

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

**GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH**

**MINISTRY OF COMMUNICATIONS  
ROADS AND RAILWAYS DIVISION  
ROADS AND HIGHWAYS DEPARTMENT**

**RUPSA BRIDGE CONSTRUCTION PROJECT**

**(PROPOSED TO BE FINANCED BY JAPAN BANK FOR  
INTERNATIONAL COOPERATION)**

**Tender Documents : Volume D**

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MARCH 2000

**PACIFIC CONSULTANTS INTERNATIONAL (PCI)  
JAPAN OVERSEAS CONSULTANTS (JOC)**

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1156855 [7]

# **A. GENERAL FOR ROAD**

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- P-05~06 - DRAINAGE OF MOHANMAD NAGAR
- P-07~08 - DRAINAGE OF LOBAN CHARA
- P-09~11 - DRAINAGE OF CHAR RUPSA
- P-12 - DRAINAGE OF JABUSA
- P-13 - DRAINAGE OF TEELOK



THE STUDY ON CONSTRUCTION OF THE BRIDGE  
OVER THE RIVER RUPSA IN KHULNA(PHASE 2)

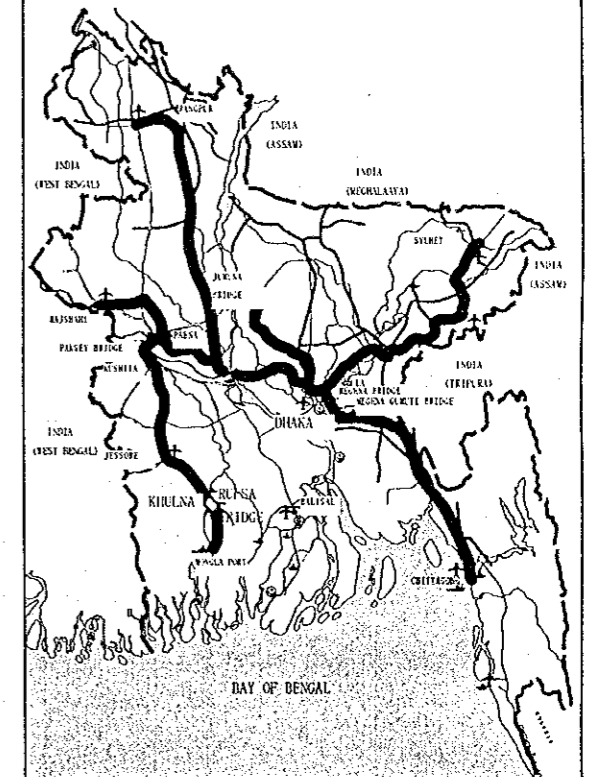
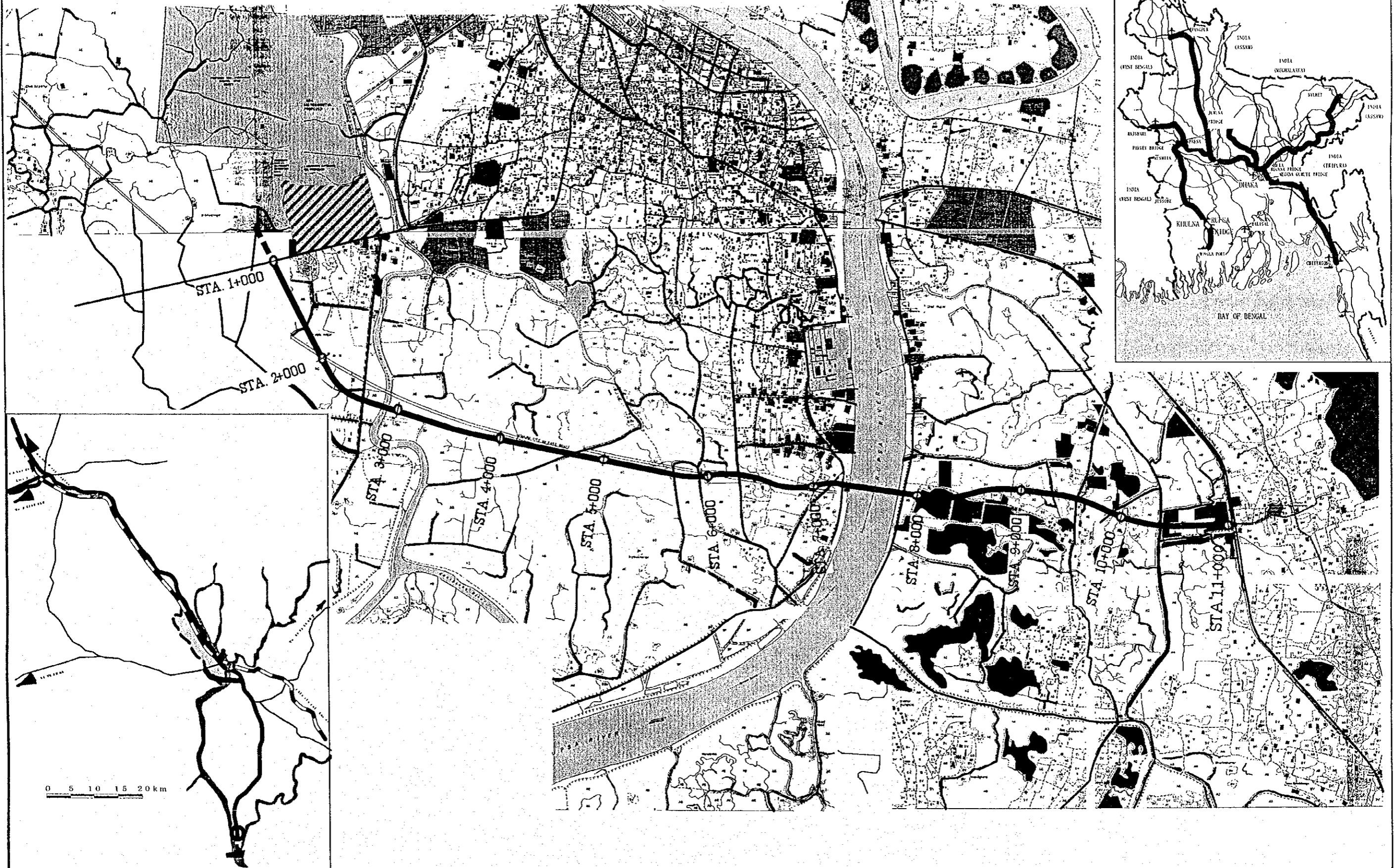
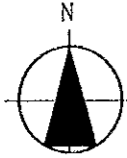
LOCATION MAP

SCALE

SHEET NO.

-

A-01



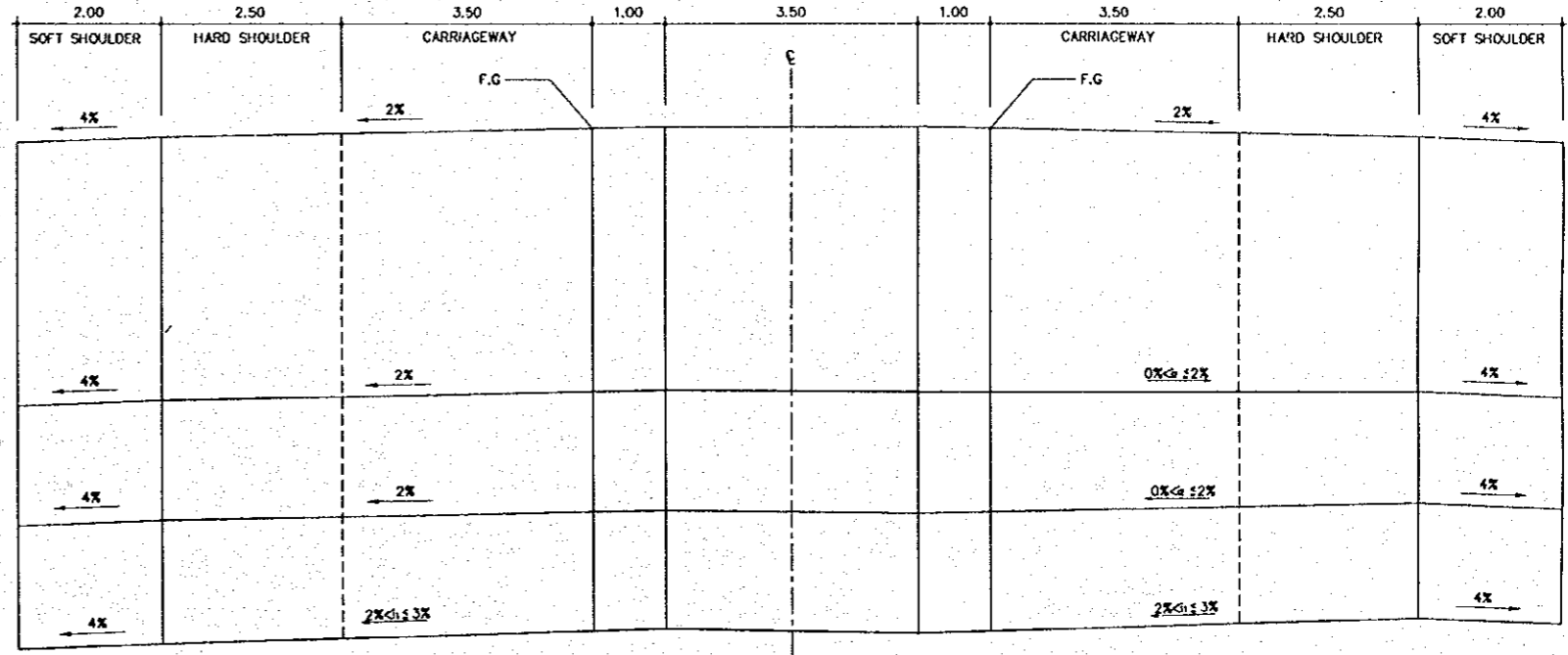
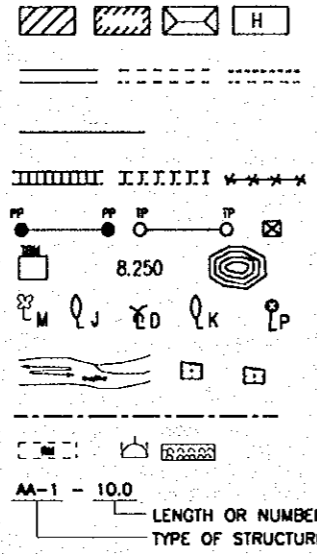
0 5 10 15 20km

THE STUDY ON CONSTRUCTION OF THE BRIDGE  
OVER THE RIVER RUPSA IN KHULNA (PHASE 2)

GENERAL FOR ROAD

SCALE AS SHOWN SHEET NO. A-02

- Structure: Permanent, Semipermanent, Tin Shed, Hut....
- Road: Metalled, Unmetalled, Brick Paved...
- Boundary Wall, Boundary Limit....
- Pucco Drain, Kalcha Drain, Wirefencing ...
- Power Line, Telephone & Telegraph Line, Tower ...
- Temporary Bench Mark (TBM), Spot Height & Contour...
- Tree: Mango, Jackfruit, Date tree, Korai, Palmtree ...
- River/Khol, Pond, Ditch, ...
- Center Line of Canal ...
- Rice mill, Mosque, Graveyard ...
- Key to Quantity ...

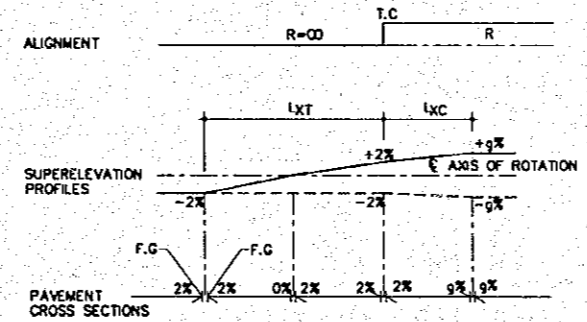


**A** LEGEND OF PLAN  
SCALE A-02

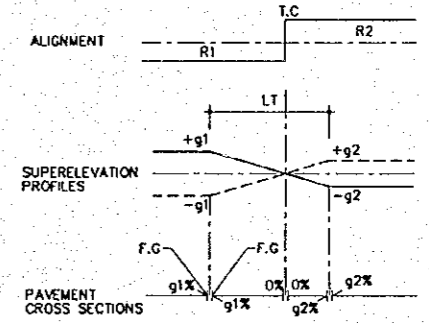
**C** SURERELEVATED CROSS SECTION  
SCALE A-02 1:50

- BB - Concrete Barrier
- CC - Concrete Curb
- CB - Catch Basin
- CP - Concrete Pipe
- DE - Delineator
- DS - Ditch
- EB - End Block
- FL - Flashing Light
- GR - Guard Rail
- GS - Guide Sign
- IL - In Let
- KP - Kilometer Post
- OL - Out Let
- RM - R.O.W. Marker Post
- RS - Regulatory Sign
- SB - Steel Barrier
- SF - Safety Fence
- SSKB - Southern Section of Khulna Bypass
- WS - Warning Sign

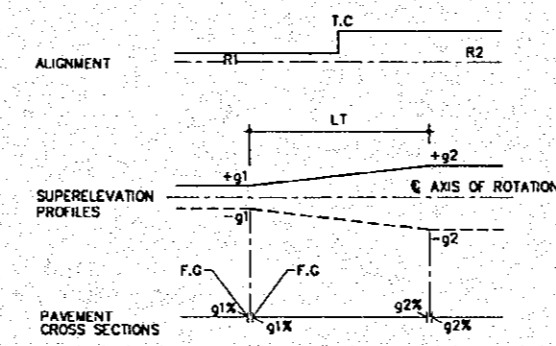
**B** ABBREVIATIONS  
SCALE A-02



**1** TANGENT-CIRCULAR COVER WITHOUT TRANSITION CURVE  
SCALE D



**2** CIRCULAR CURVE-REVERSE CIRCULAR CURVE  
SCALE D



**3** CIRCULAR CURVE-CIRCULAR CURVE  
SCALE D

**D** SURERELEVATION DIAGRAM  
SCALE A-02 1:100

- LEGEND
- E OF ROADWAY
  - LEFT HARD CARRIAGEWAY (FACING INCREASED STATION)
  - RIGHT HARD CARRIAGEWAY (FACING INCREASED STATION)
  - L<sub>w</sub> RUN OFF LENGTH ON CIRCULAR CURVE
  - L<sub>t</sub> LENGTH OF RUN OFF LENGTH ON TRASTION
  - L<sub>st</sub> LENGTH ON WHICH SUPERELEVATION OF INNER LANE IS KEPT 2.0%
  - g<sub>1</sub>, g<sub>2</sub> FINAL RATE OF SOPERELEVATION FOR CIRCULAR CURVE

- NOTES
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
  - SUPERELEVATION TO BE PROVIDED ARE AS SHOWN ON PROFILES (D-SERIES DWG.).
  - SUPERELEVATION OF RIGHT SIDE EDGE ARE ALWAYS SHOWN WITH SOLID LINE.

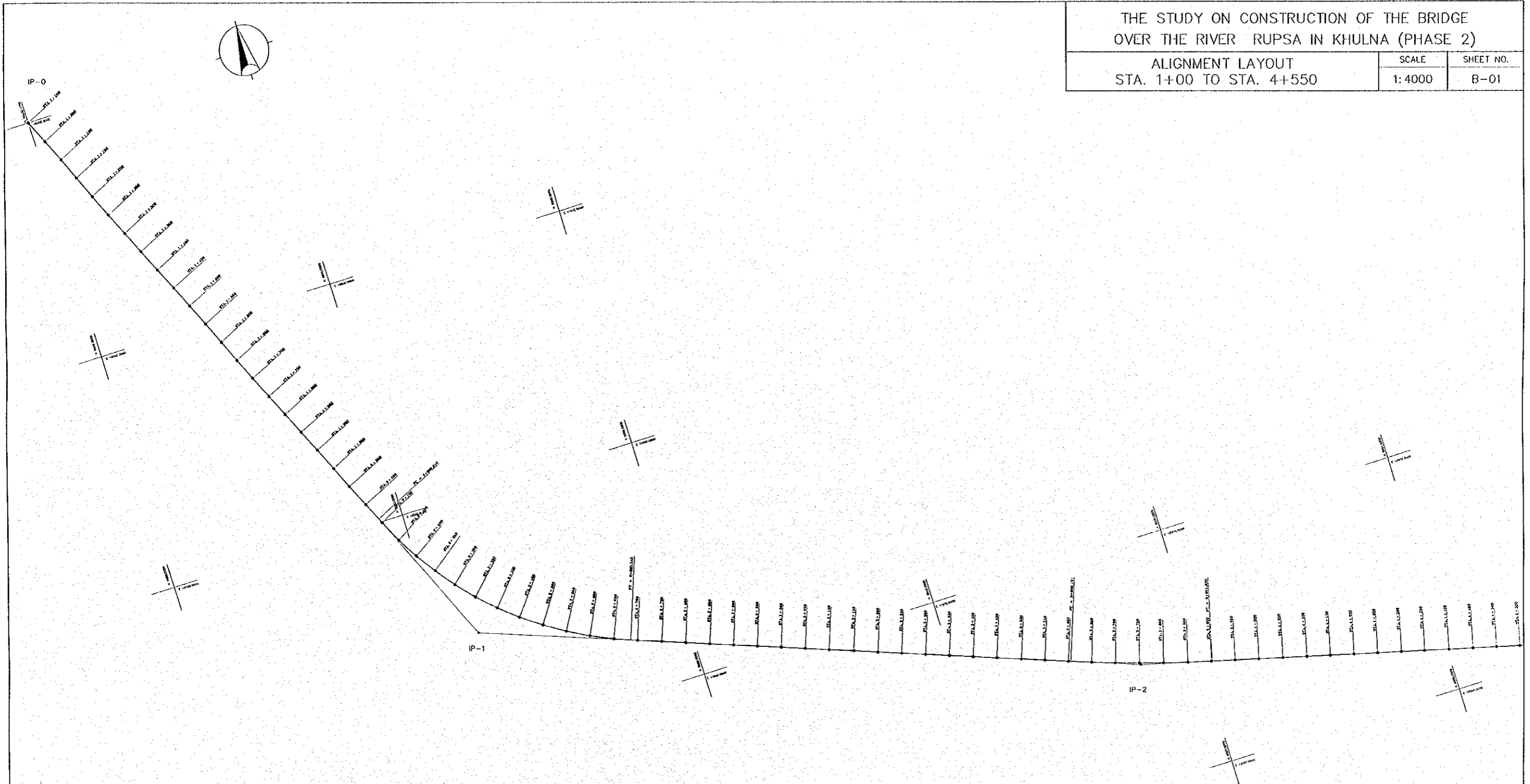
# **B. ALIGNMENT LAYOUT**

THE STUDY ON CONSTRUCTION OF THE BRIDGE  
OVER THE RIVER RUPSA IN KHULNA (PHASE 2)

ALIGNMENT LAYOUT  
STA. 1+00 TO STA. 4+550

SCALE  
1:4000

SHEET NO.  
B-01



ELEMENTS OF CURVES

CURVE NO.	STATION	COORDINATES OF PI.		I	R	T	E	Lc	L	D
		NORTHING	EASTING							
IP0	1+000.000	10,000.000	10,000.000							
IP1	2+404.396	8,720.964	10,579.995	45°30'37"	750.000	314.580	63.302	595.728	580.190	7°38'22"
IP2	3+753.602	8,245.869	11,878.446	05°40'00"	3000.000	148.472	3.672	296.702	296.581	1°54'35"

NOTES:

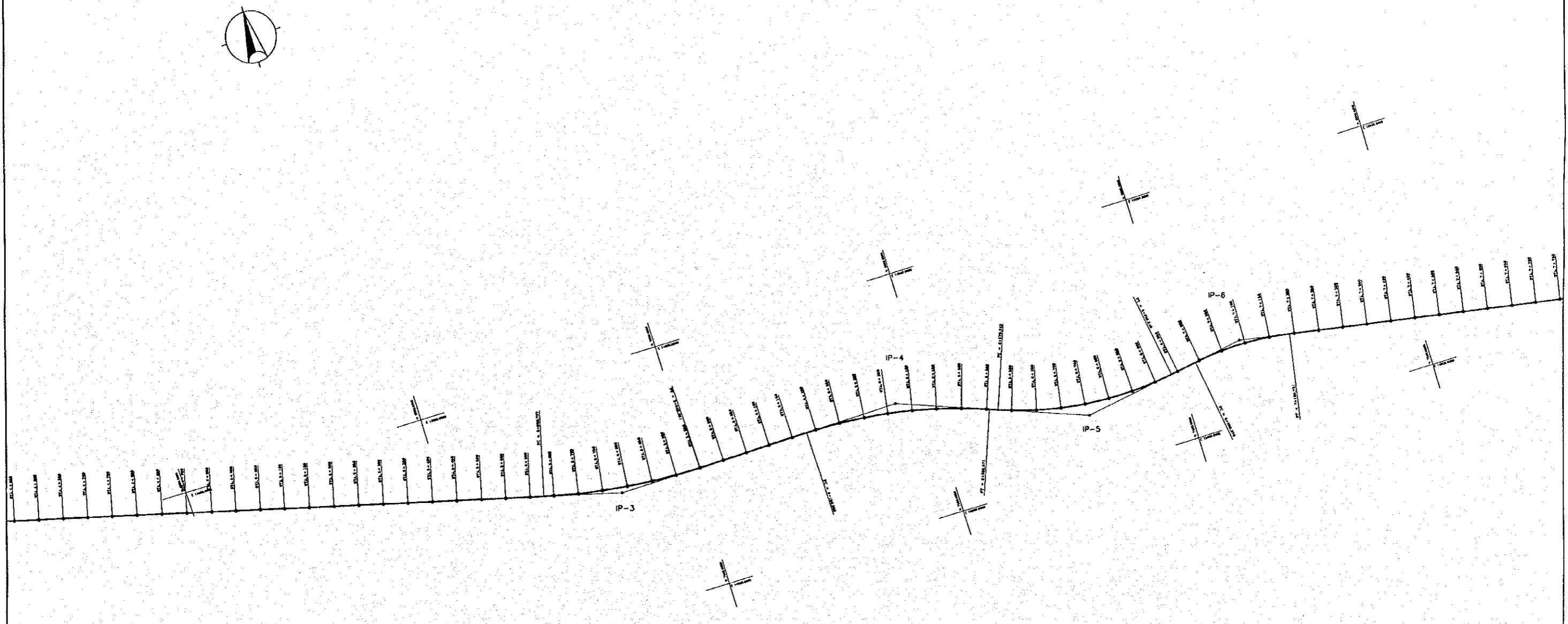
1. ALL DIMENSIONS ARE IN METERS  
UNLESS OTHERWISE SHOWN.

THE STUDY ON CONSTRUCTION OF THE BRIDGE  
OVER THE RIVER RUPSA IN KHULNA (PHASE 2)

ALIGNMENT LAYOUT  
STA. 4+550 TO 7+750

SCALE  
1:4000

SHEET NO.  
B-02



ELEMENTS OF CURVES										
CURVE NO.	STATION	COORDINATES OF PI.		I	R	T	E	Lc	L	D
		NORTHING	EASTING							
IP3	5+789.648	7,738.409	13,850.489	15°16'32"	1200.000	180.921	10.742	319.933	318.987	4°46'29"
IP4	6+370.468	7,747.003	14,433.154	21°27'57"	1000.000	189.548	17.806	374.651	372.464	5°43'48"
IP5	6+758.921	7,608.631	14,800.879	29°42'42"	700.000	185.678	24.207	382.996	358.943	8°11'06"
IP6	7+091.787	7,662.544	15,137.818	19°04'31"	600.000	100.810	08.410	199.755	198.834	9°32'57"

NOTES:

1. ALL DIMENSIONS ARE IN METERS  
UNLESS OTHERWISE SHOWN.

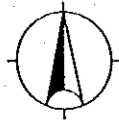


THE STUDY ON CONSTRUCTION OF THE BRIDGE  
OVER THE RIVER RUPSA IN KHULNA (PHASE 2)

ALIGNMENT LAYOUT OF ACCESS ROAD  
WEST BANK NORTH SIDE

SCALE  
1:1000

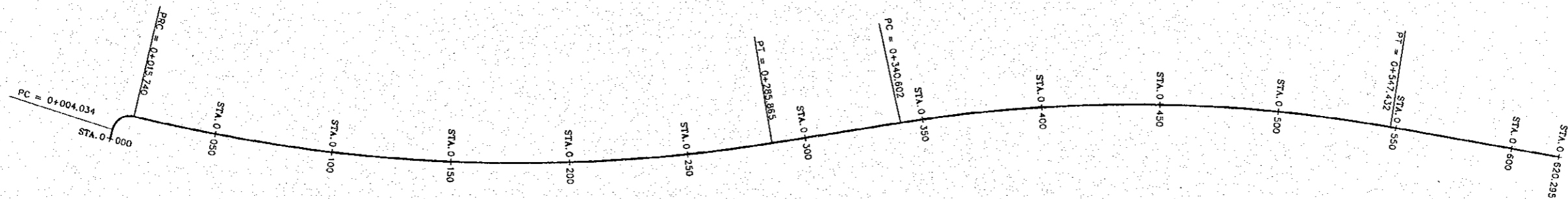
SHEET NO.  
B-04



ELEMENTS OF CURVES										
CURVE NO.	STATION	COORDINATES OF PI.		I	R	T	E	Lc	L	D
		NORTHING	EASTING							
IP0	0+000.000	7,660.426	14,702.687							
IP1	0+011.460	7,671.529	14,705.525	89°25'49"	7.500	7.426	3.054	11.706	10.554	763°56'37"
IP2	0+152.613	7,637.329	14,845.713	22°47'46"	678.934	136.873	13.659	270.125	266.347	08°26'21"
IP3	0+444.983	7,684.091	15,137.986	19°04'31"	621.250	104.381	8.708	206.830	205.876	09°13'22"
IP4	0+620.295	7,653.361	15,312.545							

NOTES:

1. ALL DIMENSIONS ARE IN METERS  
UNLESS OTHERWISE SHOWN.



1  
B-04 SCALE 1:1000

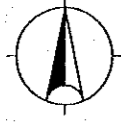
ALIGNMENT LAYOUT OF ACCESS ROAD WEST BANK  
NORTH SIDE (STA. 0+00 TO STA. 0+620.295)



THE STUDY ON CONSTRUCTION OF THE BRIDGE  
OVER THE RIVER RUPSA IN KHULNA (PHASE 2)

ALIGNMENT LAYOUT OF ACCESS ROAD  
WEST BANK SOUTH SIDE

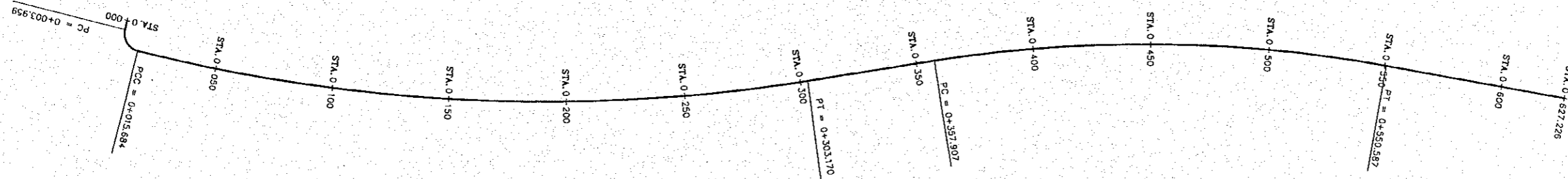
SCALE	SHEET NO.
1:1000	B-05



ELEMENTS OF CURVES										
CURVE NO.	STATION	COORDINATES OF PL		I	R	T	E	Lc	L	D
		NORTHING	EASTING							
IP0	0+000.000	7,641.533	14,697.858							
IP1	0+011.401	7,630.487	14,695.036	89°31'40"	7.503	7.442	3.065	11.724	10.567	763°56'19"
IP2	0+161.361	7,593.968	14,843.734	22°50'16"	721.250	145.677	14.565	287.486	285.587	07°56'38"
IP3	0+455.147	7,640.997	15,137.649	19°04'31"	578.750	97.240	8.112	192.680	191.792	09°54'00"
IP4	0+627.226	7,610.849	15,308.895							

NOTES:

1. ALL DIMENSIONS ARE IN METERS  
UNLESS OTHERWISE SHOWN.



ALIGNMENT LAYOUT OF ACCESS ROAD WEST BANK  
SOUTH SIDE (STA.0+000 TO STA.0+627.226)

1  
B-05

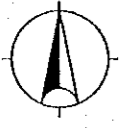
SCALE

1:1000



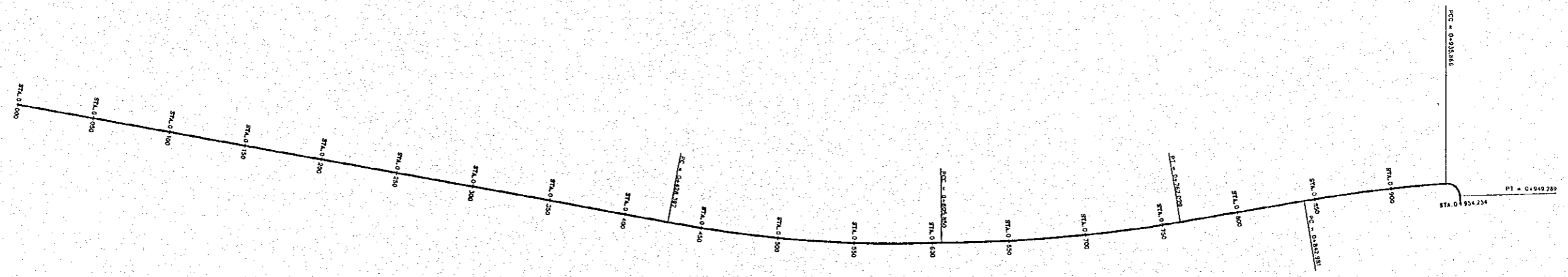
THE STUDY ON CONSTRUCTION OF THE BRIDGE  
OVER THE RIVER RUPSA IN KHULNA (PHASE 2)

ALIGNMENT LAYOUT OF ACCESS ROAD EAST BANK NORTH SIDE	SCALE	SHEET NO.
	1:1500	B-06



ELEMENTS OF CURVES										
CURVE NO.	STATION	COORDINATES OF PI		I	R	T	E	Lc	L	D
		NORTHING	EASTING							
IP0	0+000	7,551.843	15,890.328							
IP1	0+517.505	7,460.928	16,399.815	12°58'23"	783.727	89.108	5.049	177.453	177.074	07°18'38"
IP2	0+684.106	7,465.122	16,567.102	09°09'41"	976.750	78.256	3.130	156.179	156.012	05°51'57"
IP3	0+889.456	7,499.307	16,769.925	05°12'04"	1023.250	46.474	1.055	92.885	92.853	05°35'58"
IP4	0+994.438	7,503.498	16,824.811	90°28'48"	8.500	8.572	3.571	13.423	12.071	674°04'05"
IP5	0+954.254	7,489.993	16,825.728							

NOTES:  
1. ALL DIMENSIONS ARE IN METERS  
UNLESS OTHERWISE SHOWN.



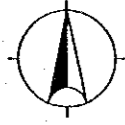
1  
ALIGNMENT OF ACCESS ROAD EAST BANK  
NORTH SIDE (STA.0+000 TO STA.0+954.254)  
SCALE 1:1500

THE STUDY ON CONSTRUCTION OF THE BRIDGE  
OVER THE RIVER RUPSA IN KHULNA (PHASE 2)

ALIGNMENT LAYOUT OF ACCESS ROAD  
EAST BANK SOUTH SIDE

SCALE  
1:1500

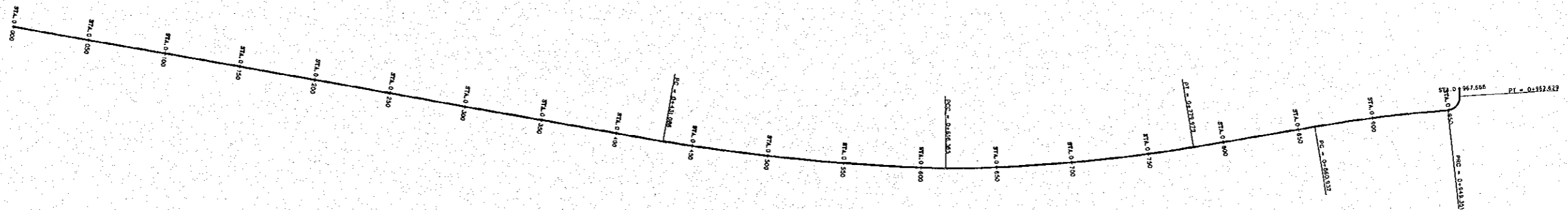
SHEET NO.  
B-07



CURVE NO.	STATION	COORDINATES OF PI.		I	R	T	E	Lc	L	D
		NORTHING	EASTING							
IP0	0+000	7,510.253	15,880.312							
IP1	0+523.873	7,420.412	16,396.419	07°55'10"	1340.456	92.786	3.208	185.280	185.132	04°16'28"
IP2	0+696.347	7,418.650	16,571.157	09°09'41"	1023.250	81.982	3.297	163.614	163.440	05°35'58"
IP3	0+905.172	7,453.082	16,775.449	05°11'12"	976.750	44.240	1.001	88.419	88.389	05°51'57"
IP4	0+957.778	7,457.105	16,827.963	89°30'20"	8.500	8.427	3.469	13.278	11.969	674°04'05"
IP5	0+967.666	7,470.538	16,827.050							

NOTES:

1. ALL DIMENSIONS ARE IN METERS  
UNLESS OTHERWISE SHOWN.

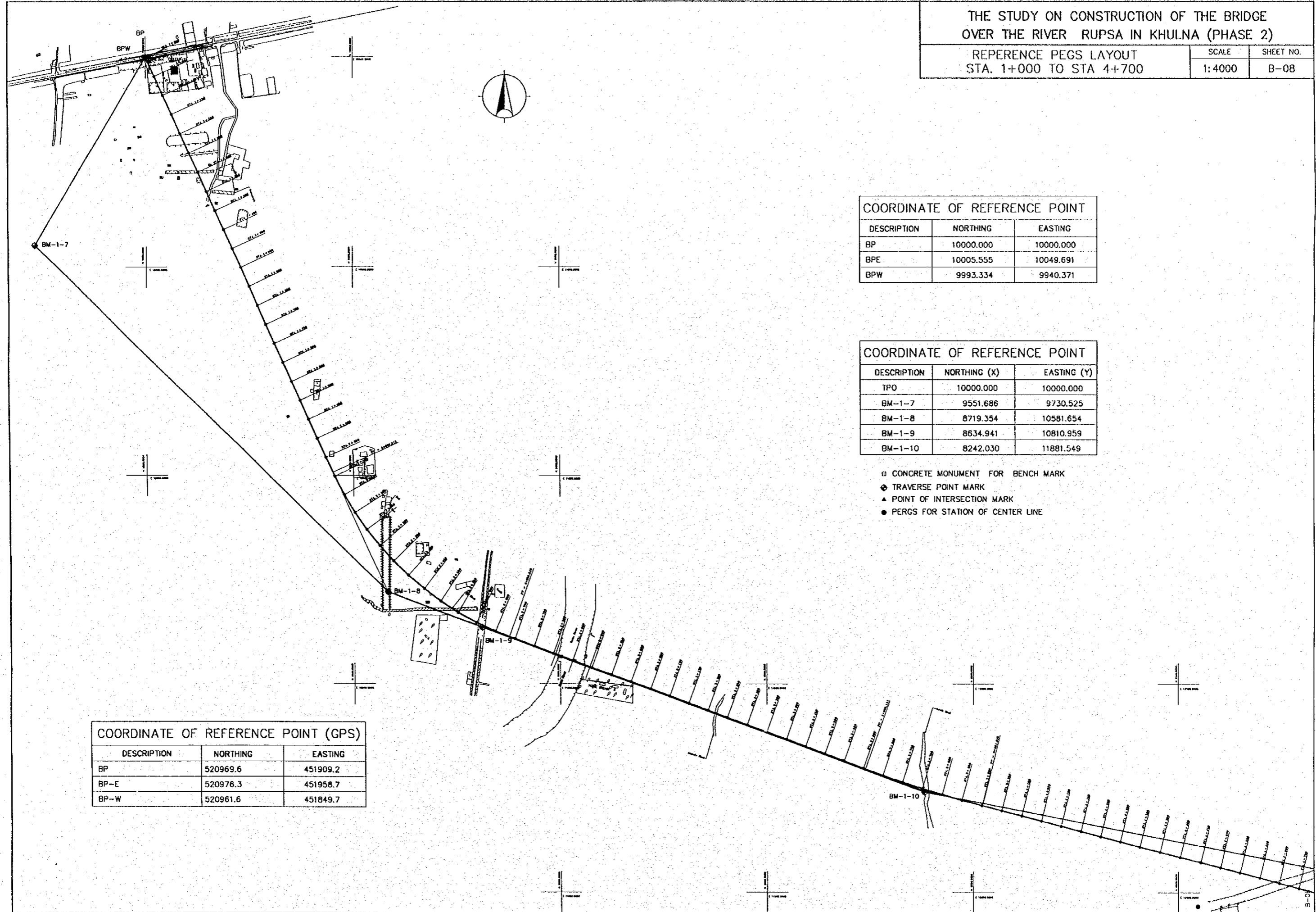


1  
ALIGNMENT OF ACCESS ROAD EAST BANK  
SOUTH SIDE (STA.0+000 TO STA.0+967.666)  
SCALE 1:1500

THE STUDY ON CONSTRUCTION OF THE BRIDGE  
OVER THE RIVER RUPSA IN KHULNA (PHASE 2)

REFERENCE PEGS LAYOUT  
STA. 1+000 TO STA 4+700

SCALE	SHEET NO.
1:4000	B-08



COORDINATE OF REFERENCE POINT

DESCRIPTION	NORTHING	EASTING
BP	10000.000	10000.000
BPE	10005.555	10049.691
BPW	9993.334	9940.371

COORDINATE OF REFERENCE POINT

DESCRIPTION	NORTHING (X)	EASTING (Y)
TPO	10000.000	10000.000
BM-1-7	9551.686	9730.525
BM-1-8	8719.354	10581.654
BM-1-9	8634.941	10810.959
BM-1-10	8242.030	11881.549

- CONCRETE MONUMENT FOR BENCH MARK
- ◆ TRAVERSE POINT MARK
- ▲ POINT OF INTERSECTION MARK
- PERGS FOR STATION OF CENTER LINE

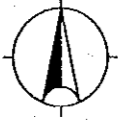
COORDINATE OF REFERENCE POINT (GPS)

DESCRIPTION	NORTHING	EASTING
BP	520969.6	451909.2
BP-E	520976.3	451958.7
BP-W	520961.6	451849.7

THE STUDY ON CONSTRUCTION OF THE BRIDGE  
OVER THE RIVER RUPSA IN KHULNA (PHASE 2)

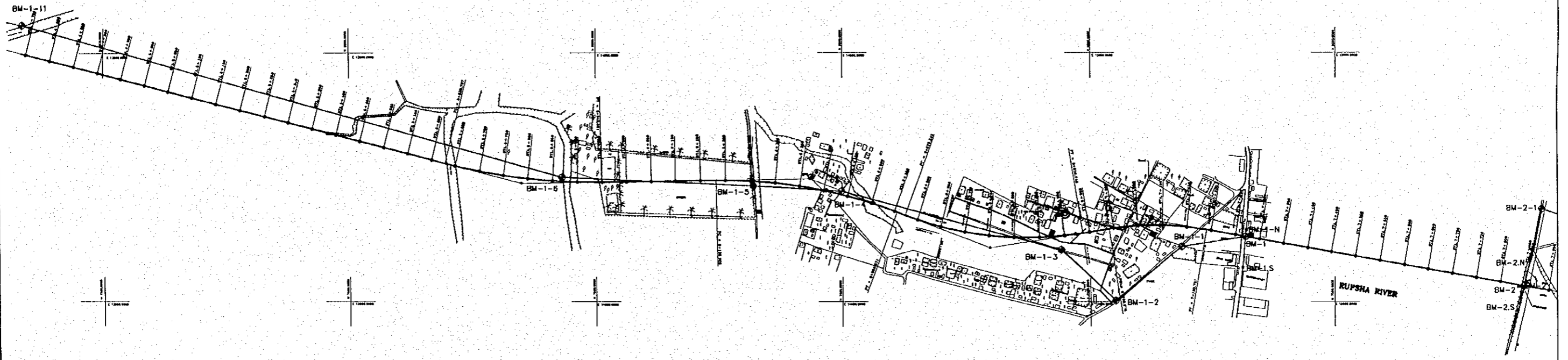
REFERENCE PEGS LAYOUT  
STA. 4+700 TO STA. 7+900

SCALE	SHEET NO.
1:4000	B-09



COORDINATE OF REFERENCE POINT (GPS)		
DESCRIPTION	NORTHING	EASTING
BM-1	518722.2	457275.4
BM-1-N	518735.2	457276.3
BM-1-S	518660.2	457270.8

COORDINATE OF REFERENCE POINT (GPS)		
DESCRIPTION	NORTHING	EASTING
BM-2	518634.9	457846.3
BM-2-N	518683.8	457856.9
BM-2-S	518586.1	457835.7



COORDINATE OF REFERENCE POINT		
LABEL	NORTHING (X)	EASTING (Y)
BM-1-11	8056.814	12836.381
BM-1-6	7750.518	13932.362
BM-1-5	7733.250	14318.083
BM-1-4	7722.046	14498.088
BM-1-3	7604.719	14942.101
BM-1-2	7502.577	15052.095
BM-1-1	7610.951	15186.295
BM-1	7631.150	15316.145
BM-2	7530.974	15885.174
BM-2-1	7685.639	15921.561

COORDINATE OF REFERENCE POINT		
DESCRIPTION	NORTHING	EASTING
BM-1	7631.150	15316.145
BM-1.N	7644.091	15310.222
BM-1.S	7569.194	15317.382

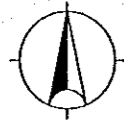
COORDINATE OF REFERENCE POINT		
DESCRIPTION	NORTHING	EASTING
BM-2	7530.974	15885.174
BM-2.N	7579.575	15896.917
BM-2.S	7482.373	15873.431

- CONCRETE MONUMENT FOR BENCH MARK
- ◆ TRAVERSE POINT MARK
- ▲ POINT OF INTERSECTION MARK
- PERGS FOR STATION OF CENTER LINE

THE STUDY ON CONSTRUCTION OF THE BRIDGE  
OVER THE RIVER RUPSA IN KHULNA (PHASE 2)

REFERENCE PEGS LAYOUT  
STA. 7+900 TO STA. 11+003.663

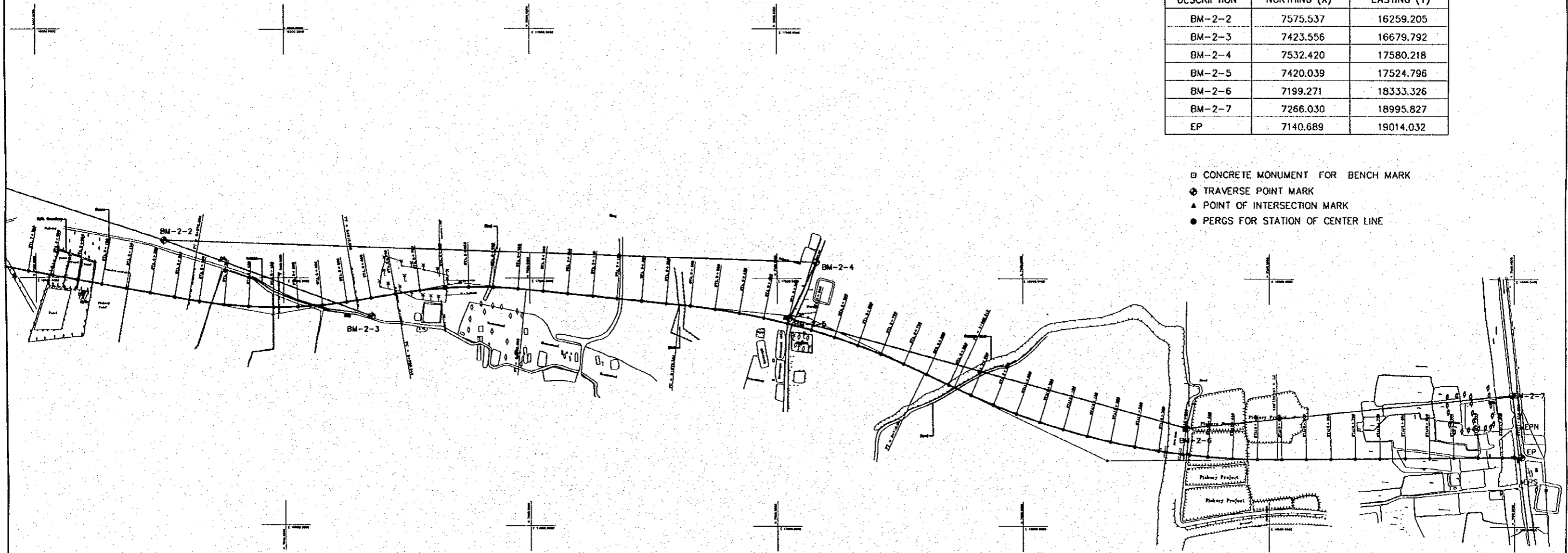
SCALE	SHEET NO.
1:4000	B-10



COORDINATE OF REFERENCE POINT

DESCRIPTION	NORTHING (X)	EASTING (Y)
BM-2-2	7575.537	16259.205
BM-2-3	7423.556	16679.792
BM-2-4	7532.420	17580.218
BM-2-5	7420.039	17524.796
BM-2-6	7199.271	18333.326
BM-2-7	7266.030	18995.827
EP	7140.689	19014.032

- CONCRETE MONUMENT FOR BENCH MARK
- ◆ TRAVERSE POINT MARK
- ▲ POINT OF INTERSECTION MARK
- PERGS FOR STATION OF CENTER LINE



COORDINATE OF REFERENCE POINT

DESCRIPTION	NORTHING	EASTING
EP	7140.689	19014.032
EPN	7200.689	19014.053
EPS	7090.689	19014.015

COORDINATE OF REFERENCE POINT (GPS)

DESCRIPTION	NORTHING	EASTING
EP	518315.2	460981.9
EPN	518375.2	460980.6
EPS	518265.2	460983.0