Saratail
Pukhuria Nikrāil
Gohāliābāri
Golābāri
Amula
Dighikatuli
Jābrājān
Mirhāmjāri
Kāgmāri Pāthailkāndi
Tikuriapara
Ghuniādaha
Bil Chhaila
Hātia
Āliābāri
Jogipāl
Betbāri
Grām Joka
Bil Joka
Char Raghunāthpur
Bāsail
Kuchbāri
Bāmanpāra
Bhāycla
Mathurāla
Chhota Bāsālia
Char Durgāpur
Gala
Failār Ghono
Bāsuria
Rasūlpur
Rābra
Pāchh Bāramhāti
Sadullāpur
Pichuria
Dhala
Bhabla
Fultala
Kurigharia
Hāyatpur
Hijli
Masjian
Pāthāilkāndi
Rājābāri
Bhāngābāri
Nardahi
Deulābāri
Bhaoal
Gharia
Poshna
Serpur
Sayārambalabh
Kuchuti
Pukhuria Deopur
Barabaju Deopur
Bāsjana
Mālati
Pichuria
Nāga
Pār
Lahuria
Māiata Terabāri
Pulia
Nārandia Kadamtali
Nikla Gobarithna
Kāchina Lakhāi
Bil Bātua
Adābāri
Sāit Sāfla
Swaruppur
Pauli
Himāipa
Dassika
Pār Magra
Khidir
Āinapur
Marsail
Bil Bhaoal
Sāfina
Saya
Hāt Kal
Maisa Sekh
Chhitkibāri
06
04
02
00
98
96
94
72
74
76
78
80
82
84
88
20K
25K
30K
35K
15K



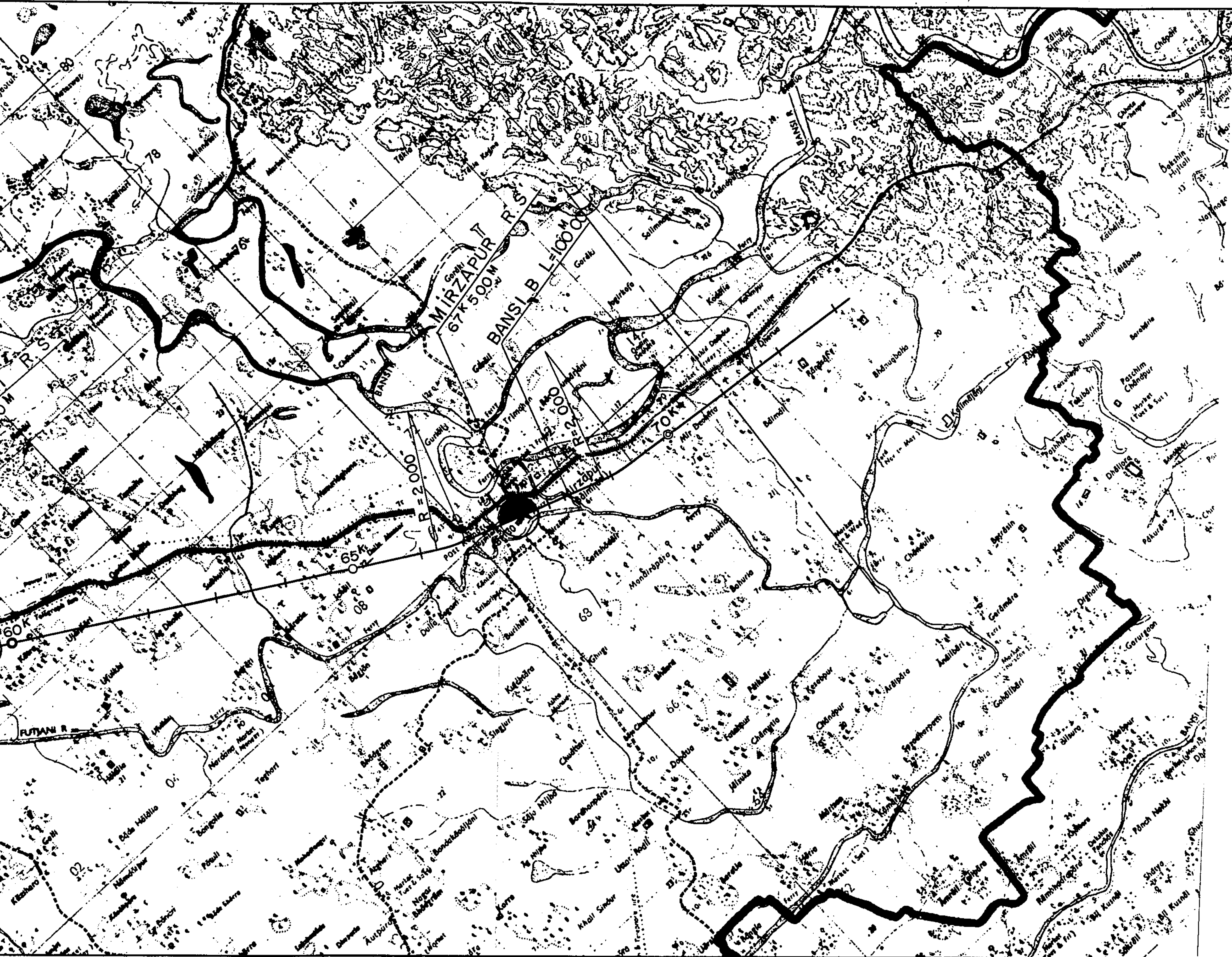
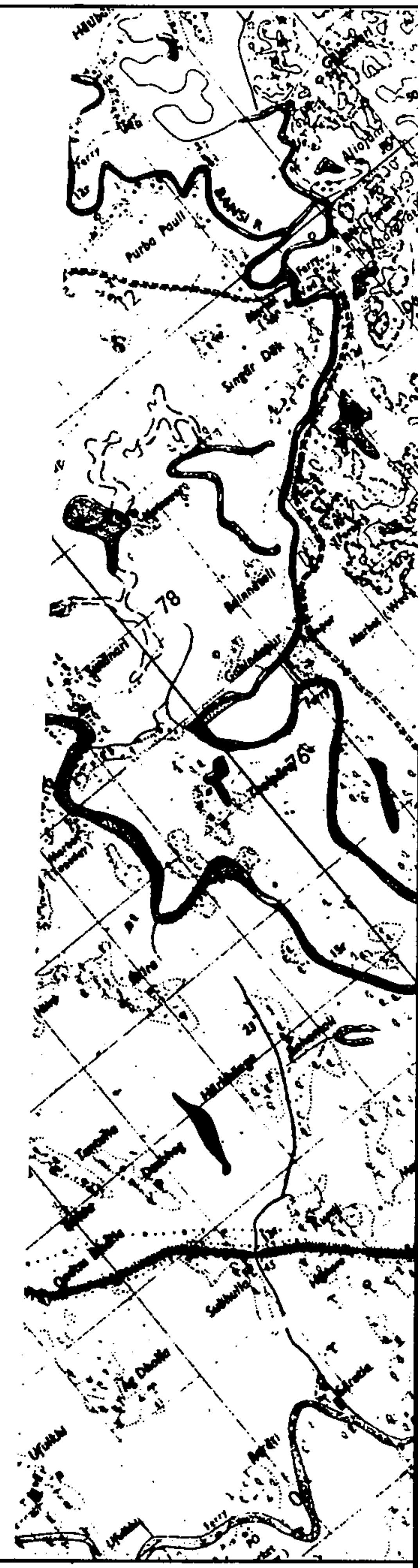
Sāit Sāfa
Terabāria
Simul
Kāyālipur
Bāde Pārai
Māijbāri
Kurmuni
07
Luhuria
Pāthālia
Purli Māijbāri
Mujāhāti
Kāliāgrām
Sālanka
Sālikābāri
Bil Dhubalia
Kurua
Hāmidpur
06
Milkura
Gāng Palima
Ārālia
Bartta
Kuruā
Chak Dākālia
Sātbilā
Kālihāti
05
Bil Palima
Bil Bartta
Pichuria
Tārābāri
Sālanka
Bāghutia
Ghuni
Sātutia
Kālihāti
04
GAIL
2
Jhātibāri
N
Khilda Basat
Dhunāil
Pālima
Silimpur
03
Khilda Chak
Hāldia
Nischintapur
Kharulia
Sākrāil
Mulia
Bāngra
Pugli
Āhulia
02
Bil Galli
Dāithya
K
Kharulia
Sahadebpur
01
Bil Naltuni
Gopināthpur
Phulbāri
Uthrāil
Yards
Bil Puguli
Sahadebpur
Sātkuria
Baldhi
LIA R. S
Pathanda
Makhjora
Terki
Āisarābāri
99
Dimukha
Kendua
Sābhār
Masinda
Naitengar
Mundail
P
Pālitāpara
Bailkhanda
Chechua
20
Bhabānipur
Munte
98
Poshna
Haorapara
Gopālpur
Sihārāil
Paujān
Chināmura
97
Himāipāra
Chang Bāniāfair
Bāniāfair
Singulia
Hāsara
Mahela
Kaloha
96
Dakhin Chāmuria
Bara Bāzupāra
Konābāri
95
Nigair
Roāil
Bānkina
Pāikara
Ākua
Kharihila
Maubāri
94
Bhukta
Barabāju
Chhātihāti
Gopra
3
Khaladbāri
Surābāri
93
Uttar Tārātia

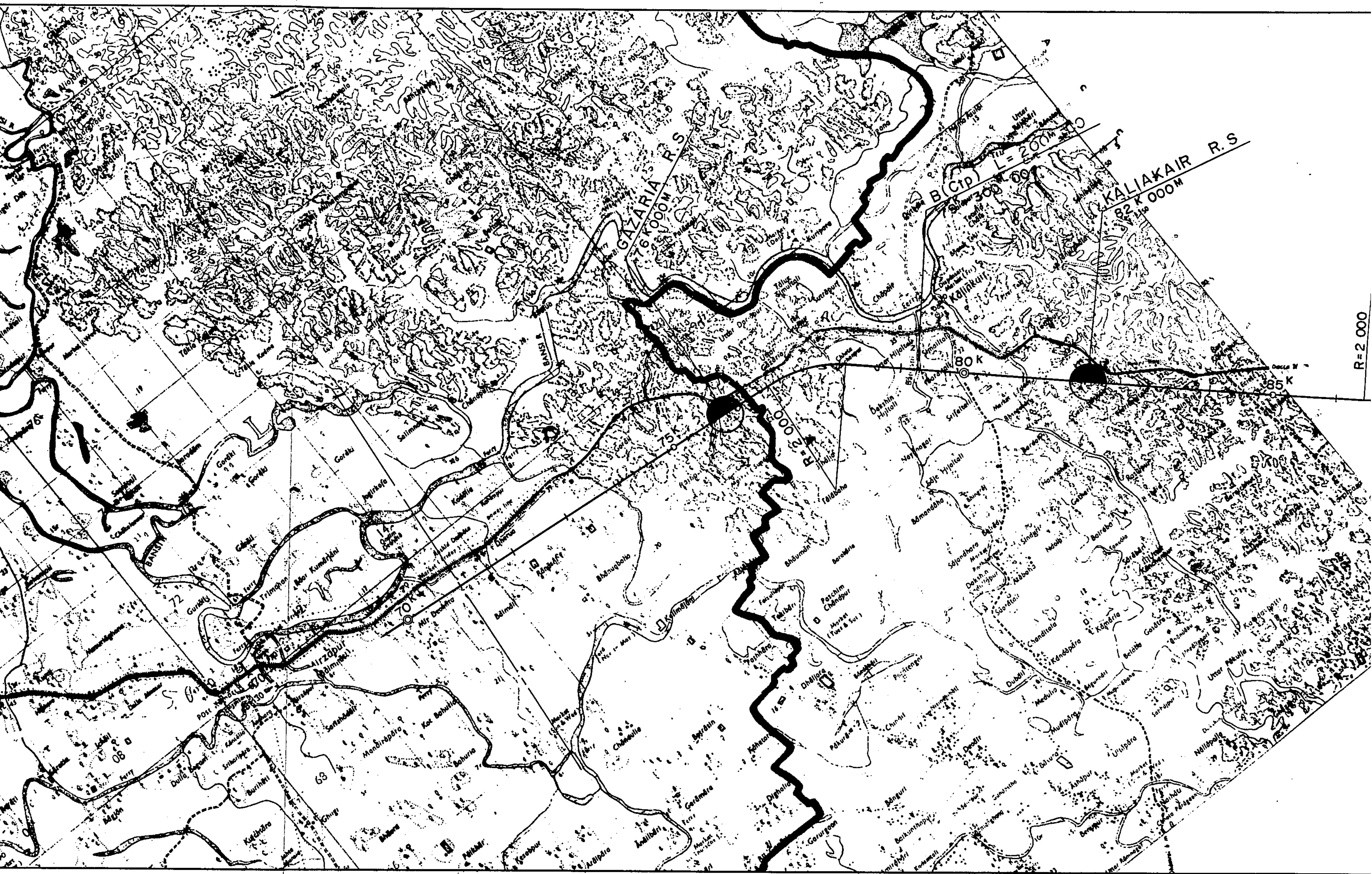


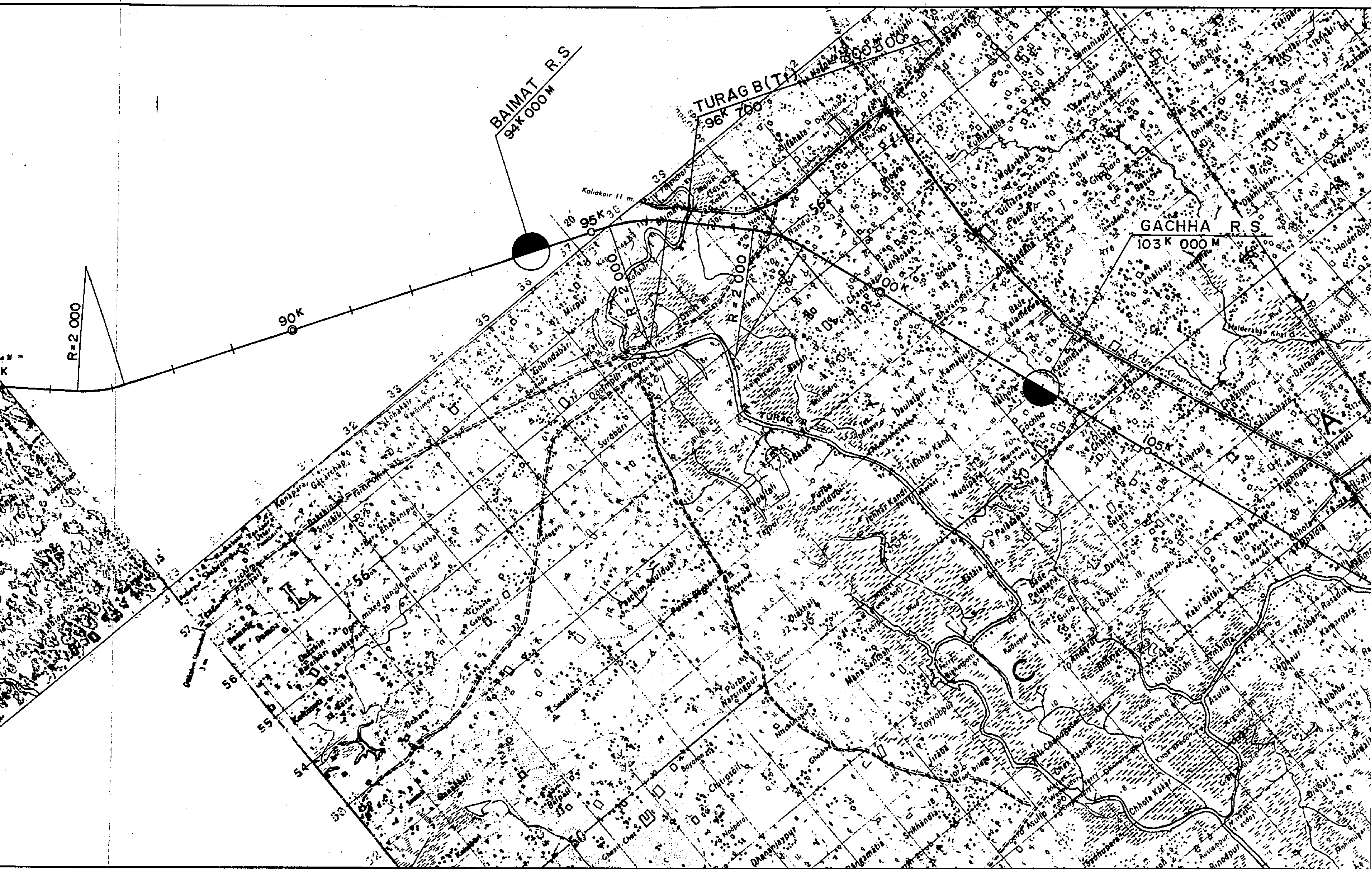
Bil Chhein
Hālia
Āihlābāri
Dhala
00
Kurithāria
Elanga
98
Maljān
Chinārmura
Himāipāra
Dakhin Chamuria
88
Hayātpur
Hūli
Swarupur
Paulk
Belbāri
Grām Joka
Dasaika
Magra
Bil Jok
Bara Bāsalia
96
35 K
Jogini
Kuchbāri
Chhota Bāsālia
Durgapur
Reālpur
94
Rabla
Pachh
R=2,000
Dulalpur
Khidir
Ānupur
Bāmanpāra
Bhāycla
Mathurāla
Bil Bikhar
PO
Gala
Sadullāpur
92
Bhitar Simul
Bāhir Simul
Rāmdebpur
Bil Gargaria
Milancha
Chaudhury Milancha
Hirākota
Failār Ghona
Mathurāla
Nandabāla
Gotbāri
Mirdur
Chakla
Saya
P
Pichuria
Bāniābāri
Dariābāri
Bil Muril
Chhitkibāri
Dakhin Bil Murili
Basuria
Kathua Jogini
Dhaterbāri
Konābāri
Lāujāna
Delda
Maisa Sekh
Pālimaril
Rāmdebpur
Khordda Jogini
Bil Bāghil
Talgachhi
96
Jhaugara
Maisa Nandail
Gopālpur
Sapua
Danya Chaudhury
Paikpāra
Kāhania
Keutil
Amarpur
Dohājāni
Dānya Rāmpāl
Sibrām
Gobāl Keutil
Purbba Narsinhapur
94
Kāsinagar
Bara Binyafair
Maisa
92
Bil Kaya
Bhāngbāri
Rāmnagar
Krishnanagar
Dhulbāri
Hugra
90
Bayra
Basudi
Parabari
LOHAJANG



TANGAIL R.S
41K 500 M
LOHAJANG B(Tt) L=100M 00
44K 700 M
FUTJANI B(Tt) L=200M 00
55K 000 M
DELDUAR R.S
52K 500 M
JAMURKI R.S
59K 500 M
R=2 000
R=2 000
R=1 000
R=2 000
45K
50K
55K
60K
LOHAJANG R
FUTJANI R
Tangail
Delduar
Santosh


MIRZAPUR
67K500M
BANSI B L=100 M
R=2000
R=2000
Mirzapur
60K
65K
70K
Mir Bochitta
FUTIANI R
BANSI R
Gorêki
Baliadangi
Tâlbâri
Kâlîmâllâu
Garurgaon
Dhâlâra
Pâkurgâra
Paschim Chândpur
Khaniâ
Baradâra
Gohâlbâri
Bâli Kushdi
Pânch Nakhi
Shâlya
Kotwali
Mandirâpâra

BANSI R
Purba Pauli
78
76


GAZARIA R.S
76 K 000 M
KALIAKAIR R.S
82 K 000 M
L= 200 M
R= 2 000
80 K
85 K
75 K
70 K
R=2 000
Mirzāpur
Kāliākair
BANSI R.


BAIMAT R.S
94K 000 M
TURAG B(T)
96K 700
GACHHA R.S
103K 000 M
R=2 000
R=2 000
R=2 000
90K
95K
100K
105K
TURAG
Gachha
Kaliakair 11 m.

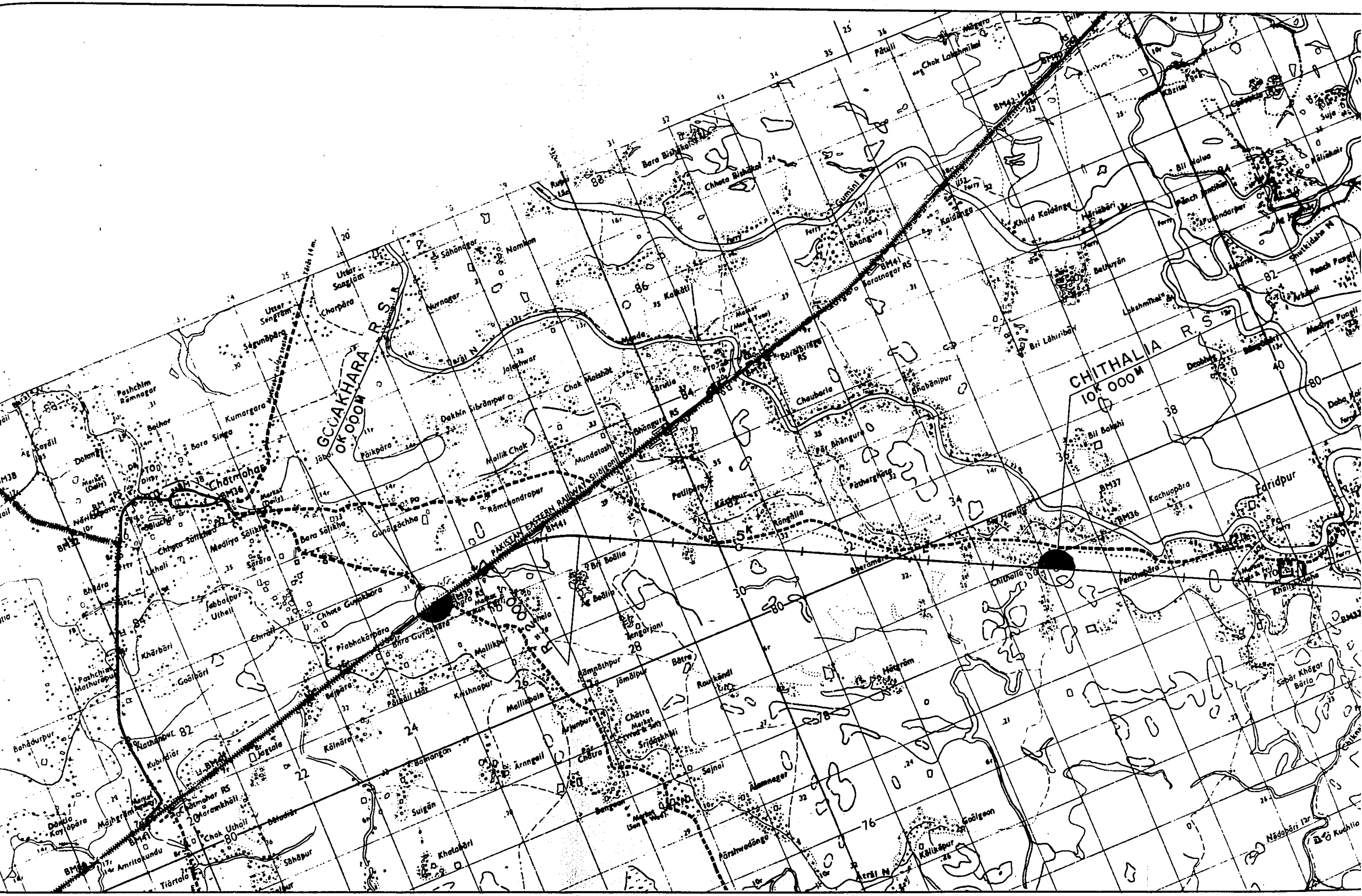
GACHHA R.S
103K 000M

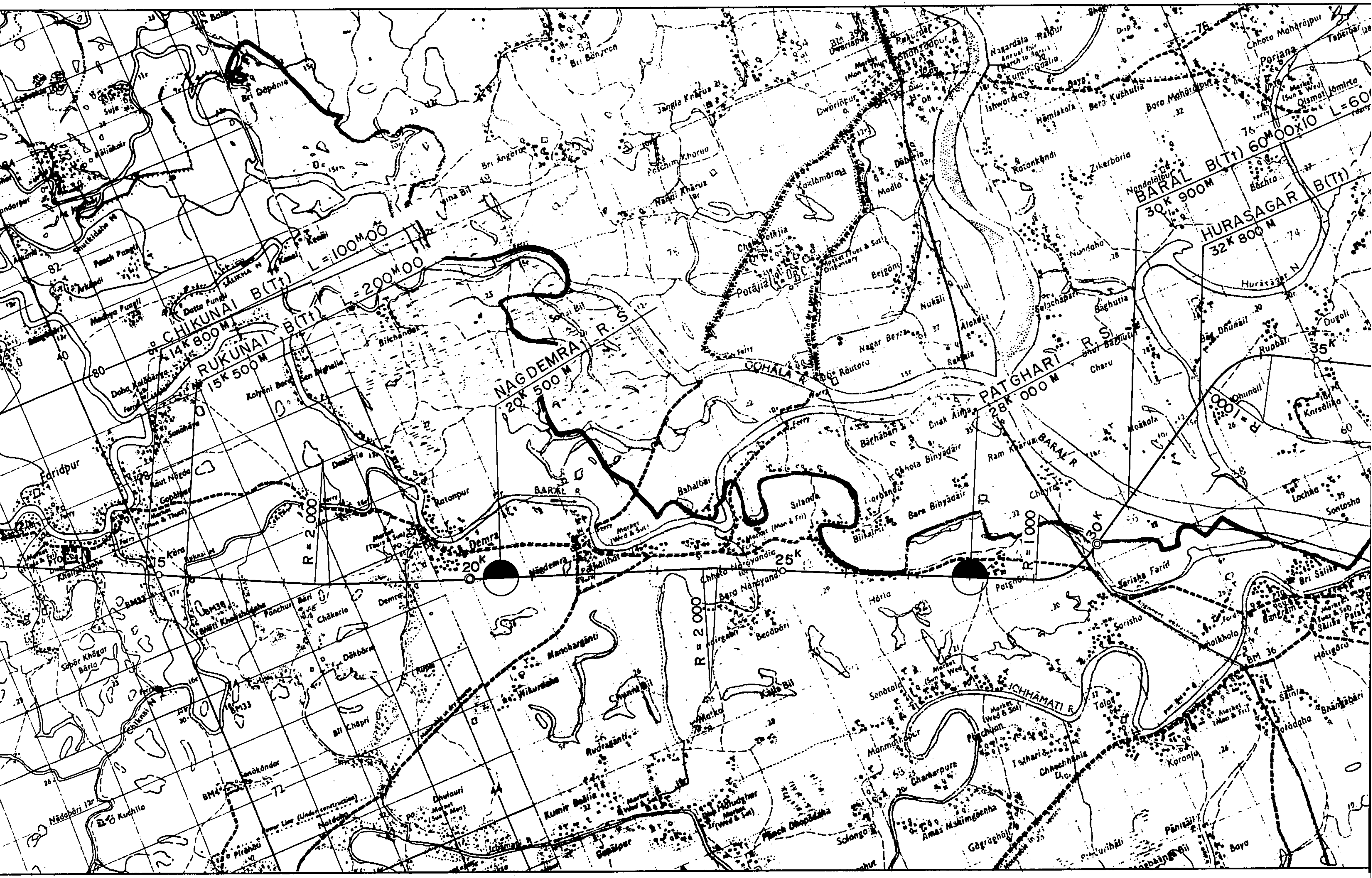
TUNGI B(Tt) 60M00x5 L=300M00
110K 300M

AZAMPUR R.S
114K 000M

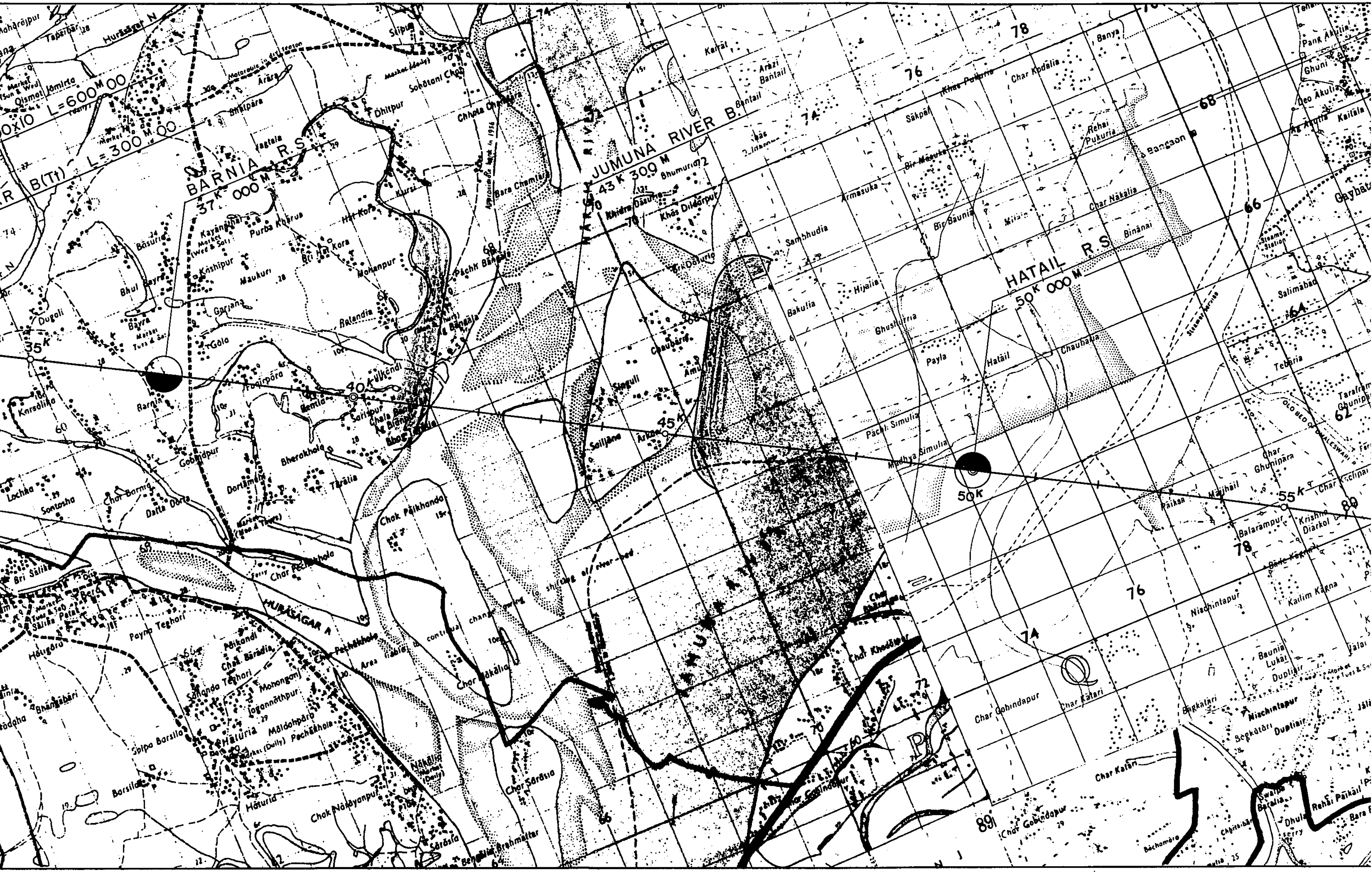
G.T.S. DATUM LEVEL

JAPAN INTERNATIONAL COOPERATION AGENCY	
PEOPLE'S REPUBLIC OF BANGLADESH	
JAMUNA RIVER BRIDGE PROJECT NO. 3 SITE (SIRAJGANJ) RAILWAY HORIZONTAL ALIGNMENT SCALE 1/50 000	
Drawn	Date
Approved	Date
PACIFIC CONSULTANTS INTERNATIONAL	Fig 7

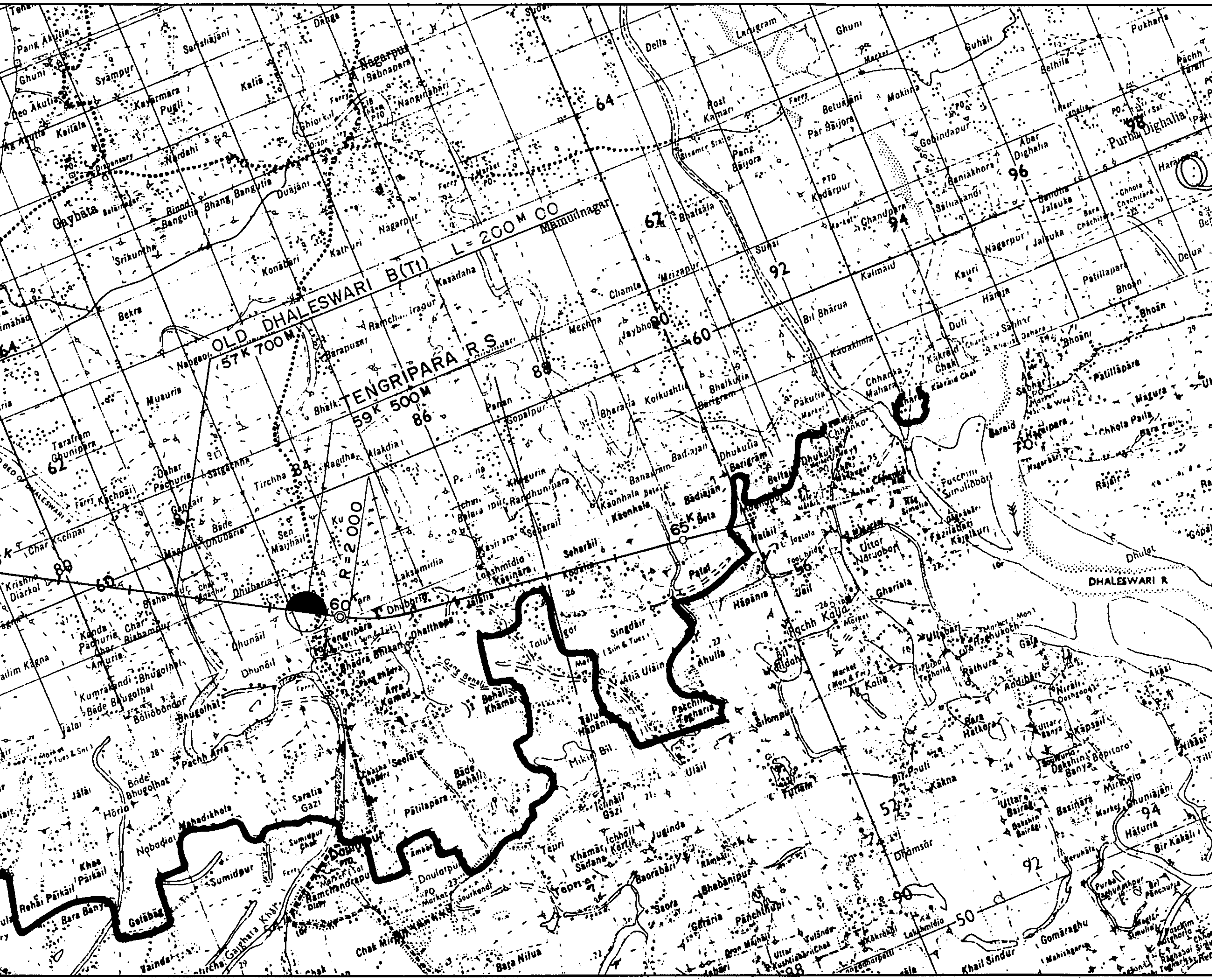

CHITHALIA R.S.
10K 000M
GOAKHARA R.S.
0K000M
PAKISTAN EASTERN RAILWAY
Chātmohar
Chātmohar RS
Bhāngura RS
Bhāngura
Barabridge RS
Baratnagar RS
Kaidānga
Gumāni R
Barāl N
Atrāi N
Faridpur
Chithalia
Pāchim Rāmnagar
Kumargara
Bara Sinda
Uttar Sengrām
Sāgunāpāra
Charpāra
Nurnagar
Sāhānagar
Namkon
Jaleshwar
Chak Maishāt
Dakhin Sibrānpur
Mallik Chak
Pāikpāra
Jābdi
Rāmchandrapur
Gunāigāchha
Bara Sālikha
Madhya Sālikha
Chhota Gulakhara
Prabhakarpāra
Mallikpur
Krishnapur
Mallikbain
Arjunpur
Chātra
Srijāgāchhi
Sajnai
Alamnagar
Bangaon
Pārshwadānga
Gorāgeon
Kālikāpur
Suigān
Khatabāri
Kālnāra
Bātnangon
Bharāmārā
Penchapāra
Kachuapāra
Bil Bakshi
Bhabānipur
Chaubaria
Pār Bhāngura
Pātherghāta
Petlipāra
Rāngālia
Bri Boālia
Boālia
Jengarjani
Bāmnāthpur
Jāmālpur
Bātre
Raukandi
Hāsrām
Kaldānga
Khurd Kaldānga
Bil Halua
Pānch Paurdhar
Batuyān
Lakshmikol
Bri Lāhiribāri
Bara Bishākol
Chhota Bishākol
Kalkāti
Pātuli
Chak Lakshmikol
Mugara
Rupsi
Pānch Pāsali
Madhya Pāsali
Arkāndi
Nādobāri
Kuchlia
Sābār Khāgar
Bārla
Khāribāri
Uthali
Jebbarpur
Bhadra
Chhota Sālikha
Nathanpur
Kubāidiār
Bahādurpur
Dāndla
Kaylāpāra
Mājhgram
Marankhāli
Chak Uthali
Sāhāpur
Amritakundu
Tiārtala
Pashchim Mathurapur
Goālbāri
Jogtola
Dolang
Bathar
BM41
BM39
BM37
BM36
BM38
BM42
Ferry
Market (Daily)

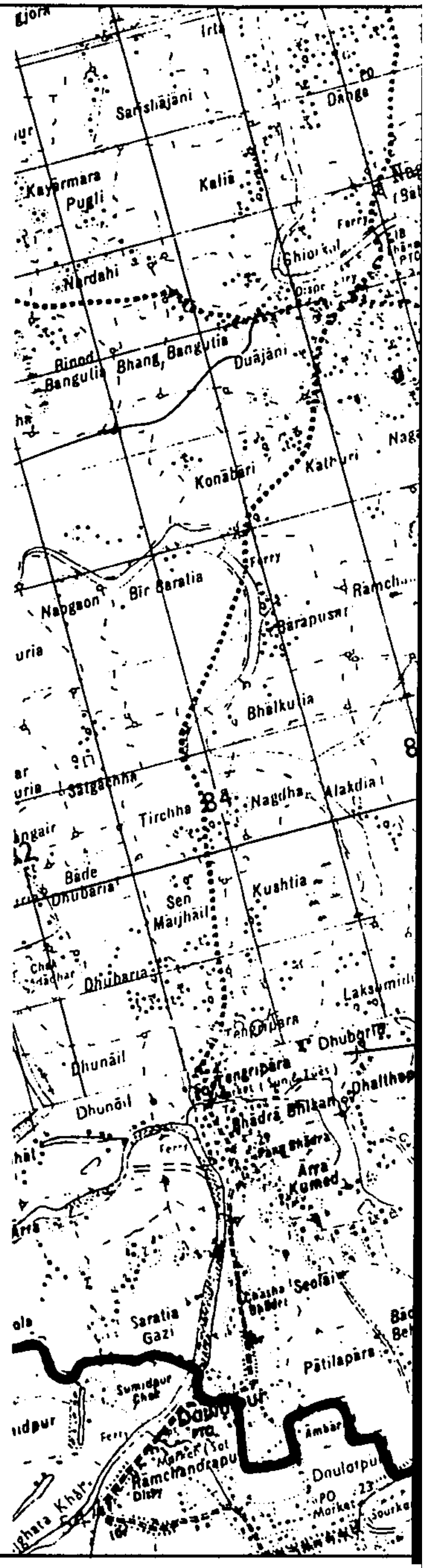


CHIKUNAI B(Tt) L=100M00
14K 800M
RUKUNAI B(Tt) L=200M00
15K 500M
NAGDEMRA R.S
20K 500M
PATGHARI R.S
28K 000M
BARAL B(Tt) 60M00x10 L=600
30K 900M
HURASAGAR B(Tt)
32K 800M
GOHALA R
BARAL R
ICHHAMATI R
Hurasagar N
R=2 000
R=1 000
20K
25K
30K
35K
Faridpur
Demra
Nagdemra
Patghari
Ratanpur
Bhalbai
Silanda
Bara Binyadair
Chhota Binyadair
Sarisha
Manmathpur
Chechuan
Sonatola
Nundaho
Baghutia
Belgani
Nukali
Potajia
Zikerbaria
Ratankandi
Charu
Lochka
Santosha
Dhunail
Rupbati
Dugoli
Boro Maharajpur
Chhota Maharajpur
Poriana
Taperbari
Ishwardia
Dwaripur
Bri Dopania
Bri Bongaon
Dabo Kalogarnga
Pach Pungli
Datta Pungli
Kalyani Bora
Bilchandoi
Sonai Bil
Hamlakola
Bera Kushutia
Kharua
Paschim Kharua
Madla
Dabaria
Nagar Beyra
Alokdia
Selachapari
Chakaria
Panchuri Bari
Dakbaria
Mankharganti
Nikurdaha
Rudraganti
Chunni Bil
Kalia Bil
Becabari
Bara Narayand
Chhota Narayandia
Horia
Talgi
Koronju
Gograghat
Amas Mahimgachha
Charkarpure
Dhulauri
Kumir Batila
Gopalpur
Pirahati
Nadobari
Kuchila
Sonakandar
Sopar Khagar
Baria
Bri Chapri
Bri Salika
Bantram
Hatigora
Salinia
Bhangabari
Potadaha
Panisail
Baya
Power Line (Under construction)



BARNIA R.S
37K 000 M
JUMUNA RIVER B.
43K 309 M
HATAIL R.S
50K 000 M
L=600M 00
L=300M 00
B(Tt)
35K
40K
45K
50K
55K
Barnia
Hatāil
Payla
Bakulia
Ghushuria
Hijalia
Sambhudia
Armasuka
Bir Bauria
Char Nākālia
Binānai
Bangaon
Salimabād
Tebāria
Chauhalia
Pāchi Simulia
Madhya Simulia
Paiksa
Balarampur
Krishna Diarkol
Niachintapur
Char Gobindapur
Char Katari
Char Katan
Nischintapur
Bagkātari
Kailim Kāgna
Dupliair
Char Kodalia
Banya
Kairāt
Arazi Bantail
Sākpār
Khas Pukuria
Rehai Pukuria
Deo Akulia
Pang Akulia
Ghuni
Gayhata
Dhitpur
Sohōtani Char
Chhota Chamlāra
Bara Chamlāra
Bhumuria
Khas Dildarpur
Kayānghar
Purba Kharua
Hat Kora
Kishipur
Mauhuri
Mohanpur
Rolandia
Bhul Bayra
Dugoli
Bayra
Gola
Fāgirpora
Bentia
Saitspur
Bherokhola
Tārālia
Gobindpur
Dorlāmeh
Darta Dorta
Char Barnia
Lochka
Sontosha
Knradlika
Chok Pālkhanda
Char Pechākhola
Char Nākālia
Char Sārāsia
Chok Nārāyanpur
Nākālia
Hāturia
Pālkandi
Sohanda Teghori
Mohongani
Jogannāthpur
Māldohpāra
Pechākhola
Payna Teghori
Hātgāra
Bhangābari
Barsila
Bri Sālika
HURĀSĀGAR R
Chauburia
Siaguli
Sailjāna
Chār Khodāpur
Bāchomāra
Dhula
Rehai Pāikail
Salimabād
76
78
74
72
70
68
66
64
62
80
89


OLD DHALESWARI B(Tt) L=200 M CO
TENGRIPARA R.S.
57 K 700 M
59 K 500 M
R=2,000
DHALESWARI R
Nagarpur
Purba Dighalia
Mamudnagar
Tengripara
Bhadra Bhikan
Dhalthapa
Gaybata
Kalia
Sarsilajani
Kayarmara
Pugli
Nardahi
Bind
Bangulia
Bhang Bangulia
Duajani
Srikuntha
Konabari
Kathuri
Kasadaha
Bekra
Musuria
Tarafram
Ghunipara
Dhubaria
Dhunail
Kumrakandi
Bhugolhat
Saratia
Gazi
Patilapara
Sumidpur
Ramchandrapur
Dulotpur
Chak Mirpur
Bara Nilua
Jalai
Kasinara
Dhubaria
Singdair
Atia Ulsin
Ahulia
Patchil
Tegharia
Hapania
Mokhna
Betuajani
Par Baijora
Gobindapur
Baniakhora
Abar
Dighalia
Kauri
Nagarpur
Jalauka
Patillapara
Bhoan
Duli
Kalmaiu
Bil Bharua
Chamta
Mirzapur
Jaybhogi
Meghna
Paran
Gopalpur
Bharatia
Kolkushtia
Bhalkutia
Barigram
Dhukutia
Beltail
Chhanka
Kharand Chak
Baraid
Magura
Chhota Paila
Rajair
Pubchim
Simuliabari
Uttar
Naruabari
Ulail
Silimpur
Bara Hatkora
Kapsail
Dakshin
Banya Bapitoro
Haturia
Bir Kakali
Purba
Ramdiamapur
Bil Panchuria
Bhabanipur
Panchkhupi
Gomaraghu
Khail Sindur
Mahishgaram
Baorabari
Saofa
Juginda
Ichhail
Gazi
Tepri
Khamar
Sadana Kartik
Ulail
Mikin Bil
Kakna
Dhamsar
Turam


Kayarmara
Pugli
Kalia
Sarsilajani
Nardahi
Bind
Bangulia
Bhang Bangulia
Duajani
Konabari
Kathuri
Napgaon
Bir Baralia
Barapusar
Bhalkutia
Tirchha
Nagdha
Alakdia
Sen
Majhail
Dhubaria
Kushtia
Lakshmidia
Tengripara
Dhubaria
Bhadra Bhikan
Dhalthapa
Dhunail
Arra
Kumed
Seofail
Saratia
Gazi
Patilapara
Sumidpur
Ramchandrapur
Dulotpur