FLOOD SURVEY

(Ⓕ ZONE)

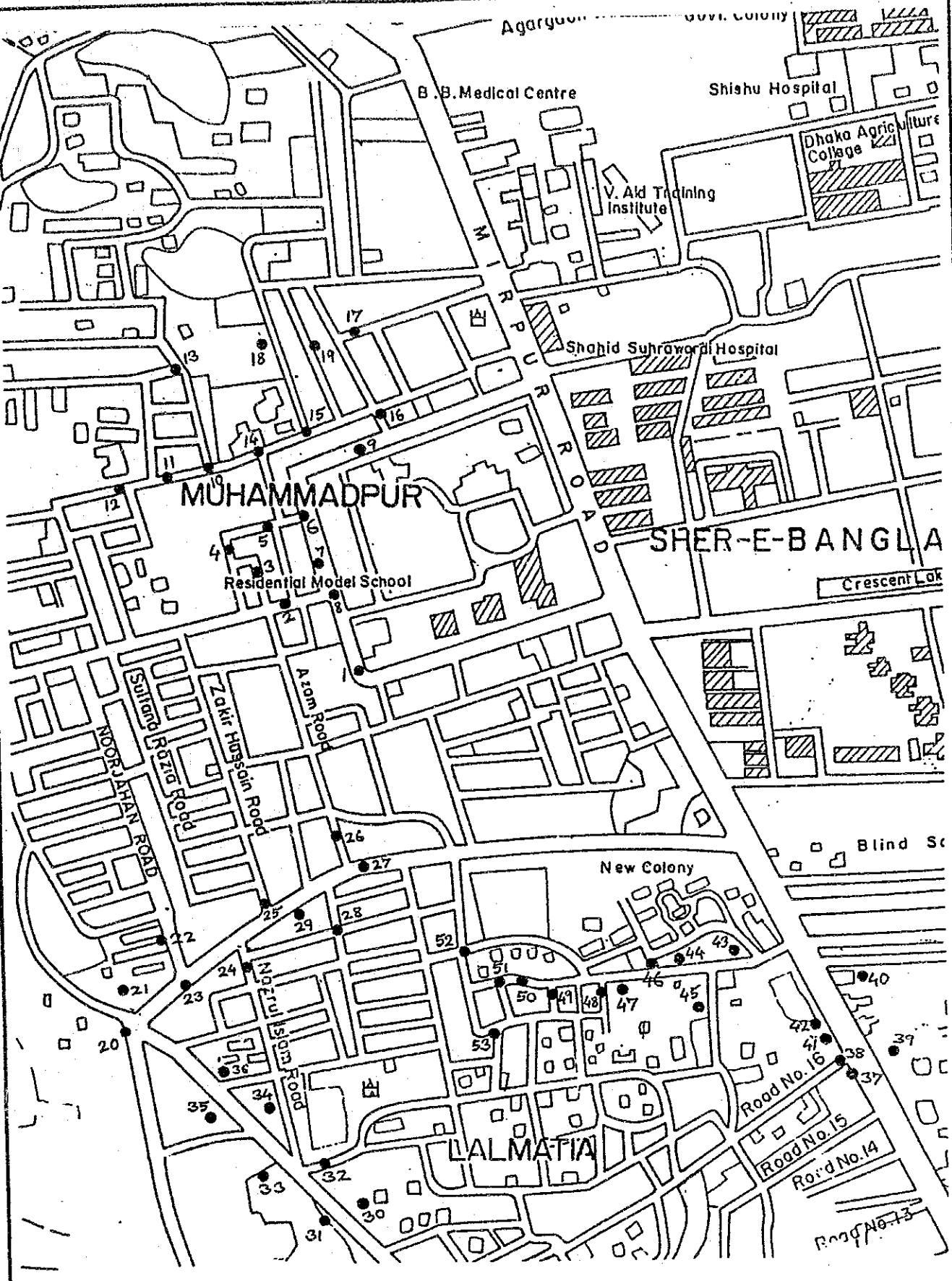


FIG.	Flood Survey Points in F Zone (1)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
37	✓				✓					✓		2	10 hr	30	2	15 hr	1986		✓			
38	✓				✓					✓		2	4 hr	20	2	5 hr	1983					✓
39	✓				✓						✓	1	1 hr	15	1	2 hr	1974		✓			
40	✓				✓						✓	1	2 hr	25	1	3 hr	1986		✓			
41	✓				✓						✓	1	1 hr	20	1	2 hr	1984					✓
42	✓				✓					✓		3	3 hr	2	3	4 hr	1986				✓	
43	✓				✓		✓					—	—	—	—	—	—					
44	✓				✓		✓					—	—	—	—	—	—					
45	✓				✓		✓					—	—	—	—	—	—					
46	✓				✓		✓					—	—	—	—	—	—					
47	✓				✓						✓	1	1 hr	20	1	2 hr	1983		✓			
48	✓				✓		✓					—	—	—	—	—	—					
49	✓				✓		✓					—	—	—	—	—	—					
50	✓				✓		✓					—	—	—	—	—	—					
51	✓				✓		✓					—	—	—	—	—	—					
52	✓				✓		✓					—	—	—	—	—	—					
53	✓				✓		✓					—	—	—	—	—	—					

F-F-2

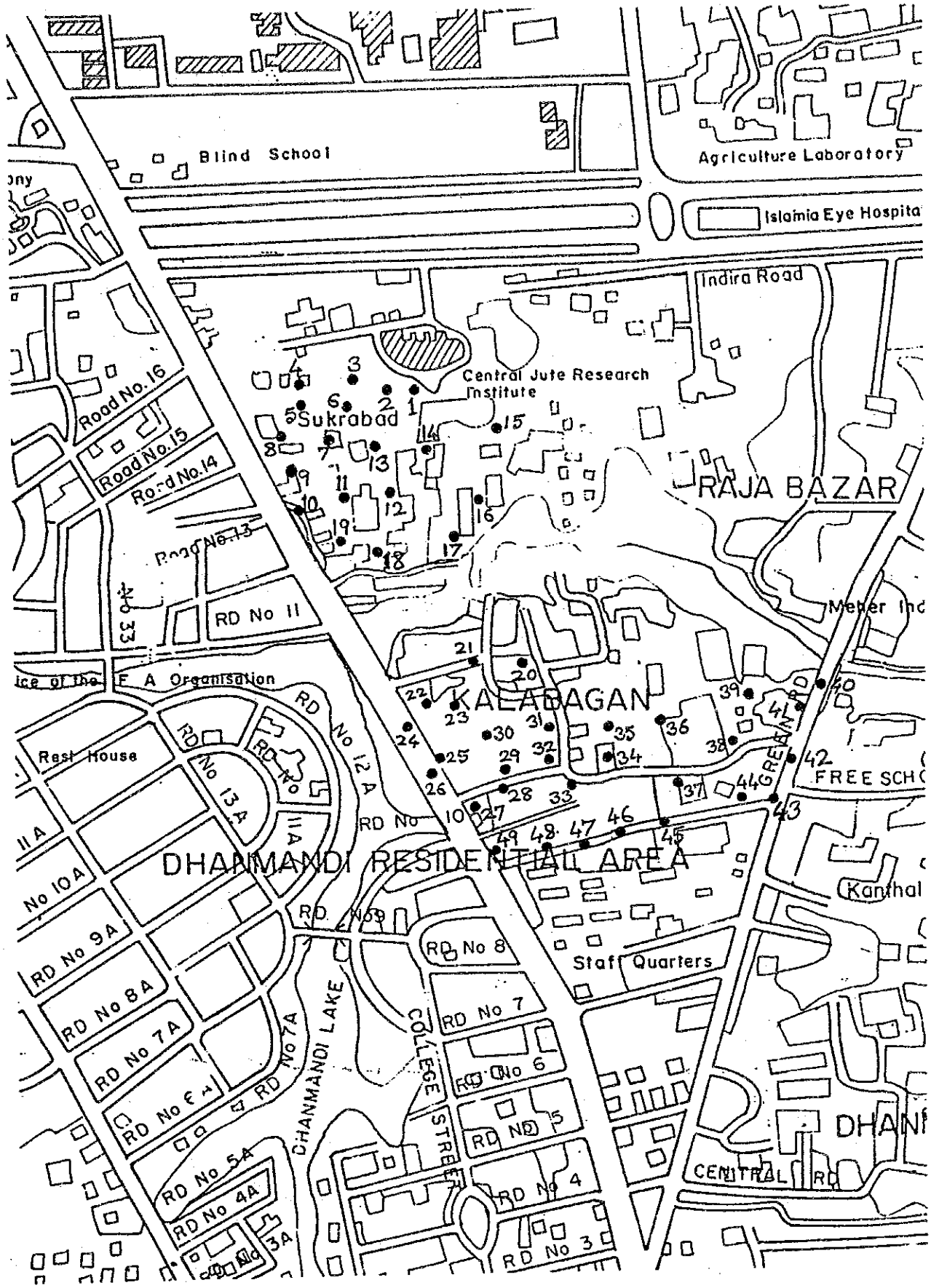


FIG.	Flood Survey Points in F Zone (2)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1	✓			✓			✓					—	—	—	—	—	—					
2	✓			✓			✓					—	—	—	—	—	—					
3	✓			✓							✓	—	—	—	1	5 hr	almost every year.					
4	✓			✓							✓	—	—	—	1	3 hr	1986					
5	✓					✓				✓		1	15 hr	12	2	1 day	1974					
6	✓					✓					✓	—	—	—	1	1 day	—					
7	✓			✓							✓	—	—	—	1	1 day	—					
8	✓			✓			✓					—	—	—	—	—	—					
9	✓			✓			✓					—	—	—	—	—	—					
10	✓			✓			✓					—	—	—	—	—	—					
11	✓			✓						✓		1	1 day	12	2	2 days	1986	✓				
12	✓			✓						✓		1	1 day	15	2	2 days	1983	✓				
13	✓			✓						✓		2	1 day	23	3	3 days	1986	✓				
14	✓					✓				✓		1	1 day	18	3	4 days	1986		✓			
15	✓					✓				✓		1	1 day	20	3	3 days	1974		✓		✓	✓
16	✓					✓				✓		1	12 hr	20	2	1 day.	1982		✓	✓	✓	✓
17	✓					✓					✓	—	—	—	1	1 day	—		✓			
18	✓			✓			✓					—	—	—	—	—	—					
19	✓			✓			✓					—	—	—	—	—	—					

F-F-4

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA

FIGURE No.

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
20	✓			✓							✓	1	4 hr	3	1	4 hr	—	✓				
21		✓		✓						✓		1	4 hr	6	2	5 hr	—	✓				
22	✓			✓							✓	1	5 hr	2	1	6 hr	—	✓				
23		✓		✓							✓	3	2 days	10	4	4 days	—	✓				
24	✓					✓					✓	1	1 hr	10	1	1 hr	—		✓		✓	
25	✓		✓							✓		2	1 day	8	—	—	—	✓				
26	✓					✓					✓	1	1 hr	5	1	1 hr	—		✓		✓	
27	✓				✓						✓	1	1 hr	3	1	1 hr	—	✓	✓			
28	✓				✓						✓	1	2 hr	5	1	2 hr	—	✓	✓			
29		✓		✓						✓		2	3 days	5	3	4 days	—	✓				
30		✓		✓						✓		3	2 days	10	4	4 days	—	✓				
31	✓			✓							✓	1	2 hr.	6	1	3 hr	—	✓				
32		✓		✓						✓		3	2 days	12	4	4 days	—	✓				
33	✓					✓					✓	1	6 hr	7	1	6 hr	—		✓		✓	
												1.6										
34	✓					✓					✓	1	1/4 hr	3	1	1/4 hr	—		✓			
35		✓				✓				✓		1	3 hr	10	3	4 days	—		✓			
36	✓					✓					✓	1	1/4 hr	6	1	1/4 hr.	—		✓			
37	✓					✓					✓	2	1 hr	10	2	1 hr	—		✓		✓	
38	✓					✓					✓	1	5 hr	6	1	6 hr	—		✓		✓	

E-E-5

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
39		✓		✓						✓		1	1 hr	15	1	2 hr	—	✓				
40	✓				✓	✓	✓					—	—	—	—	—	—					
41		✓			✓	✓				✓		2	4 hr	20	3	6 hr	—					
42	✓				✓	✓	✓					—	—	—	—	—	—					
43	✓				✓	✓					✓	1	$\frac{1}{4}$ hr	2	1	$\frac{1}{4}$ hr	—		✓	✓		
44		✓			✓					✓		3	1 day	20	3	1 day	—	✓	✓			
45	✓				✓						✓	1	$\frac{1}{4}$ hr	2	1	$\frac{1}{4}$ hr	—	✓	✓			
46	✓				✓						✓	2	1 hr	4	2	1 hr	—	✓	✓			
47	✓				✓						✓	1	$\frac{3}{4}$ hr	4	1	$\frac{3}{4}$ hr	—	✓	✓			
48	✓				✓						✓	1	3 hr	5	1	3 hr	—	✓	✓			
49	✓					✓					✓	1	1 hr	6	1	1 hr	—				✓	

F-F-6

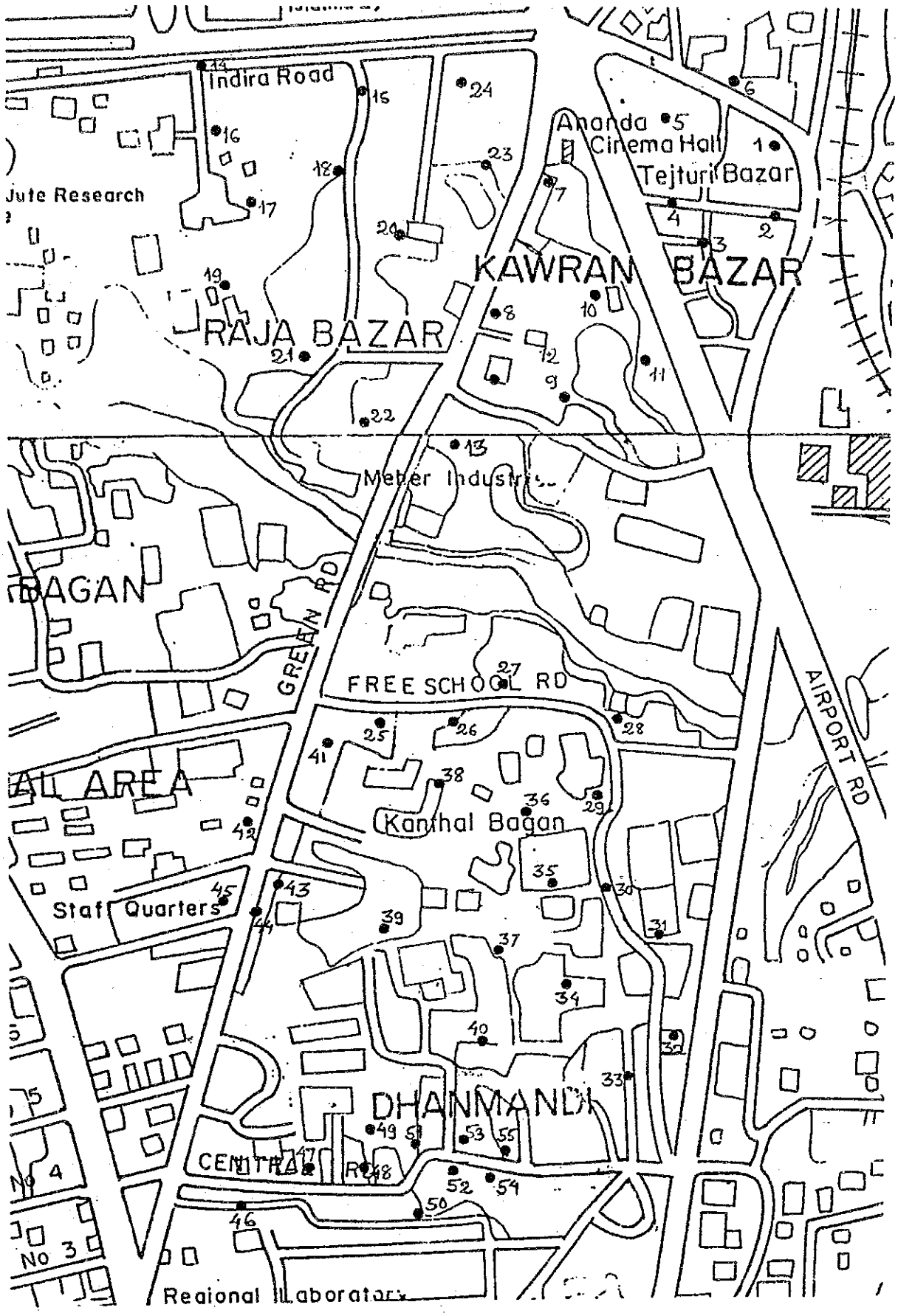


FIG.	Flood Survey Points in F Zone (3)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1	✓					✓					✓	2	10 hr	12 "	3	2 day	'82				✓	
2		✓			✓					✓		1	15 "	10	2	2 "	'80		✓		✓	
3		✓				✓					✓	2	12 "	15	3	1 "	'83			✓	✓	
4		✓				✓					✓	2	10 "	10	3	2 "	'82				✓	
5		✓				✓					✓	1	6 "	12	2	1 "	'86		✓		✓	
6	✓				✓					✓		1	15 "	20	2	1 "	'86				✓	
7	✓					✓					✓	1	6 "	10	2	1 "	'82				✓	
8	✓					✓					✓	1	10 "	15	—	1 "	'86		✓		✓	
9	✓					✓	✓					—	—	—	—	—	—					
10	✓					✓	✓					—	—	—			—					
11	✓					✓					✓	1	6 "	12	2	1 "	'86				✓	
12	✓					✓					✓	1	10 "	16	2	1 "	'86				✓	
13	✓			✓						✓		1	15 "	20	2	3 "	1974	✓				
14	✓			✓			✓					—	—	—	—	—	—					
15	✓			✓			✓					—	—	—	—	—	—					
16	✓			✓							✓	—	—	—	1	6 hr	1986	✓				

F-F-8

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
17	✓			✓							✓	—	—	—	1	4 hr	1986	✓				
18	✓			✓							✓	—	—	—	1	6 "	1986	✓				
19	✓			✓						✓		1	6 hr	15	2	4 day	1962	✓				
20	✓			✓							✓	-	-	-	1	2 hr	1986	✓				
21	✓			✓						✓		1	8 "	12	1	8 "	1986	✓				
22	✓			✓						✓		1	3 "	16	1	2 day	1974	✓				
23	✓			✓							✓	—	—	—	1	6 hr	1986	✓				
24	✓			✓			✓					—	—	—	—	—	—	—				
25	✓					✓	✓					—	—	—	—	—	—	-	-	-	-	-
26	✓					✓	✓					-	-	—	—	—	--	--	-	-	-	-
27	✓				✓	✓					✓	1	1 hr	2	1	2 hr	'86		✓			✓
28	✓					✓					✓	1	3 "	3	2	4 "	'86				✓	✓
29		✓				✓				✓		1	4 "	3	2	8 "	'86					✓
30		✓				✓				✓		2	1 day	4	3	1 day	'84		✓			✓
31		✓				✓				✓		2	2 "	4	3	3 "	'84					✓
32		✓				✓				✓		2	2 "	4	3	3 "	'84				✓	✓
33	✓					✓					✓	1	1 hr	2	1	2 hr	'86		✓			
34		✓				✓					✓	1	3 "	3	2	4 "	'86					✓
35		✓				✓					✓	1	2 "	3	2	4 "	'86		✓			✓
36	✓					✓	✓				-	-	-	-	-	-	-		-			
37	✓					✓					✓	1	2	3	2	3 "	'84		✓			✓

F-F-9

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY; BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
38		✓				✓					✓	1	2 hr	3	2	4 hr	'86					✓
39	✓					✓					✓	1	1 "	2	1	1 "	'84		✓			
40	✓					✓	✓					—	—	—	—	—	—					
41	✓				✓					✓		2	1-2 hr	60-70	2	5-6 "	—				✓	
42	✓			✓						✓		3	7-8 hr	30-40	3	17-18 "	—	✓				
43	✓				✓					✓		1	8-10 "	8-10	1	8-10 "	—				✓	
44	✓				✓					✓		1	—	20-25	1	10-12 "	—				✓	
45	✓				✓					✓		1	2-3 "	30-35	1	7-8 "	—				✓	
46	✓					✓	✓					—	—	—	—	—	—					
47	✓					✓				✓		1	4-5 day	90	1	8-10 day	—		✓			
48	✓					✓	✓					—	—	—	—	—	—					
49	✓					✓				✓		1	4-5 "	80-90	1	4-5 "	—		✓			
50	✓					✓				✓		1	3-4 hr	80-90	1	3-4 hr	—		✓			
51	✓					✓					✓	1	2-3	20-25	1	2-3 "	—		✓			
52	✓					✓				✓		1	4-5	50-60	1	7-8 "	—		✓			
53	✓					✓					✓	1	2-3	30-35	1	3-4	—		✓			
54	✓					✓				✓		1	1-2	40-45	2	5-6	—		✓			
55																						
56																						

F-F-10

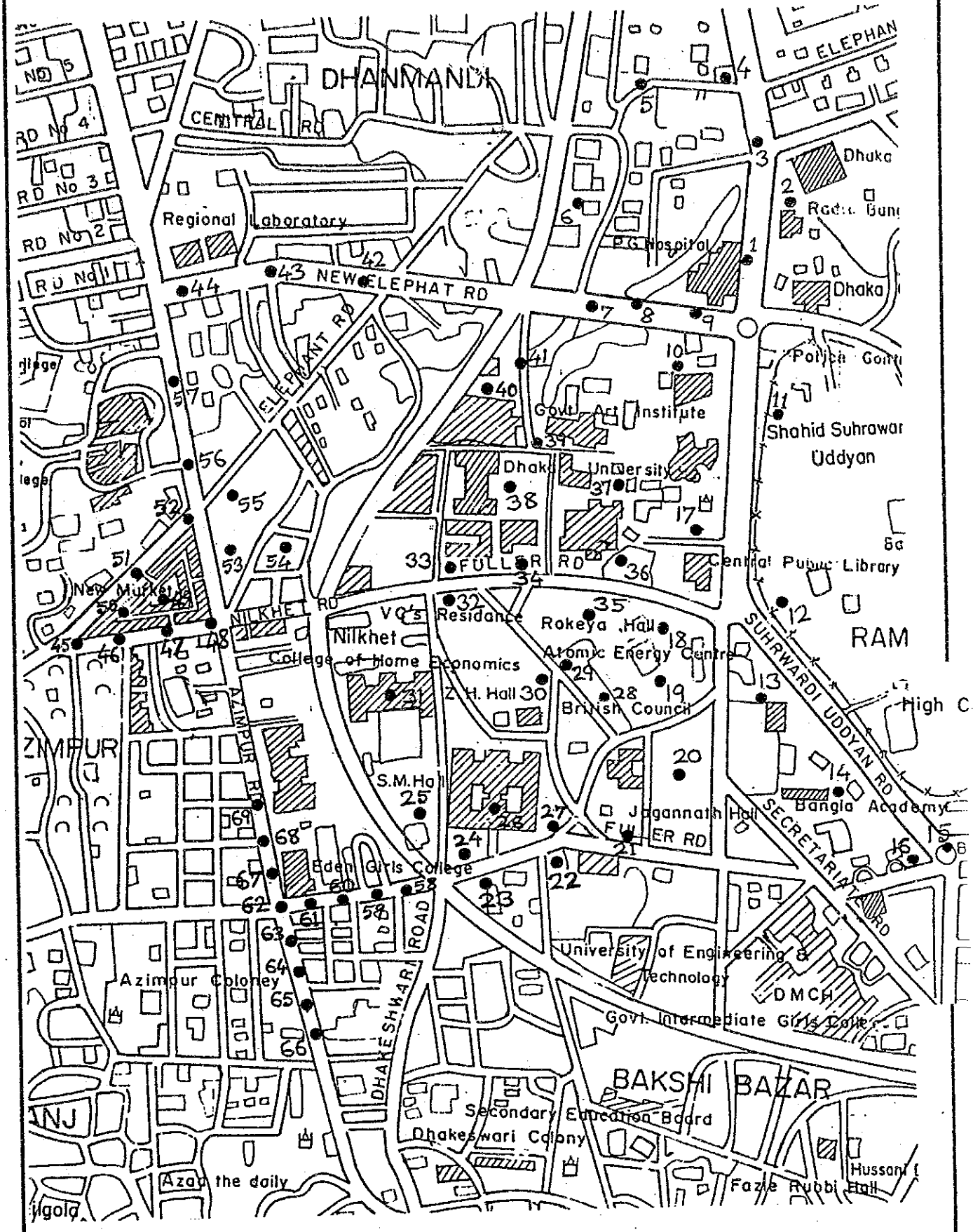


FIG.	Flood Survey Points in F Zone (4)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1		✓			✓					✓		2	8 hr	7	3	24 hr.	–		✓			
2		✓			✓					✓		2	2 hr	3	4	1 day	–		✓			
3		✓			✓					✓		2	4 hr	4	3	2 days	–	✓				
4		✓				✓				✓		1	4 hr	5	3	24 hr.	–		✓			
5	✓				✓		✓					–	–	–	–	–	–					
6	✓				✓		✓					–	–	–	–	–	–					
7	✓				✓					✓		1	1 hr	5	1	3 hr.	–	✓	✓			
8		✓				✓				✓		1	5 hr	4	1	12 hr.	–		✓		✓	
9		✓				✓					✓	1	1 hr	3	1	1 hr.	–		✓			
10	✓					✓	✓					–	–	–	–	–	–					
11	✓				✓						✓	1	2 hr	3	2	3 hr	–	✓				
12		✓			✓						✓	1	3 hr	5	1	6 hr	–	✓				
13	✓				✓		✓					–	–	–	–	–	–					
14		✓			✓					✓		1	24 hr	5	2	24 hr	–	✓				
15		✓			✓					✓		1	15 hr	6	2	24 hr	–	✓				
16		✓			✓					✓		2	24 hr	4	3	1½ days	–	✓				

F-F-12

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA

FIGURE No.

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
17	✓				✓						✓	1	3 hr	4	1	5 hr	—	✓				
18	✓					✓					✓	1	12 hr	3	2	1 day	—		✓			✓
19	✓					✓					✓	1	12 hr	2	2	1 day	—		✓			✓
20		✓		✓							✓	2	2 days	3	3	3 days	—	✓				
21		✓		✓							✓	3	24 hr	4	4	2 days	—	✓				
22		✓			✓						✓	2	24 hr	3	3	2 days	—	✓				
23		✓			✓						✓	2	24 hr	4	3	2 days	—	✓				
24		✓			✓						✓	2	12 hr	5	3	2 days	—	✓				
25		✓		✓							✓	3	12 hr	4	4	3 days	—	✓				
26		✓			✓						✓	2	2 days	3	3	4 days	—	✓				
27		✓			✓						✓	2	6 hr	4	3	1 day	—	✓				
28		✓				✓					✓	1	6 hr	2	2	1 day	—	✓			✓	
29		✓				✓					✓	1	3 hr	3	2	6 hr	—		✓			
30		✓			✓						✓	2	6 hr	3	3	1 day	—	✓			✓	
31		✓			✓						✓	2	3 days	4	3	3 days	—	✓				
32		✓				✓					✓	2	12 hr	3	2	1 day	—		✓			
33		✓				✓				✓		2	3 days	5	3	4 days	—		✓		✓	✓
34		✓				✓					✓	1	12 hr	3	2	1 day	—		✓			✓
35	✓					✓					✓	1	24 hr	3	2	1 day	—		✓			✓
36		✓				✓					✓	1	1 day	3	2	2 days	—		✓	✓		✓
37		✓				✓					✓	2	24 hr	3	2	2 days	—		✓			✓
38		✓				✓					✓	2	24 hr	3	2	3 days	—		✓			✓

F-F-13

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY,, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
39		✓		✓							✓	3	3 days	3	3	3 days	—	✓				
40	✓			✓							✓	1	12 hr	2	1	2 days	—	✓				
41		✓		✓							✓	1	24 hr	3	2	2 days	—	✓				
42												1	3 hr	10	3	12 hr	—	✓				
43												1	3 hr	15	2	12 hr	—		✓			
44	✓					✓	✓					—	—	—	—	—	—					
45	✓					✓				✓		1	12 hr	15	1	6 hr						
46	✓					✓				✓		2	2 days	20	3	2 days						
47	✓					✓				✓		2	1 day	15	3	2 days						
48	✓					✓					✓	—	—	—	1	3 hr						
49	✓				✓	✓					✓	1	10 hr	5	2	2 days						
50	✓					✓				✓		1	6 hr	20	2	1 day	—				✓	
51	✓					✓				✓		1	6 hr	20	2	2 days						
52	✓						✓					—	—	—	—	—	—					
53	✓			✓			✓					—	—	—	—	—	—					
54	✓			✓			✓					—	—	—	—	—	—					
55	✓					✓					✓	1	3 hr	8	1	5 hr	—					
56	✓					✓				✓		1	6 hr	20	2	1 day						

F-F-14

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
57	✓					✓	✓					—	—	—	—	—	—					
58	✓			✓						✓		2	2 days	12	3	3 days	—					
59	✓			✓						✓		1	6 hr	15	3	3 days	—					
60	✓			✓						✓		2	1 day	20	3	4 days	—					
61	✓					✓					✓	2	2 days	3	2	3 days	—					
62	✓					✓				✓		1	3 hr	20	3	4 days	—					
63	✓				✓						✓	1	$2\frac{1}{4}$ days	10	2	3 days	—					
64	✓				✓						✓	1	2 hr	2	1	3 days	—					
65	✓				✓						✓	1	3 hr	2	1	4 days	—					
66	✓				✓						✓	1	2 hr	2	1	3 days	—					
67	✓				✓						✓	1	2 days	10	1	3 days	—					
68	✓					✓					✓	1	4 hr	5	1	1 days	—					
69	✓				✓		✓				✓	—	—	—	—	—	—					

F-F-15

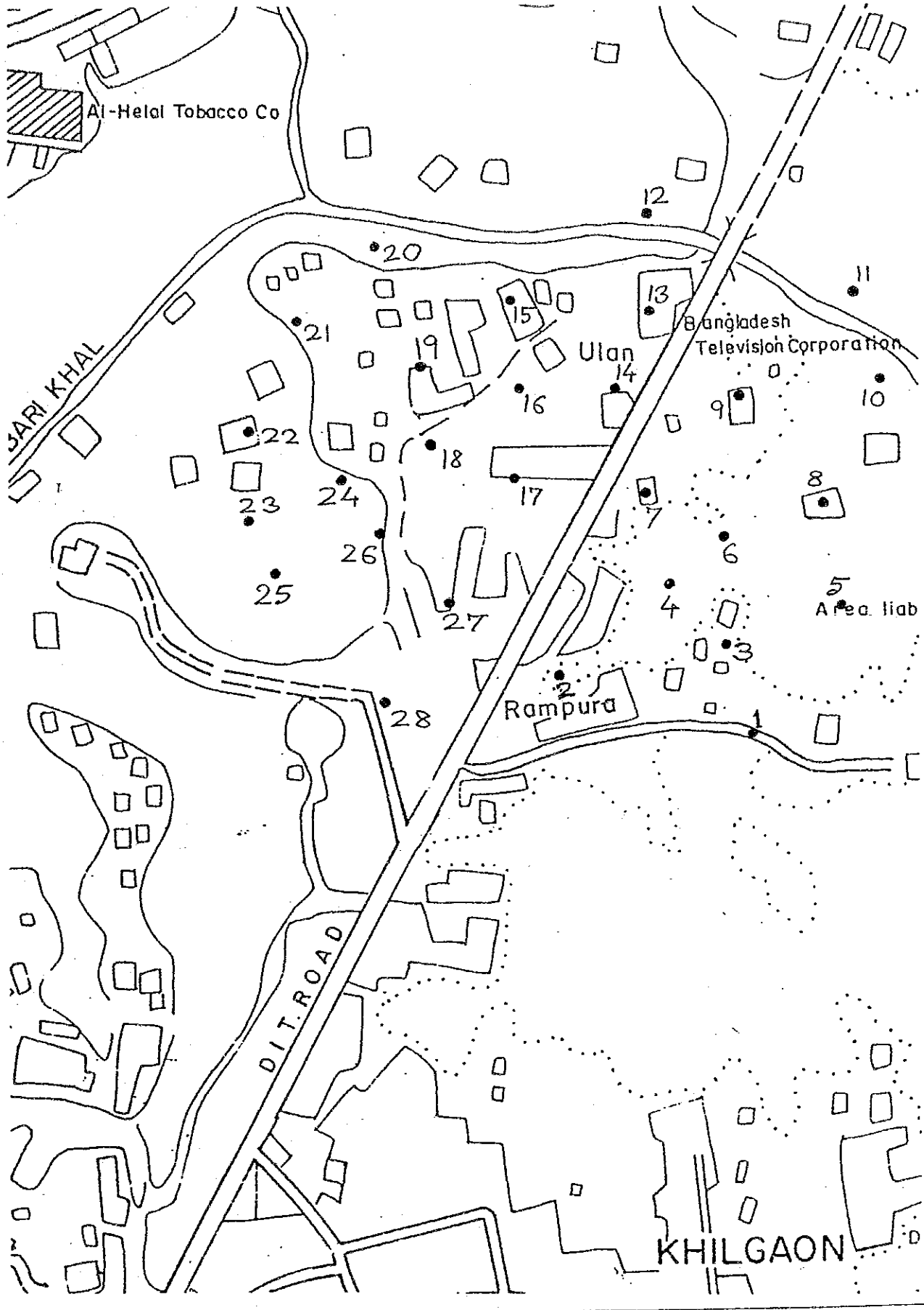


FIG.	Flood Survey Points in F Zone (5)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1		✓		✓						✓		1	8 hr	10	2	1 day	1984	✓				
2	✓				✓						✓	1	½ hr	6	1	1 hr	1986	✓				
3		✓		✓						✓		2	18 hr	12	4	2 days	1976	✓				
4	✓			✓						✓		1	10 hr	10	3	1 day	1986	✓				
5		✓		✓						✓		2	12 hr	12	3	1 day	1986	✓				
6	✓			✓						✓		2	12 hr	10	3	1 day	1986	✓				
7	✓				✓						✓	1	¾ hr	5	1	1 hr	1986	✓				
8		✓				✓				✓		1	2 hr	10	1	2 hr	1986		✓		✓	
9		✓		✓						✓		1	½ hr	8	1	1 hr	1986	✓				
10		✓		✓				✓				2	6 hr	12	5	4 days	1986	✓				
11			✓	✓			✓					10	2 Months	1	12	3 Months	1976	✓				
12			✓	✓					✓			10	2 Months	1	12	3 Months	1976	✓				
13	✓				✓																	
14		✓		✓						✓		1	2 hr	8	2	1 day	1984	✓				
15		✓		✓						✓		1	3 hr	8	2	4 hr	1986	✓				
16		✓		✓						✓		1	2 hr	10	2	1 hr	1986	✓				
17		✓		✓						✓		1	8 hr	8	2	18 hr	1986	✓				
18		✓		✓						✓		1	2 hr	6	2	2 days	1984	✓				
19		✓		✓						✓		1	2 hr	8	2	6 hr	1986	✓				

F-F-17

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
20		✓		✓						✓		1	2 hr	8	2	6 hr	1986	✓				
21		✓		✓						✓		1	2 hr	7	2	5 hr	1986	✓				
22		✓		✓						✓		1	4 hr	8	2	1 day	1984	✓				
23		✓		✓						✓		1	12 hr	8	1	1 day	1986	✓				
24		✓		✓						✓		1	10 hr	12	1	12 hr	1986	✓				
25		✓		✓						✓		1	6 hr	12	2	1 day	1984	✓				
26		✓		✓						✓		1	10 hr	10	1	1 day	1986	✓				
27	✓				✓					✓		1	1 hr	8	2	2 hr	1986	✓				
28	✓				✓						✓	1	½ hr	5	1	1 hr	1986	✓				

F-F-18

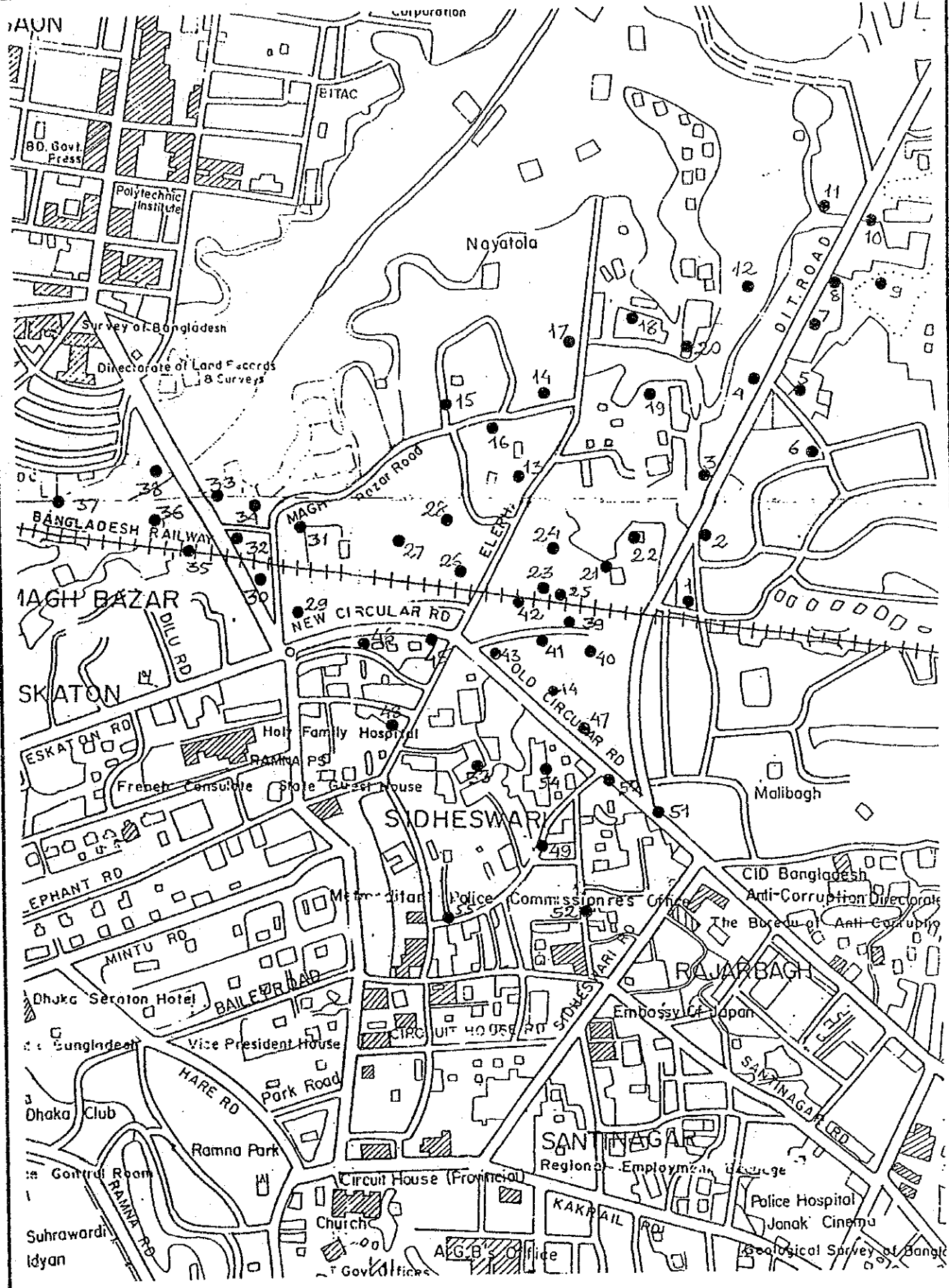


FIG.	Flood Survey Points in F Zone (6)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1	✓				✓						✓	1	4 hr	15	1	6 hr	'86					✓
2	✓				✓		✓															
3	✓				✓						✓	1	3 hr	25	1	3 "	'83				✓	
4	✓				✓						✓	1	7 hr	20	1	8 "	'84					✓
5	✓				✓						✓	2	10 "	30	2	1 day	'86					
6	✓				✓					✓		2	1 day	35	2	2 "	'74		✓			
7	✓				✓					✓		1	8 hr	40	1	10 hr	'83					✓
8	✓				✓					✓		1	7 "	25	1	8 "	'86				✓	
9		✓		✓					✓			5	30 day	80	5	35 day	'74	✓				
10	✓				✓					✓		1	1 day	30	1	2 "	'86					✓
11	✓				✓					✓		1	1 "	40	1	2 "	'83				✓	
12	✓				✓					✓		2	2 "	30	2	3 "	'74					✓
13	✓				✓						✓	1	12 hr	15	2	1 day	'82			✓	✓	
14	✓				✓						✓	1	10 "	15	2	1 "	'83				✓	
15	✓				✓						✓	1	8 "	12	1	1 "	'80		✓		✓	
16	✓				✓					✓		1	6 "	10	2	1 "	'85				✓	
17	✓				✓						✓	1	12 "	15	1	2 "	'82			✓	✓	
18	✓				✓						✓	1	10 "	12	1	1 "	'84				✓	
19	✓				✓						✓	1	15 "	10	2	1 "	'82				✓	

F-F-20

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
20	✓				✓						✓	1	10 hr	12	2	1 day	'83		✓		✓	
21		✓				✓					✓	2	12 hr	10	3	1 day	'74, '82				✓	
22		✓				✓				✓		2	15 "	20	3	1 "	'74, '86			✓	✓	
23		✓				✓					✓	1	10 "	15	2	2 "	'86				✓	
24		✓				✓					✓	2	15 "	12	3	1 "	'83				✓	
25		✓			✓						✓	1	8 "	5	2	12 hr	'83				✓	✓
26		✓				✓				✓		1	6"	10	2	1 day	'82			✓	✓	
27		✓				✓					✓	2	10 "	15	3	2 "	'74				✓	
28		✓				✓					✓	1	8 "	10	2	1 "	'86		✓		✓	
29	✓					✓					✓	1	10 hr	15	2	1 day	'82				✓	
30	✓				✓						✓	1	15 "	12	1	1 "	'84		✓		✓	
31		✓				✓					✓	2	12 "	15	2	1 "	'74				✓	
32		✓				✓					✓	1	15 "	10	2	1 "	'82				✓	
33		✓				✓					✓	1	6	12	2	1 "	'80				✓	
34		✓				✓					✓	2	10	15	2	2 "	'82		✓		✓	

F-F-21

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
35		✓			✓					✓		1	8 hr	10	2	1 day	'74			✓	✓	
36		✓		✓							✓	-	-	-	1	2 "	'78	✓				
37		✓				✓					✓	2	10 "	15	3	2 "	'74				✓	
38	✓					✓					✓	1	15 "	20	2	2	'74		✓		✓	
39		✓			✓						✓											
40		✓			✓						✓											
41		✓				✓				✓												
42		✓			✓						✓	1	6 "	4	2	10 "	1983			✓	✓	✓
43		✓				✓					✓	2	12 "	10	3	24 "	1983			✓	✓	✓
44		✓				✓					✓	2	10 "	8	2	20 "	1982			✓	✓	✓
45		✓			✓						✓	1	4 "	5	1	12 "	1982			✓	✓	✓
46		✓			✓	✓					✓	1	5 "	4	1	12 "	1982			✓	✓	✓
47	✓					✓					✓	1	6 hr	4	2	12 hr	1983 1982			✓	✓	✓
48	✓				✓						✓	1	6 "	5	1	12 "	1982			✓	✓	✓
49	✓				✓						✓	1	6 "	8	1	12 "	1982			✓	✓	✓
50	✓				✓						✓	1	6 "	4	1	12 "	1982			✓	✓	✓

F-F-22

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
51	✓				✓	✓					✓	1	8 hrs	6	2	12 hr	1982			✓	✓	✓
52	✓				✓						✓	1	6 "	4	1	12 "	1983			✓	✓	✓
53	✓				✓						✓	1	6 "	6	1	12 "	1983			✓	✓	✓
54	✓				✓						✓	1	6 "	5	1	12"	1982			✓	✓	✓
55	✓				✓						✓	1	4 "	5	1	6 "				✓	✓	✓

F-F-23

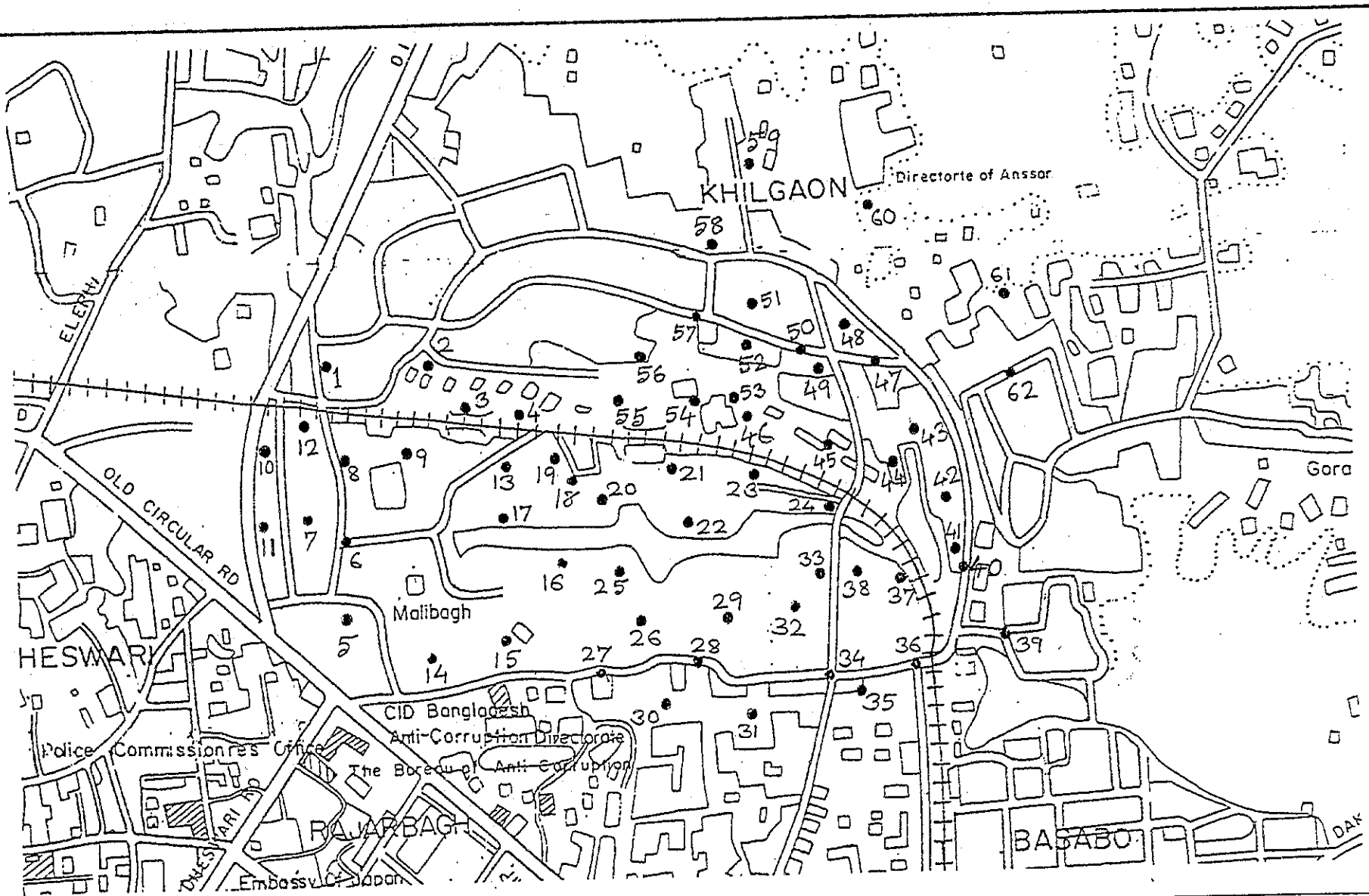


FIG.	Flood Survey Points in F Zone (7)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

F-F-24

JICA 1987A-D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No. _____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Csuse of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1		✓			✓						✓	2	10 hr	15	3	1 day	1982		✓			
2		✓			✓						✓	2	12 hr	20	3	1 day	1986				✓	
3		✓			✓						✓	1	8 hr	10	2	20 hr	1986			✓	✓	
4		✓			✓					✓		1	10 hr	15	2	1 day	1974				✓	
5	✓					✓					✓	1	6 hr	10	2	1 day	1978			✓	✓	
6	✓				✓					✓		1	8 hr	12	2	20 hr	1974			✓		✓
7		✓			✓					✓		2	10 hr	15	3	1 day	1974 1986				✓	
8		✓			✓						✓	1	12 hr	10	2	1 day	1982		✓		✓	
9		✓			✓					✓		1	6 hr	10	2	20 hr	1974		✓		✓	✓
10	✓					✓					✓	1	5 hr	8	1	20 hr	1974				✓	
11	✓					✓					✓	1	10 hr	15	2	24 hr	1974			✓	✓	
12		✓			✓					✓		2	15 hr	20	3	2 day	1974				✓	✓
13		✓			✓						✓	1	12 hr	10	2	1 day	1982		✓			
14		✓			✓						✓	2	10 hr	15	3	1 day	1974			✓	✓	
15	✓				✓						✓	1	12 hr	10	2	2 days	1974				✓	
16	✓				✓						✓	2	10 hr	10	3	1 day	1986				✓	
17	✓				✓						✓	1	12 hr	15	2	1 day	1982				✓	
18		✓			✓						✓	2	10 hr	15	3	1 day	1983				✓	

F-F-25

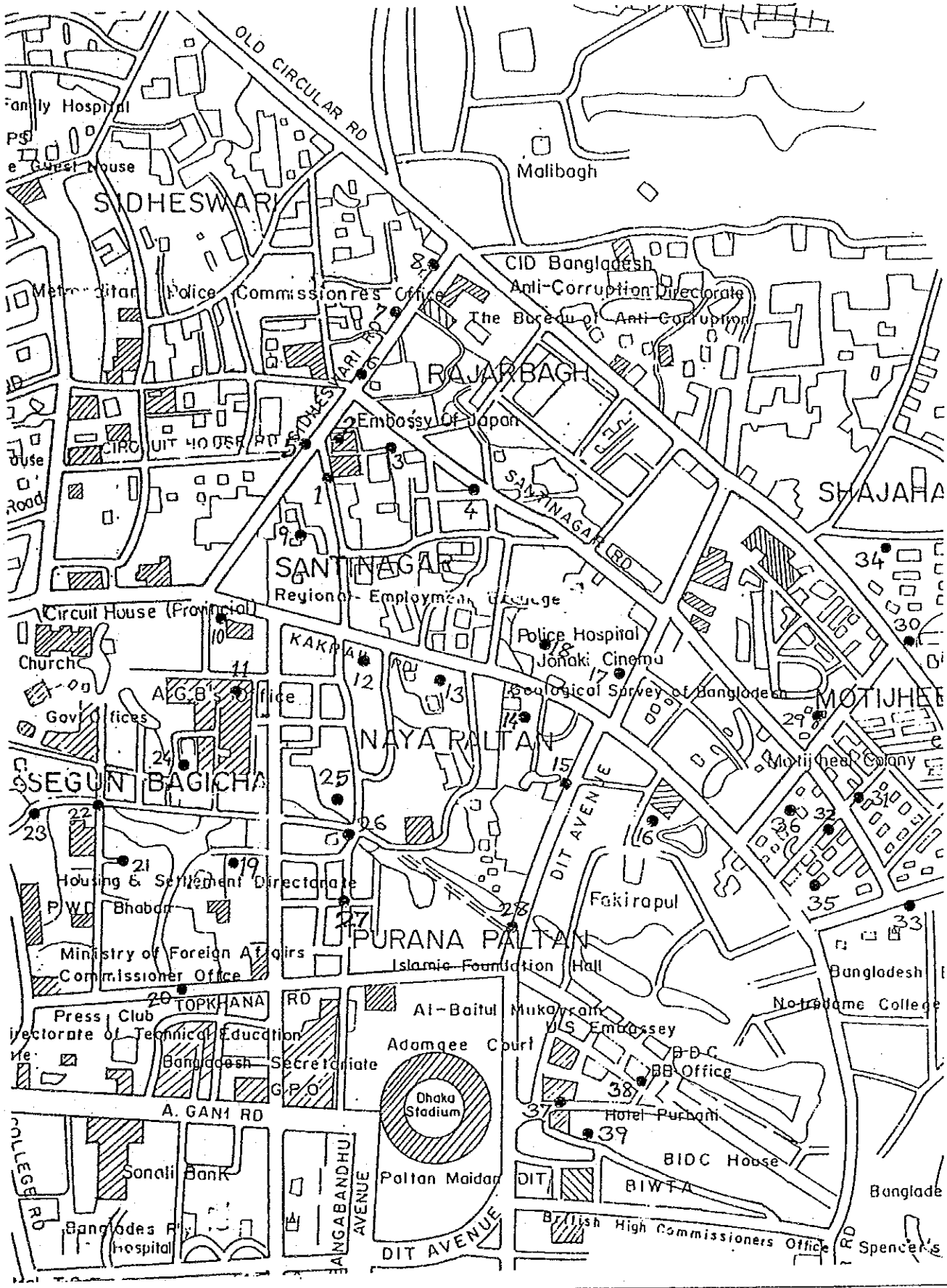


FIG. Flood Survey Points in F Zone (8)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1		✓				✓				✓		2	24 hr.	12	3	2 days	1982 1986			✓	✓	✓
2		✓				✓				✓		3	8 hr.	5	3	1 day	–			✓	✓	✓
3		✓			✓					✓		3	24 hr.	20	4	3 days	1968 1986			✓	✓	✓
4		✓			✓					✓		3	10 hr.	10	4	24 hr.	1986			✓	✓	✓
5	✓					✓				✓		2	8 hr.	5	3	24 hr.	1986			✓	✓	✓
6	✓					✓				✓		2	10 hr.	6	3	12 hr.	1986			✓	✓	✓
7	✓					✓					✓	1	5 hr.	4	2	10 hr.	1983				✓	✓
8		✓				✓					✓	2	12 hr.	10	3	1 day	1986			✓	✓	✓
9		✓				✓				✓		3	8 hr.	20	3	1 day			✓		✓	✓
10		✓				✓					✓	2	8 hr.	7	3	12 hr.			✓		✓	✓
11		✓				✓				✓		2	4 hr.	8	3	12 hr.			✓		✓	✓
12		✓				✓					✓	2	6 hr.	6	3	8 hr.			✓		✓	✓
13		✓				✓					✓	2	6 hr.	8	3	12 hr.			✓		✓	✓
14		✓				✓					✓	2	4 hr.	8	3	6 hr.			✓		✓	✓
15		✓				✓					✓	2	3 hr.	6	3	8 hr.			✓		✓	✓
16	✓					✓					✓	1	2 hr.	5	2	4 hr.			✓		✓	✓
17	✓					✓					✓	1	4 hr.	5	2	6 hr.	–		✓		✓	✓
18		✓				✓					✓	1	4 hr.	8	2	5 hr.	–		✓		✓	✓

F-F-27

FLOOD SURVEY

(Ⓖ ZONE)

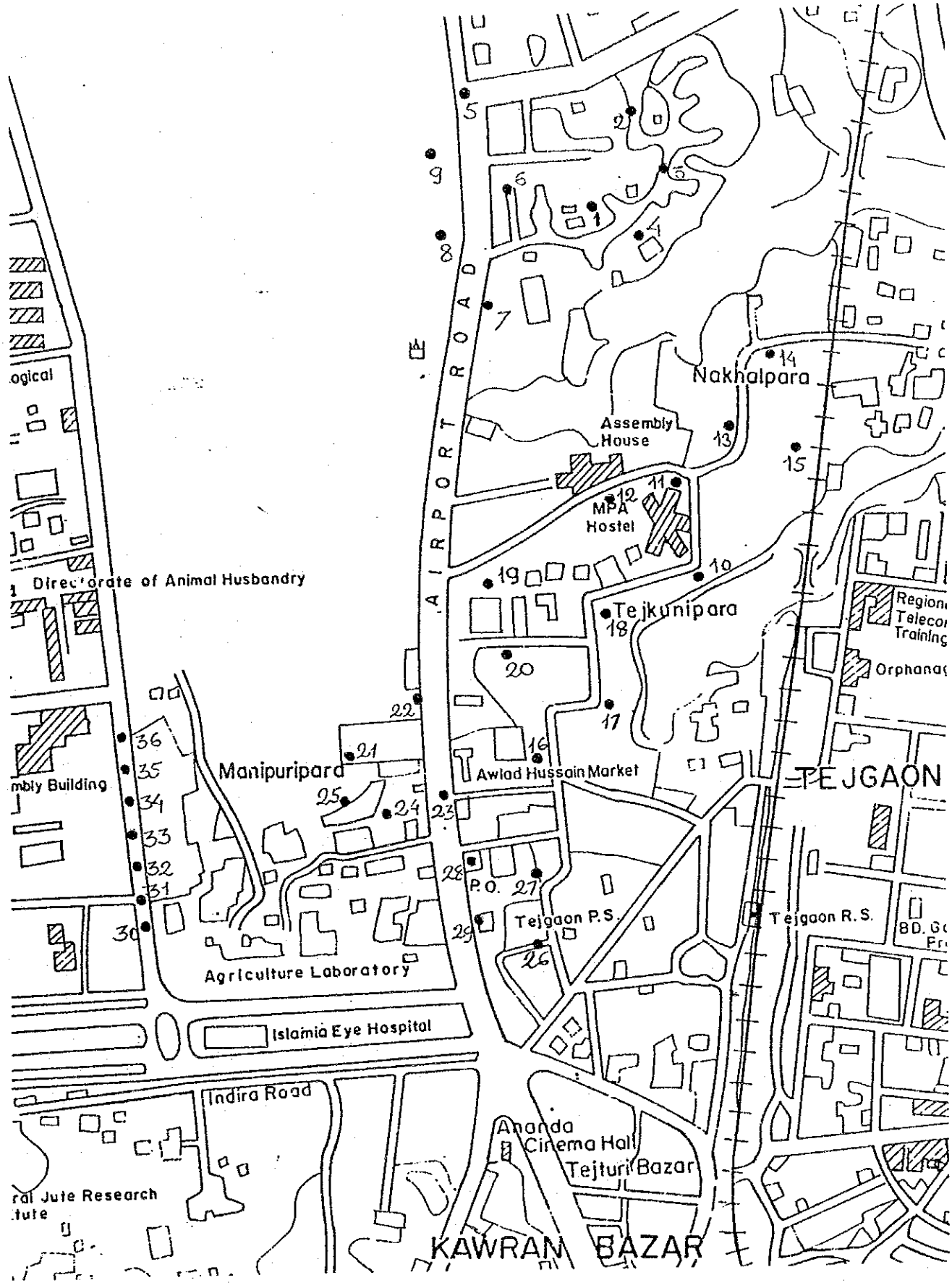


FIG.	Flood Survey Points in G Zone (1)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1	✓				✓						✓	1	10 hr	15	2	1 day	1982				✓	
2	✓				✓						✓	1	8 hr	12	2	1 day	1986			✓	✓	
3	✓				✓					✓		1	6 hr	10	2	20 hr	1982				✓	
4	✓				✓					✓		1	10 hr	12	2	15 hr	1982				✓	
5	✓				✓					✓		2	15 hr	12	2	1 day	1980		✓		✓	
6	✓				✓						✓	1	10 hr	15	2	1 day	1982				✓	
7	✓				✓						✓	1	12 hr	10	2	1 day	1980				✓	
8	✓			✓							✓	—	—	—	—	—	—		✓			
9	✓			✓							✓	—	—	—	—	1 day	—		✓			
10	✓				✓						✓	2	15 hr	10	2	1 day	1984				✓	
11	✓				✓						✓	1	8 hr	15	2	1 day	1986		✓		✓	
12	✓					✓					✓	2	10 hr	20	3	1 day	1982				✓	
13	✓				✓						✓	1	8 hr	10	2	1 day	1980			✓	✓	
14	✓				✓			✓				—	—	—	—	—	—					
15	✓				✓			✓				—	—	—	—	—	—					

F-G-2

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
16		✓			✓						✓	2	10 hr	6	3	2 days	1986				✓	
17		✓			✓						✓	1	12 hr	15	2	2 days	1982		✓		✓	
18		✓			✓		✓					—	—	—	—	—	—					
19	✓				✓						✓	1	10	15	2	1 day	1982			✓	✓	
20	✓				✓					✓		1	6	10	2	1 day	1984		✓		✓	
21		✓			✓						✓	2	10 hr	15	3	20 hr	1982				✓	
22	✓				✓					✓		1	8 hr	10	2	1 day	1986		✓		✓	
23	✓				✓					✓		1	6 hr	10	2	1 day	1980		✓			
24	✓				✓						✓	1	10 hr	15	2	20 hr	1982				✓	
25	✓				✓						✓	2	12 hr	10	3	1 day	1986				✓	
26	✓				✓						✓	1	6 hr	12	2	1 day	1986			✓	✓	
27	✓				✓						✓	1	8 hr	10	2	1 day	1982				✓	
28	✓			✓							✓	—	—	—	—	1 day	1986	✓				
29	✓				✓						✓	2	8 hr	15	3	20 hr	1982				✓	

F-G-3

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
30	✓				✓						✓	—	—	—	1	1½ days	1986					✓
31	✓				✓						✓	—	—	—	1	1 day	1986					✓
32	✓				✓						✓	—	—	—	1	2 days	—					✓
33	✓				✓						✓	—	—	—	2	2 days	1986					✓
34	✓				✓						✓	—	—	—	1	1 day	—					✓
35	✓				✓						✓	—	—	—	1	10≈12 hrs	1984					✓
36	✓				✓																	

F-G-4

FLOOD SURVEY

(Ⓗ ZONE)

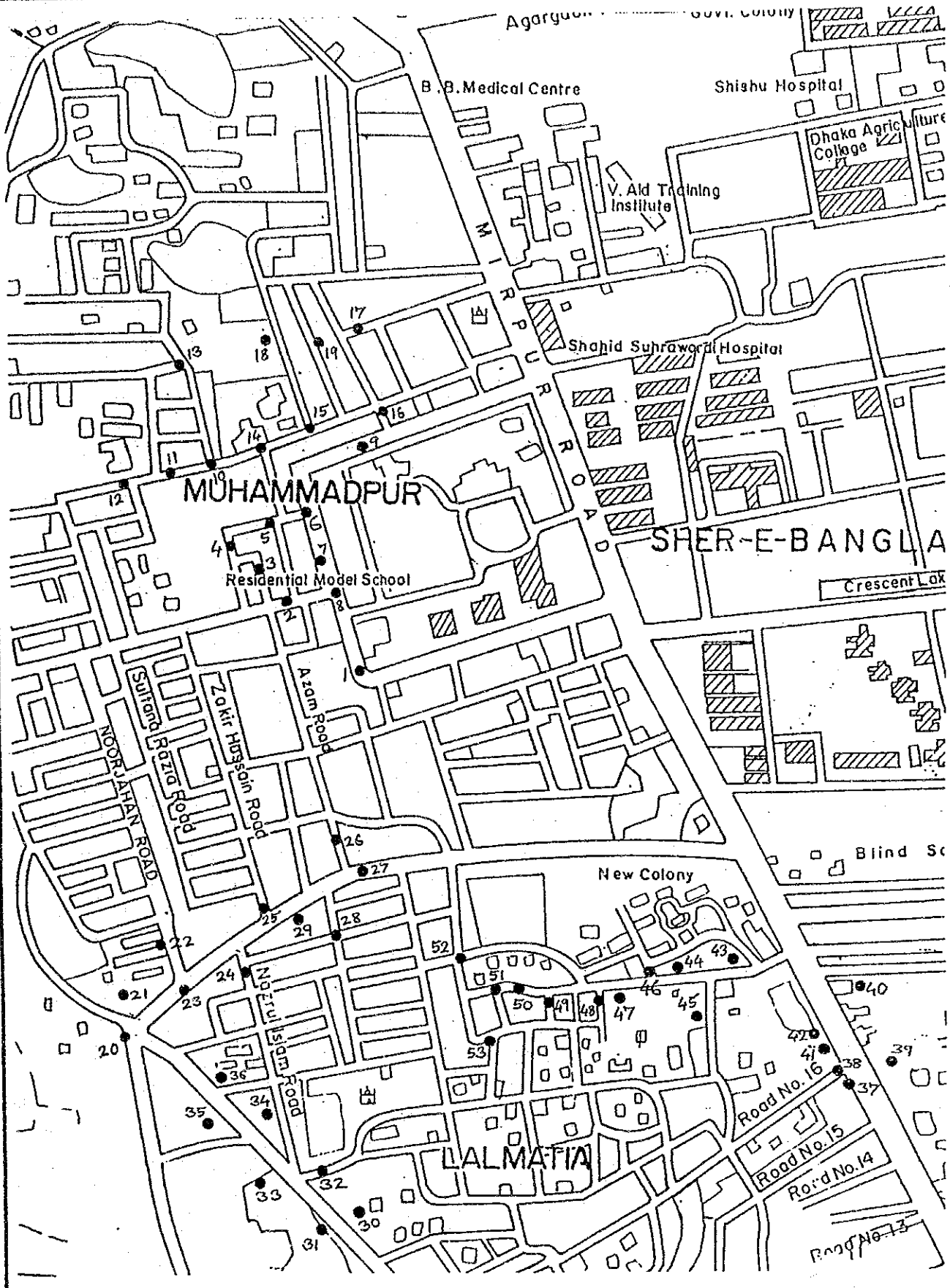


FIG.	Flood Survey Points in H Zone (1)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1		✓			✓					✓		1	5 hr	5	2	24 hr	1980 1986	✓				
2			✓		✓					✓		1	4 hr	6	2	24 hr	1976 1986	✓				
3																						
4		✓			✓					✓		1	4 hr	10	2	24 hr	1980 1986	✓				
5			✓	✓						✓		1	5 hr	10	3	24 hr		✓				
6			✓		✓						✓	1	3 hr	4	1	6 hr		✓				
7			✓		✓						✓	1	3 hr	3	1	6 hr		✓				
8		✓			✓						✓	1	3 hr	5	1	3 hr		✓				
9		✓			✓					✓		1		6	2	24 hr	1976, 1980 1986	✓				
10			✓	✓						✓		2	12 hr	10	3	3 days	1980 1986	✓				
11			✓		✓					✓		1	6 hr	6	2	12 hr	1976 1986	✓				
12			✓	✓						✓		1	3 hr	5	2	12 hr	1976 1986	✓				
13			✓	✓						✓		1	7 hr	10	3	3 days	1976 1986	✓				
14		✓		✓						✓		1	4 hr	6	2	12 hr	1980 1986	✓				
15		✓			✓					✓		1	3 hr	6	2	12 hr	1980 1986	✓				
16	✓				✓		✓					—	—	—	—	—	—	-				
17		✓			✓					✓		1		3	1	12 hr	1986	✓				
18			✓	✓						✓		1	3 hr	6	2	12 hr		✓				
19		✓			✓					✓		1	3 hr	4	2	9 hr	1976, 1980 1986	✓				

F-H-2

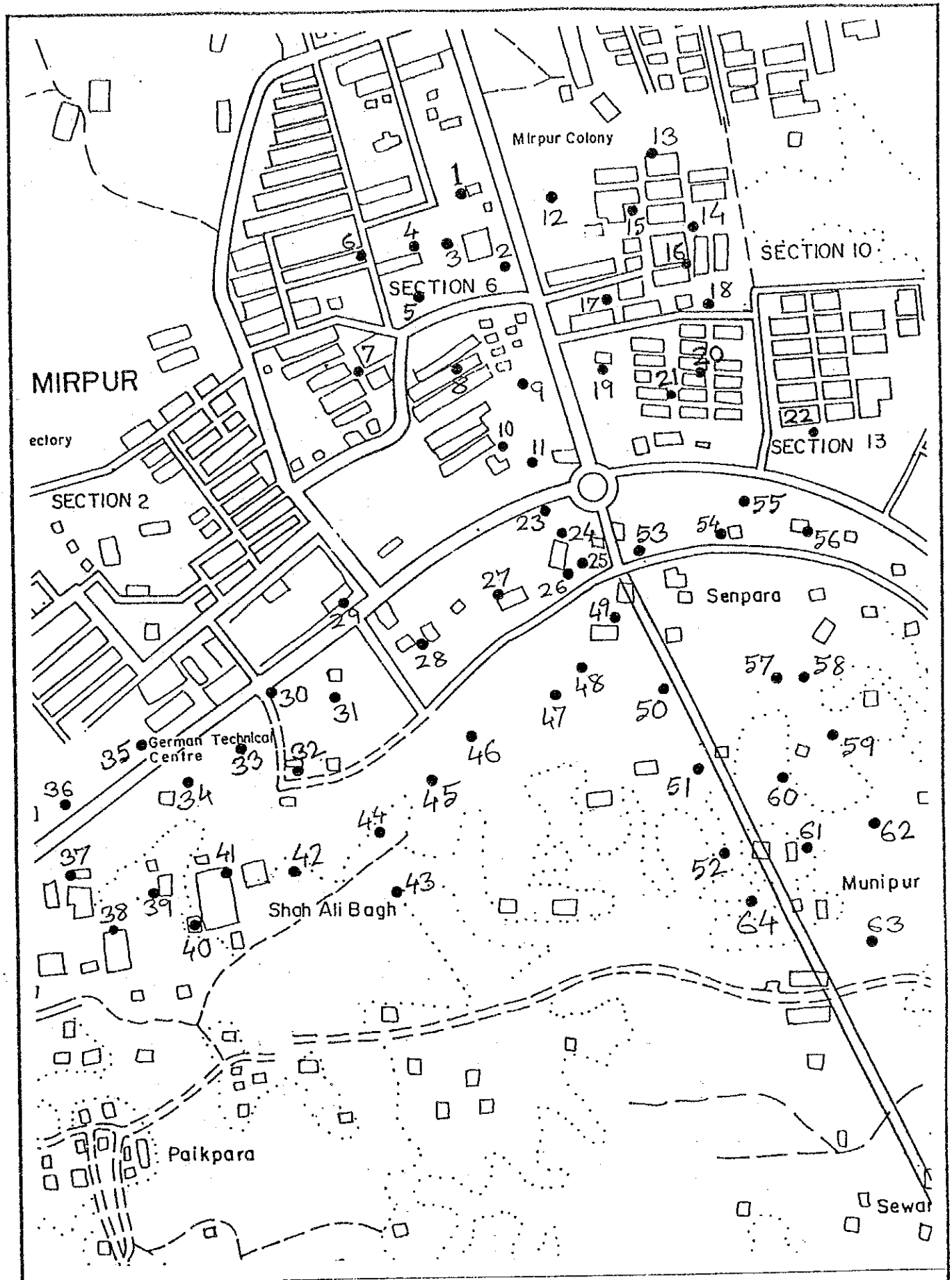


FIG. Flood Survey Points in H Zone (2)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1		✓			✓						✓	1	12 hr	3	2	6 days	1976	✓				
2		✓			✓					✓		1	3 hr	4	1	6 hr	1979	✓				
3			✓	✓						✓		2	1 day	6	3	3 days	1986	✓				
4			✓		✓					✓		2	1 day	8	3	4 days	1986	✓				
5			✓	✓						✓		1	1 day	8	3	7 days	1974	✓				
6	✓			✓								–	–	–	–	–	–					
7	✓			✓								–	–	–	–	–	–					
8		✓		✓						✓		1	12 hr	7	2	3 days	1986	✓				
9		✓			✓					✓		1	12 hr	5	3	3 days	1986	✓	✓			
10		✓		✓						✓		1	6 hr	4	2	2 days	1978	✓				
11	✓				✓					✓		1	3 hr	6	2	5 hr	–	✓				
12			✓	✓						✓		2	6 days	8	3	10 days	1986	✓				
13			✓	✓						✓		2	2 days	10	3	9 days	1985	✓				
14	✓			✓							✓	1	1 hours	4	1	–	–					
15			✓	✓						✓		1	3 days	10	3	10 days	1986	✓				
16		✓			✓					✓		2	1 days	5	3	5 days	1984	✓	✓			✓
17			✓		✓					✓		2	12 hours	7	3	6 days	1984	✓	✓			✓
18	✓			✓								–	–	–	–	–	–					
19			✓	✓						✓		2	2 days	8	3	8 days	1985	✓				
20		✓		✓							✓	2	1 day	7	3	6 days	1983	✓				
21	✓			✓							✓	1	7 hr.	4	1	8 hr.	1984	✓				
22	✓			✓								–	–	–	–	–	–					

F-H-4

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA

FIGURE No.

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
23	✓				✓					✓		1	3 hr	8	3	6 hr	—	✓				
24			✓	✓						✓		1	12 hr	6	2	3	1984	✓				
25			✓	✓						✓		1	12 hr	10	3	5	1969	✓				
26	✓				✓					✓		1	4 hr	5	2	5 hr	—	✓				
27	✓				✓					✓		1	5 hr	6	3	6 hr	—	✓				
28	✓			✓								—	—	—	—	—	—					
29	✓				✓						✓	1	$\frac{1}{4}$ hr	5	1	$\frac{3}{4}$ hr	—	✓				
30	✓				✓						✓	1	$\frac{1}{2}$ hr	5	1	$\frac{1}{2}$ hr.	—	✓				
31	✓			✓								—	—	—	—	—	—					
32	✓			✓								—	—	—	—	—	—					
33	✓			✓								—	—	—	—	—	—					
34	✓			✓								—	—	—	—	—	—					
35	✓				✓						✓	1	$\frac{1}{2}$ hr	5	1	$\frac{1}{2}$ hr.	—	✓				
36	✓				✓					✓		1	$\frac{1}{2}$ hr	4	1	2 hr	—	✓				
37		✓		✓						✓		2	8 hr	5	3	3 days	—	✓				
38		✓		✓						✓		1	6 hr	8	2	3 days	—	✓				
39		✓		✓						✓		1	2 hr	5	2	3 days	—	✓				
40		✓		✓						✓		1	5 hr	6	2	2 days	—	✓				
41		✓		✓						✓		1	5 hr	6	2	3 days	—	✓				
42		✓		✓						✓		1	6 hr	7	2	2 days	—	✓				
43		✓		✓						✓		1	4 hr	5	2	2 days	—	✓				

F-H-5

JICA S5-115 (25X2)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No. _____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
44		✓		✓						✓		1	2 hr	5	2	2 days	–	✓				
45		✓		✓						✓		1	1 hr	7	3	3 days	–	✓				
46		✓		✓						✓		1	2 hr	6	2	2 days	–	✓				
47		✓		✓						✓		1	5 hr	8	2	2 days	–	✓				
48		✓		✓						✓		1	6 hr	7	3	3 days	–	✓				
49	✓					✓				✓		2	8 hr	40	2	2 days	1974		✓			
50	✓				✓					✓		3	2 days	35	3	3 days	1986					✓
51	✓				✓					✓		2	7 hr	20	2	8 hr	1983		✓			
52	✓				✓					✓		2	10 hr	30	2	12 hr	1984					✓
53					✓					✓		1	8 hr	7	3	6 days	1983	✓	✓		✓	
54		✓		✓							✓	1	24 hr	7	2	2 days	1985	✓				
55		✓			✓					✓		1	2 days	7	2	6 days	1986	✓	✓			
56			✓	✓						✓		1	1 day	8	3	5 days	1984	✓				
57	✓			✓						✓		1	2 days	35	1	3 days	1983					
58		✓		✓						✓		2	2 days	55	2	3 days	1974					
59		✓		✓						✓		3	3 days	70	3	4 days	1986					
60		✓		✓						✓		2	1 day	55	2	2 days	1984					
61		✓		✓						✓		3	3 days	80	3	9 days	1986					
62		✓		✓						✓		2	15 hr	65	2	16 hr.	1974					
63		✓		✓						✓		2	10 hr	30	2	14 hr.	1986					
64	✓			✓						✓		1	7 days	45	1	8 days	1986	✓				

F-H-6

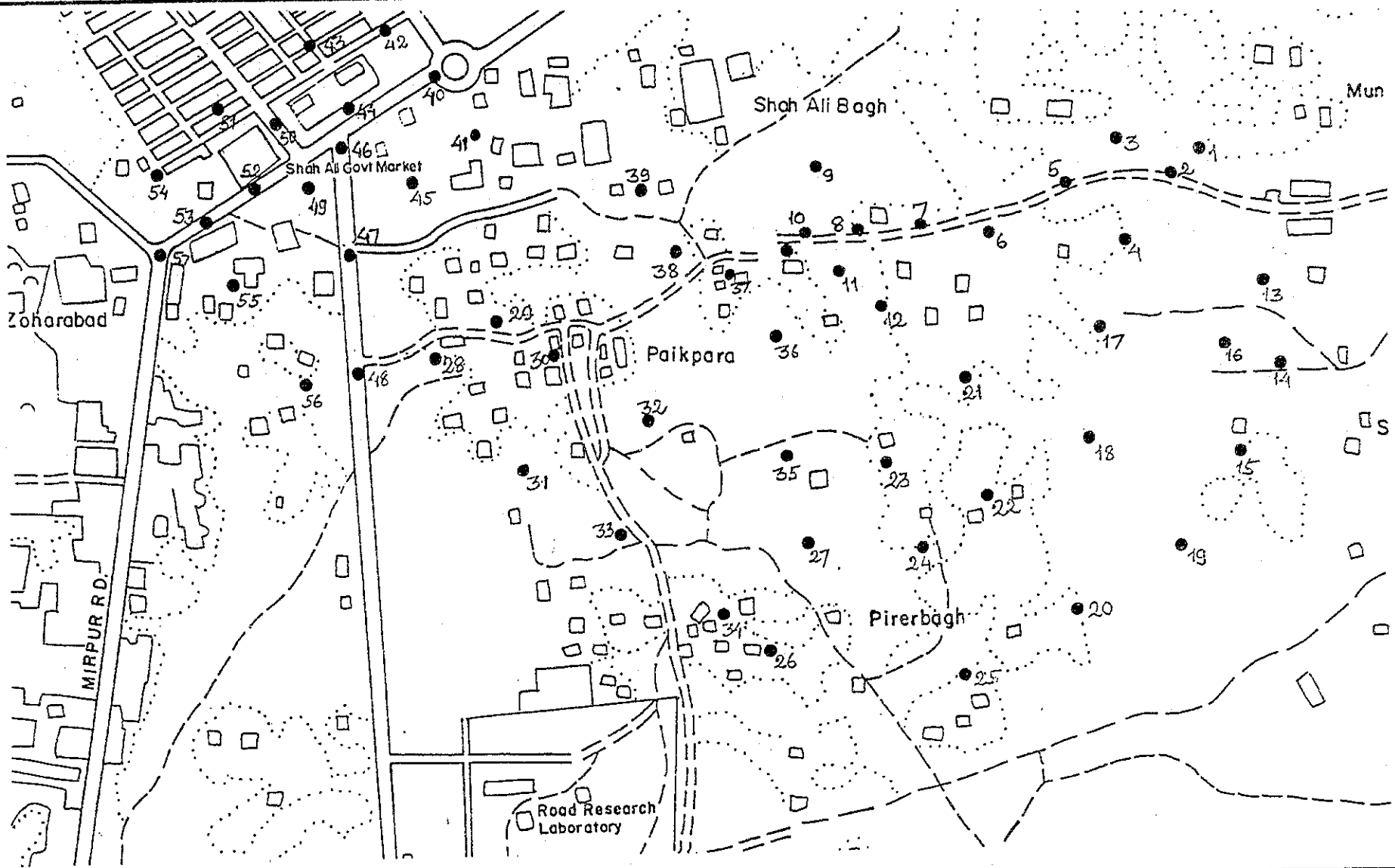


FIG.	Flood Survey Points in H Zone (3)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

F-H-7

JICA 1987 A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1	✓			✓						✓		2	7 day	40	2	8 day	'86	✓				
2	✓			✓							✓	1	1 "	30	1	2 "	'83	✓				
3	✓			✓						✓		3	5 "	65	3	12 "	'74	✓				
4	✓			✓						✓		2	3 "	40	2	4 "	'81	✓				
5	✓			✓							✓	1	12 hr	30	1	14 hr	'82	✓				
6	✓			✓							✓	2	10 "	20	2	2 day	'86	✓				
7	✓			✓						✓		1	1 day	40	1	2 "	'84	✓				
8	✓				✓						✓	1	8 hr	20	1	3 "	'74					✓
9	✓			✓						✓		2	5 day	85	2	12 "	'86	✓				
10	✓			✓							✓	1	16 hr	30	1	1 "	'83	✓				
11	✓			✓						✓		3	3 day	75	3	6 "	'83	✓				
12	✓			✓						✓		2	1 "	55	2	6 "	'86	✓				
13	✓			✓			✓					—	—	—	—	—	—					
14	✓			✓			✓					—	—	—	—	—	—					
15	✓			✓			✓					—	—	—	—	—	—					
16	✓			✓							✓	—	—	—	1	4 day	1974	✓				
17	✓			✓						✓		1	1 day	15	1	3 "	1974	✓				
18	✓			✓							✓	—	—	—	1	5 hr	1966	✓				
19	✓			✓			✓					—	—	—	—	—	—					
20	✓			✓							✓	—	—	—	1	1 day	1965	✓				
21	✓			✓							✓	—	—	—	1	10 hr	1972	✓				
22	✓			✓							✓	—	—	—	1	8 "	1966	✓				

293 93-115 (26X42)

F-H-'8

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA

FIGURE No.

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
23	✓			✓						✓		1	6 hr	12	2	2 day	1986	✓				
24	✓			✓							✓	—	—	—	1	3 hr	1982	✓				
25	✓			✓								—	—	—	—	—	—					
26	✓			✓			✓					—	—	—	—	—	—					
27	✓			✓			✓			✓		1	1day	16	2	2 day	1974	✓				
28	✓			✓						✓		1	3-4 hr	5	1	5-7 hr		✓				
29	✓			✓						✓		1	6-7 "	8	2	7-8 day	'80					
30	✓			✓							✓	2	10 "	5	2	2-3 "	'80, '84, '85	✓				
31		✓		✓						✓		2	10 day	10	3	16 "	'80 '86	✓				
32	✓			✓						✓		1	5-6 "	8-9	2	12-14	'82	✓				
33	✓			✓							✓	1	7-8 hr	5-6	2	5 day	'80, '84	✓				
34	✓			✓							✓	1	4-5 "	7	1	10-12 hr		✓				
35	✓			✓							✓	1	5-7 "	5-6	1	1 day	'80	✓				
36	✓			✓						✓		1	8-9 "	8	2	15 "	'80	✓				
37	✓			✓						✓		1	10-12 day	7-8	3	1½ month		✓				
38		✓		✓						✓		2	2 "	15	3	1 "	'82	✓				
39		✓		✓						✓		1	1½ "	12		20-25 day		✓				
40	✓			✓			✓				✓	—	—	—	—	—	—					
41	✓			✓								—	—	—	1	3 hr	After rain every year	✓				
42	✓			✓			✓					—	—	—	—	—	—					
43	✓			✓			✓					—	—	—	—	—	—					
44	✓			✓			✓				✓	—	—	—	—	—	—					
45	✓			✓								—	—	—	1	4-5 "	1988	✓				
46	✓			✓			✓					—	—	—	—	—	—					

F-H-9

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No. _____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
47	✓			✓			✓					—	—	—	—	—	—					
48	✓			✓			✓					—	—	—	—	—	—					
49	✓			✓							✓	—	—	—	1	4 hr	—	✓				
50	✓			✓			✓					—	—	—	—	—	—					
51	✓			✓			✓					—	—	—	—	—	—					
52	✓			✓			✓					—	—	—	—	—	—					
53	✓			✓			✓					—	—	—	—	—	—					
54	✓			✓			✓					—	—	—	—	—	—					
55		✓			✓						✓	—	—	—	1	12 hr	Every year					✓
56		✓		✓						✓		1	15 hr	10	1	1 day	1974	✓				
57	✓				✓		✓					—	—	—	—	—	—					

F-H-10

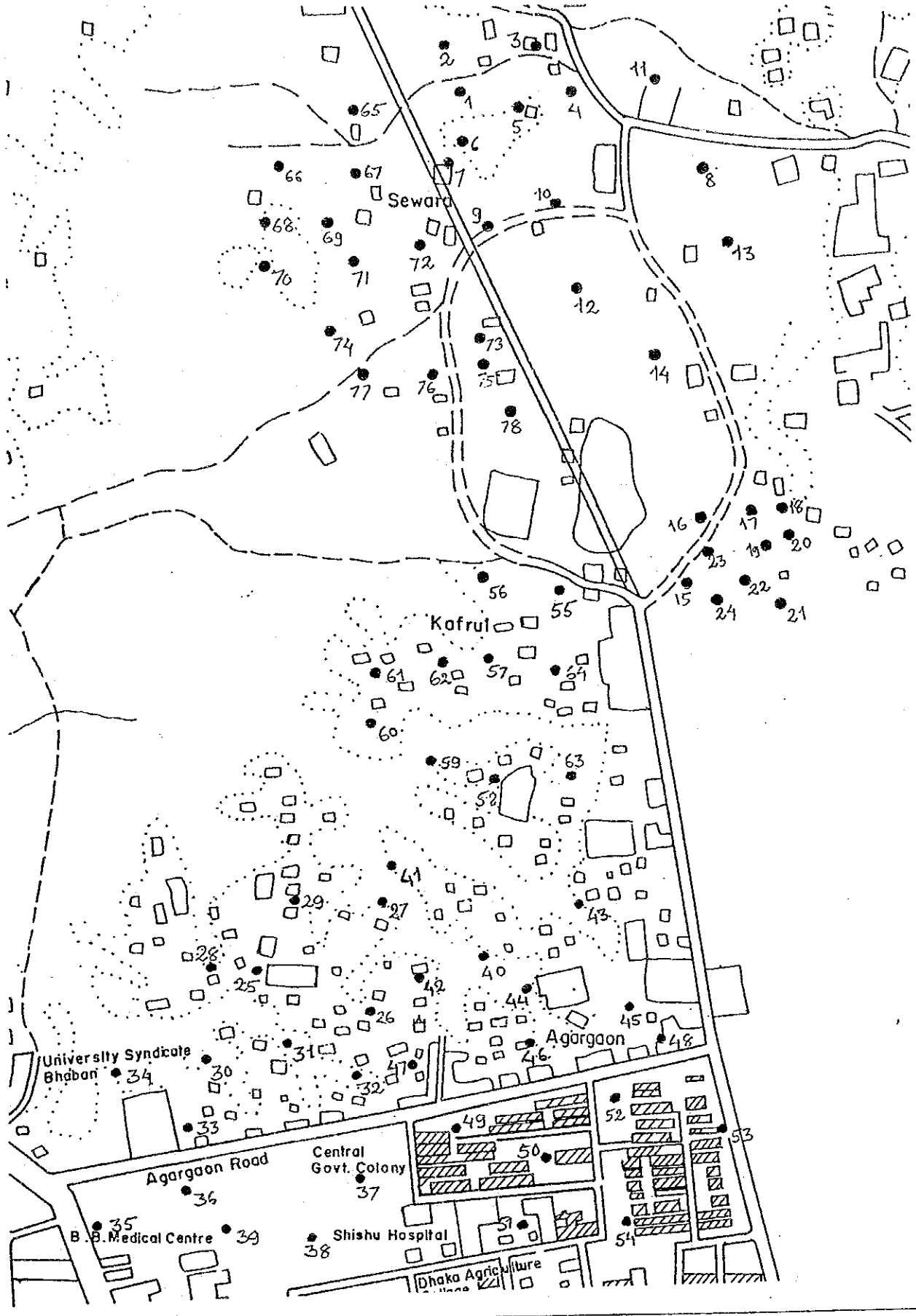


FIG. Flood Survey Points in H Zone (4)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1	✓			✓						✓		1	4 hr	10	2	1 day	'86	✓				
2	✓			✓						✓		1	3 "	8	2	1 "	'86	✓				
3	✓			✓						✓		1	2 "	10	2	2 "	'86	✓				
4	✓			✓						✓		1	4 "	8	2	1 "	'86	✓				
5	✓			✓						✓		1	4 "	6	2	1 "	'86	✓				
6	✓			✓						✓		1	3 "	6	2	1 "	'86	✓				
7	✓			✓						✓		1	4 "	8	2	1 "	'86	✓				
8		✓		✓						✓		2	1 day	8	3	5 "	'86	✓				
9	✓			✓						✓		1	2 hr	7	1	6 hr	'86	✓				
10	✓			✓																		
11	✓			✓																		
12		✓		✓						✓		1	2 "	7	3	3 day	'86	✓				
13		✓		✓						✓		1	4 "	8	3	3 "	'84	✓				
14		✓		✓						✓		1	4 "	12	3	3 "	'84	✓				
15		✓		✓							✓	3	15 day	6	4	30 "	'84,'86	✓				
16		✓		✓							✓	1	3 "	3	2	7 "	Every year	✓				
17		✓		✓							✓	1	4 hr	4	2	2 "	'86	✓				
18		✓		✓						✓		1	2 month	1	3	3 Month	—	✓				
19		✓		✓							✓	2	2 day	5	2	6 day	'74,'82	✓				
20		✓		✓							✓	1	2 "	4	2	5 "	—	✓				
21			✓							✓	✓	1	2 month	1 or 2	4	3 month	'82,'86	✓				
22		✓		✓							✓	1	1 day	5	2	6 day	—	✓				

F-H-12

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
23		✓		✓						✓		1	2 day	6	2	4 day	'86, '84	✓				
24			✓	✓							✓	1	1 "	3	2	4 "	'86	✓				
25			✓	✓				✓				3	2-3 day	10-12	5	15 "	'74	✓				
26		✓		✓							✓	1	2-3 hr	1-2	1	1 "	'86	✓				
27			✓	✓				✓				3	3-4 day	10-15	5	20 "	'74	✓				
28			✓	✓				✓				4	2 "	20-25	7	20 "	'74	✓				
29		✓		✓						✓		1	1 "	7-8	4	7 "	'84	✓				
30		✓		✓							✓	1	12 hr	3	3	2 "	'86	✓				
31			✓	✓						✓		2	1 day	5-8	4	15 "	'82	✓				
32			✓	✓						✓		2	1½ "	8-10	4	9 "	'76	✓				
33		✓		✓							✓	1	2-6 hr	2-4	2	1 "	'86	✓				
34		✓		✓						✓		1	6 "	7-8	2	4 "	'82	✓				
35	✓				✓							-	-	-	-	-	-	-				
36	✓				✓							-	-	-	-	-	-	-				
37	✓				✓							-	-	-	-	-	-	-				
38	✓				✓							-	-	-	-	-	-	-				
39	✓				✓							-	-	-	-	-	-	-				
40			✓	✓						✓		2	2 day	7-8	4	9 day	'86	✓				
41		✓		✓						✓		2	1 "	6-7	3	8 "	'85	✓				
42			✓	✓						✓		2	2 "	4-5	3	6 "	'84	✓				
43		✓		✓							✓	2	2 "	3-4	2	5 "	'85	✓				

F-H-13

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
44		✓								✓		2	3 day	6-7	3	4 day	'82	✓				
45			✓	✓						✓		3	2 "	8-10	4	10 "	'86	✓				
46			✓	✓						✓		2	2 "	6-7	3	6 "	'83	✓				
47		✓		✓							✓	2	1 "	2-3	3	3 "	'85	✓				
48		✓		✓							✓	2	1 "	5-6	2	3 "	'84	✓				
49		✓		✓							✓	1	12 hr	2-3	2	2 "	'80	✓	✓		✓	
50					✓						✓	1	6 "	2-3	1	1 "	'83	✓				
51		✓			✓						✓	1	12 "	2-3	2	2 "	'81	✓	✓		✓	
52	✓				✓						✓	1	6 "	2-3	1	12 hr	'86	✓				
53		✓			✓						✓	1	8 "	3-4	2	1 day	'79	✓	✓		✓	
54	✓				✓						✓	1	10 "	2-3	2	1 "	'80	✓				
55		✓		✓				✓			✓	2	4 "	1 on 2	4	1 month	'86	✓				
56		✓		✓					✓		✓	1	1 month	3	3	2 "	'84	✓				
57	✓			✓			✓					-	-	-	-	-	-					
58		✓		✓							✓	1	12 hr	4	1	24 hr	'86	✓				
59	✓			✓			✓					-	-	-	-	-	-					
60			✓	✓							✓	3	1 month	2	4	1 month	'81	✓				
61			✓	✓				✓			✓	3	1 "	1 on 2	4	2 "	'86	✓				
62			✓	✓					✓		✓	2	25 day	2	3	1 "	'84, '86	✓				
63			✓	✓							✓	4	2 month	1	5	3 "	'74	✓				
64		✓		✓							✓	1	2 day	3	2	7 day	'86	✓				

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
65	✓			✓						✓		1	1 hr	6	2	12 hr	'86	✓				
66	✓			✓						✓		1	1 "	10	2	10 "	'86	✓				
67	✓			✓						✓		1	2 "	4	2	2 day	'84	✓				
68		✓		✓						✓		1	4 "	8	3	3 "	'86	✓				
69	✓			✓						✓		1	1 "	6	2	2 "	'86	✓				
70		✓		✓						✓		2	1 day	8	3	5 "	'86	✓				
71	✓			✓						✓		1	1 "	5	2	2 "	'86	✓				
72	✓			✓						✓		1	1 hr	6	2	2 "	'86	✓				
73	✓			✓						✓		1	3 "	6	2	2 "	'86	✓				
74		✓		✓						✓		1	6 "	6	3	3 "	'86	✓				
75	✓			✓						✓		1	2 "	5	2	2 "	'86	✓				
76		✓		✓						✓		1	5 "	6	3	3 "	'86	✓				
77		✓		✓						✓		1	6 "	8	3	3 "	'86	✓				
78		✓		✓						✓		1	2	10	3	2 "	'86	✓				

F-H-15

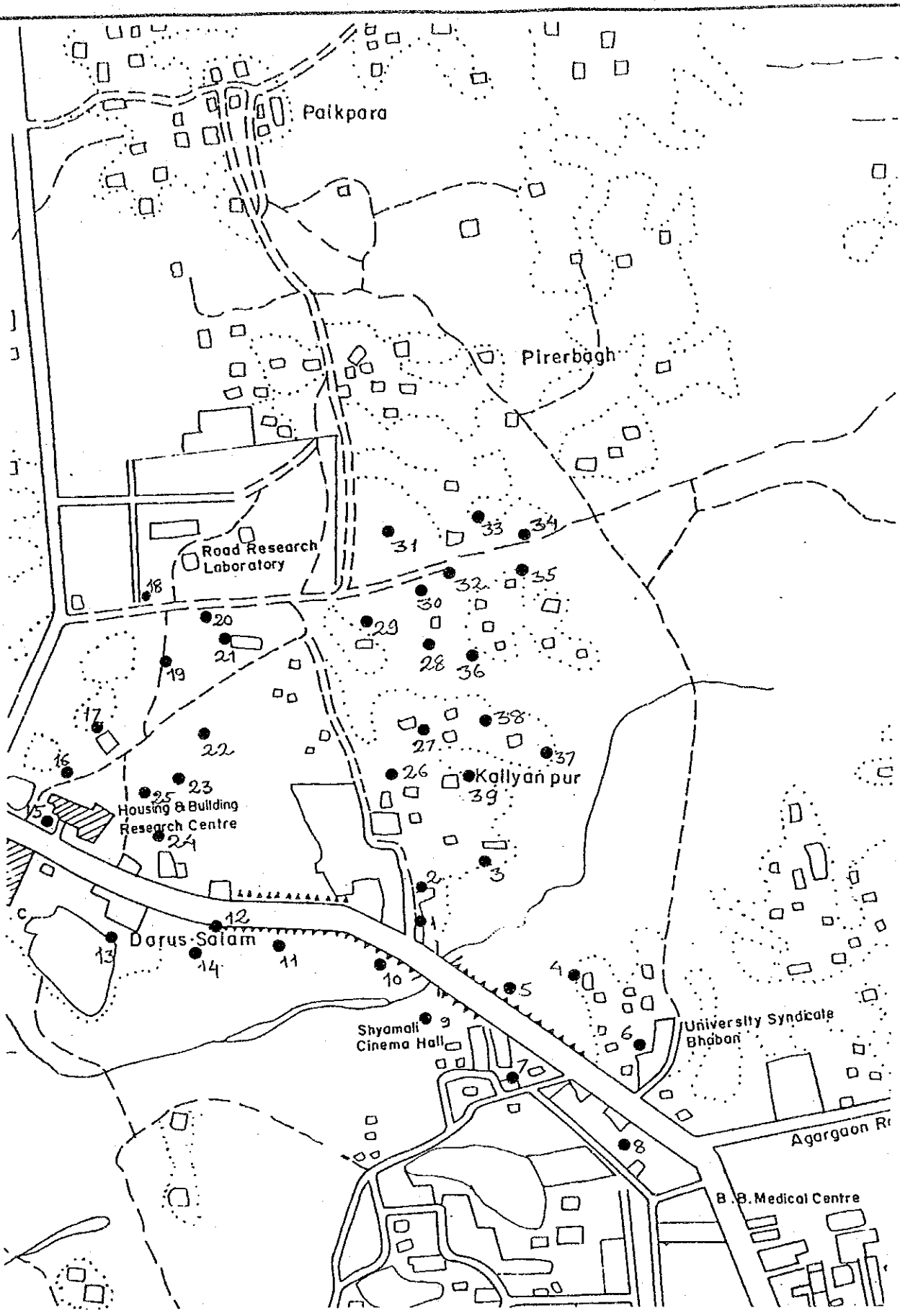


FIG. Flood Survey Points in H Zone (5)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1	✓				✓					✓		1	4-5 hr	7-8	3	3 day	'74, '77		✓		✓	
2	✓				✓						✓	1	10 "	8	1	1 "	'82	✓				
3			✓		✓				✓			5	4-5 day	20	5	4-5 "	'74	✓				
4		✓			✓						✓	3	1 "	15	4	2 "	'74, '86			✓	✓	
5	✓					✓					✓	2	12 hr	10	3	1 "	'74, '76				✓	
6		✓			✓						✓	2	14 "	10	3	2 "	'74, '82				✓	
7	✓					✓					✓	1	12 "	15	2	1 "	'74		✓		✓	
8	✓					✓					✓	1	8 "	10	1	12 hr	'78				✓	
9	✓					✓					✓	1	10 "	7	2	1 day	'76		✓		✓	
10	✓					✓	✓					–	–	–	–	–						
11			✓	✓					✓			5	5 day	15	8	8 "	'74	✓				
12		✓			✓				✓			3	2 "	10	4	5 "	'74	✓				
13			✓		✓				✓			4	5 "	20	5	6 "	'74	✓				
14			✓		✓				✓			3	4 "	15	5	6-7"	'74	✓				
15			✓	✓				✓			✓	3	2 Month	1	5	3 month	'82, '84, '74	✓				
16	✓			✓			✓					–	–	–	–	–	–					
17	✓				✓		✓					–	–	–	–	–	–					
18	✓			✓			✓					–	–	–	–	–	–					
19		✓		✓						✓		1	4 hr	5	1	12 hr	'82, '86	✓				
20	✓				✓						✓	1	2 "	3	1	6 "	'86	✓	✓			
21		✓			✓						✓	2	3 day	4	2	4 day	'62, '54, '74, '86	✓	✓			
22			✓	✓				✓				3	45 min	1	5	3 month	'86	✓				

F-H-17

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
23			✓	✓				✓				2	1 month	1	4	2 month	'74, '86	✓				
24			✓	✓				✓				2	15 day	2	3	1 "	'82, '86	✓				
25			✓	✓				✓				4	2 month	1	5	3 "	Every year	✓				
26	✓			✓			✓					3	15 day	1	4	2 "	'83	✓				
27			✓	✓				✓				2	15 "	1	3	1 "	'86	✓				
28			✓	✓								2	15	1	3	1 "	'82	✓				
29	✓			✓			✓					—	—	—	—	—	—					
30			✓	✓				✓				3	2 month	1	5	4 month	Every year	✓				
31		✓		✓							✓	1	8 hr	4	2	1 day	—	✓				
32	✓			✓			✓					—	—	—	—	—	—					
33		✓		✓							✓	1	3 "	3	1	4 hr	'86	✓				
34		✓		✓				✓				1	12 "	4	1	1 day	—	✓				
35	✓			✓			✓					—	—	—	—	—	—					
36			✓	✓				✓				3	1 month	1	4	2-3 month	'82, '86	✓				
37	✓			✓			✓					—	—	—	—	—	—					
38			✓	✓				✓				2	15 day	4	2	20 day	'86	✓				
39			✓	✓				✓				3	15 "	1	4	3 month						

F-H-18

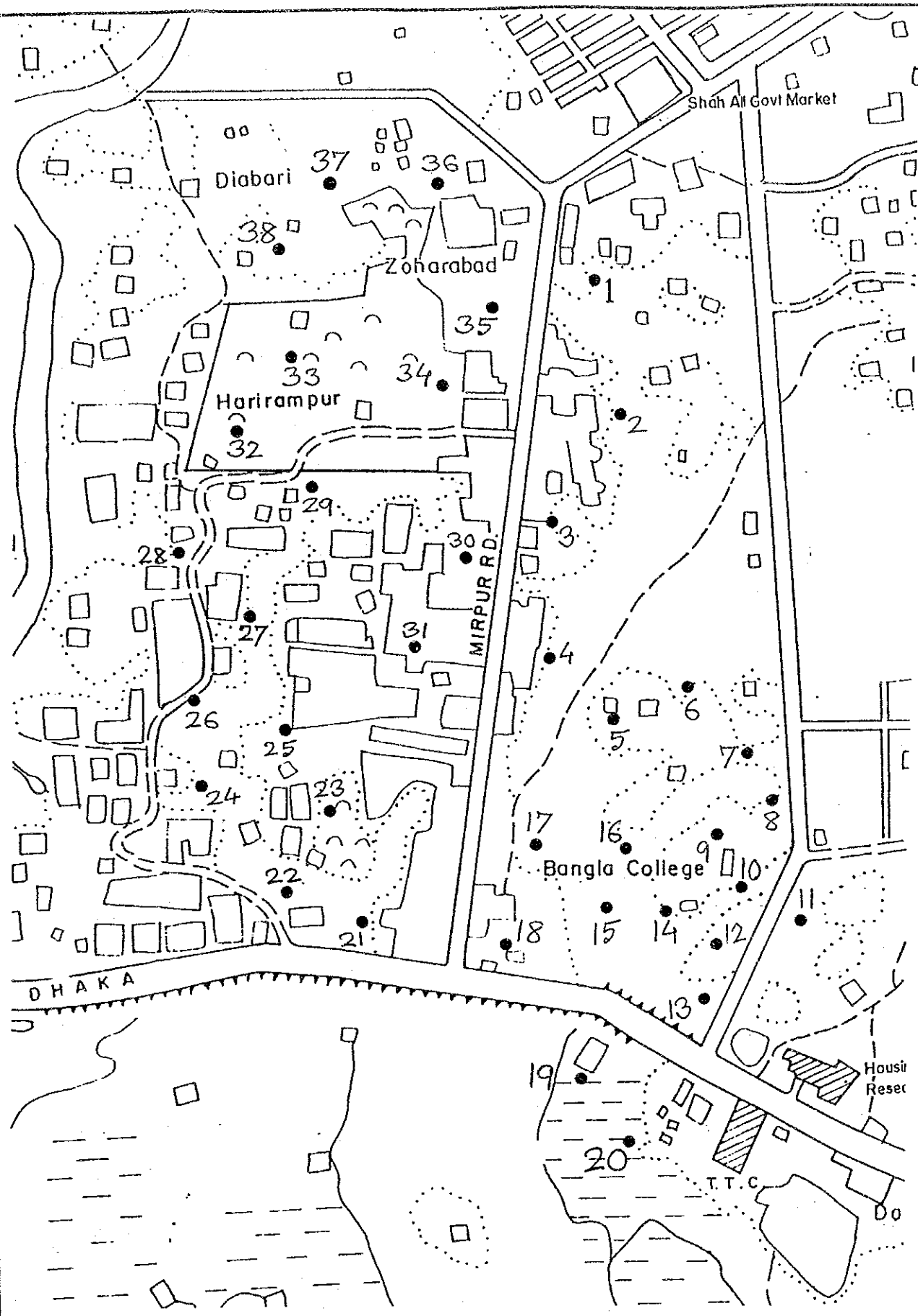


FIG.	Flood Survey Points in H Zone (6)

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT IN DHAKA CITY, THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA 1987A.D

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Noth-ing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
1		✓		✓						✓		1	20 hr	6	2	2 days	1985	✓				
2		✓			✓						✓	2	2 days	8	3	4 days	1983	✓			✓	
3	✓			✓							✓	1	8 hr	5	2	12 hr.	1986	✓				
4		✓			✓						✓	2	6 hr	5	2	1 day	1986				✓	
5	✓				✓						✓	1	6 hr	5	2	8 hr	1986				✓	
6			✓		✓			✓				3	2 days	3	5	5 days	1984	✓				
7			✓	✓				✓				3	2 days	3	4	5 days	1984	✓				
8	✓				✓		✓					–	–	–	–	–	–					
9			✓	✓				✓				3	3 days	6	5	5 days	1984	✓				
10	✓			✓			✓					–	–	–	–	–	–					
11	✓				✓						✓	1	2 days	2	1	2 days	1986		✓			
12	✓				✓		✓					–	–	–	–	–	–					
13	✓				✓						✓	1	1 hr	2	1	1 hr	1986		✓			
14			✓	✓						✓		3	10 days	10	5	10 days	1986	✓				
15			✓	✓				✓				3	2 days	5	5	5 days	1984	✓				
16			✓	✓				✓				3	3 days	6	5	5 days	1984	✓				
17		✓			✓						✓	1	4 hr	5	2	7 hr	1986		✓			
18		✓			✓						✓	1	3 hr	3	1	4 hr	1986		✓			
19			✓	✓				✓				4	15 days	4	5	15 days	1984	✓				
20			✓	✓				✓				4	15 days	4	5	15 days	1984	✓				

F-H-20

STORM WATER DRAINAGE SYSTEM IMPROVEMENT PROJECT
IN DHAKA CITY, BANGLADESH
FLOOD AND INUNDATION SURVEY SUMMARY SHEET

NAME OF DRAINAGE AREA _____

FIGURE No._____

Point	Land Elevation			Drainage System			How Flooded or Waterlogged?					Annual Average Flood or Waterlogged Condition			Max. Flood or Waterlogged Condition			Main Cause of Flood or Waterlogged.				
No.	High	Low	Very Low	Nothing	Ditch	Pipe	a	b	c	d	e	Depth (feet)	Duration	Times	Depth (feet)	Duration	Date	a	b	c	d	e
21		✓			✓					✓		1	12 hr	7	2	2 days	1982	✓			✓	
22	✓			✓							✓	1	2 hr	4	1	6 hr	1984	✓				
23			✓	✓				✓				3	6 days	6	5	8 days	1974	✓				
24			✓	✓				✓				4	8 days	7	6	20 days	1974	✓				
25	✓				✓							—	—	—	—	—	—					
26			✓	✓				✓				3	3 days	6	5	8 days	1984	✓				
27		✓		✓						✓		1	1 day	6	3	2 days	1983	✓				
28		✓			✓					✓		2	1 day	6	3	3 days	1985	✓			✓	
29	✓			✓							✓	1	8 hr	4	2	15 hr	1983	✓				
30		✓		✓						✓		1	1 day	5	3	3 days	1986	✓				
31		✓			✓					✓		2	2 days	6	3	4 days	1985	✓			✓	
32			✓	✓				✓				3	4 days	7	5	18 days	1974	✓				
33			✓	✓				✓				4	5 days	6	5	12 days	1984	✓				
34		✓		✓						✓		2	3 days	9	3	5 days	1983	✓				
35	✓		✓							✓		1	1 day	5	4	3 days	1986	✓				
36		✓	✓					✓				3	4 days	7	5	10 days	1974	✓				
37			✓	✓				✓				3	3 days	6	4	11 days	1984	✓				
38		✓		✓						✓		2	2 days	6	3	4 days	1986	✓				

F-H-21

DATA BOOK II-3 : HYDRAULIC CALCULATION

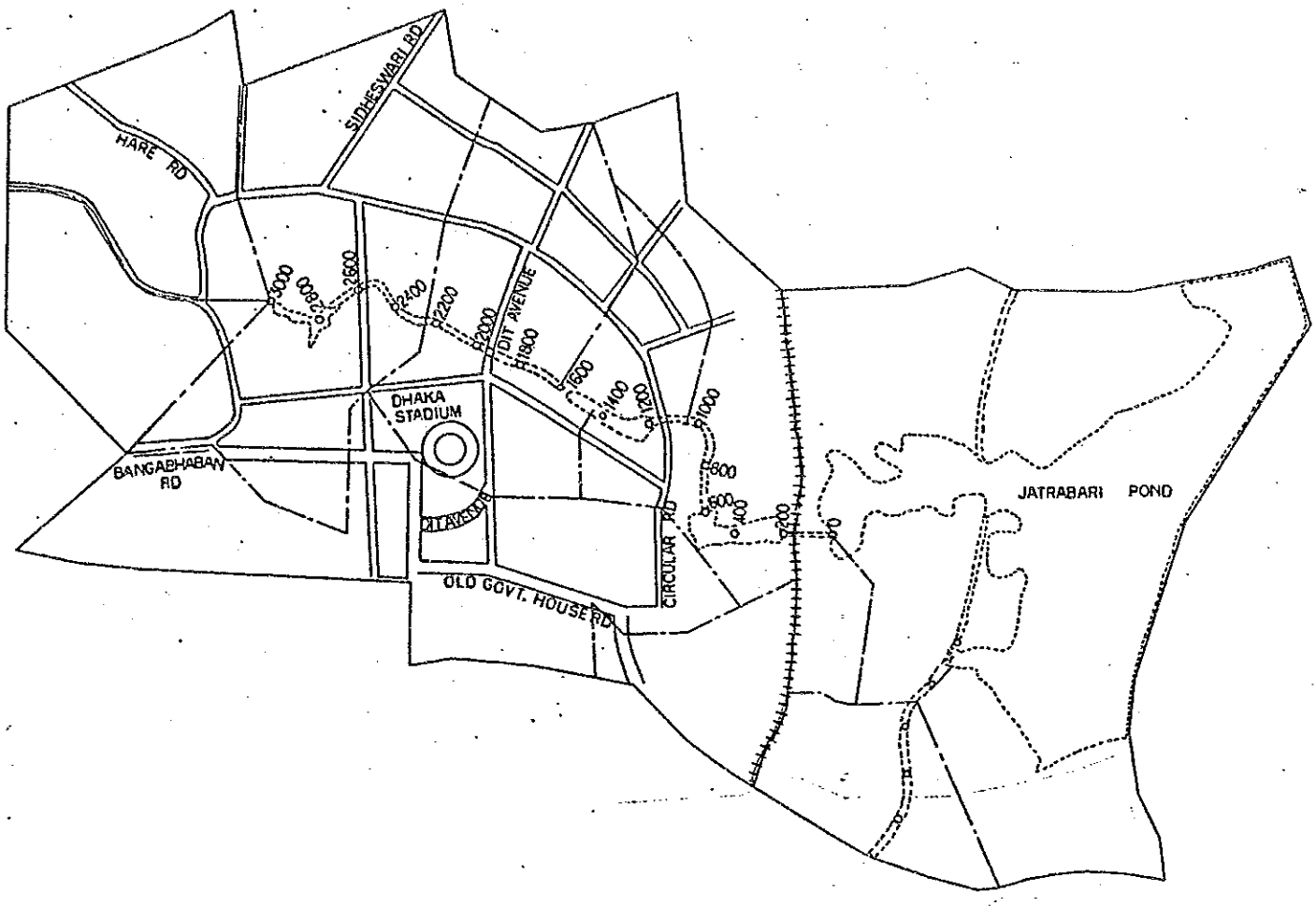
CONTENTS

Hydraulic Condition of Khal for Nonuniform Flow Calculation

Zone	Khal	Length (m)	Design Discharge (m^3/sec)	Coefficient of Roughness (n)	Hydraulic Boundary Condition (m.G.T.S.)	Khal Bed Slope
B Zone	Gandaria Khal	1,200	4.2	0.035	4.00	1/2,000
	Dholai Khal	2,000	13.0	0.035	4.00	Level
C Zone	Segunbagicha Khal	0 - 600	52.2	0.025	4.00	1/2,000
		600 - 1000	41.5	0.025	4.00	1/2,000
	1000	1000 - 1600	37.8	0.025	4.00	1/2,000
		1600 - 2200	35.7	0.025	4.00	1/2,000
		2200 - 2800	26.1	0.025	4.00	1/2,000
		2800 - 3000	10.1	0.025	4.00	1/2,000
F Zone	Begunbari Khal	0 - 1000	55.0	0.035	5.36	1/5,000
		1000 - 1450	30.8	0.035	5.36	1/5,000
		1450 - 2800	28.6	0.035	5.36	1/5,000
	Paribagu Khal	1,000	25.1	0.025	5.644	1/2,000

Result of Nonuniform Flow Calculation

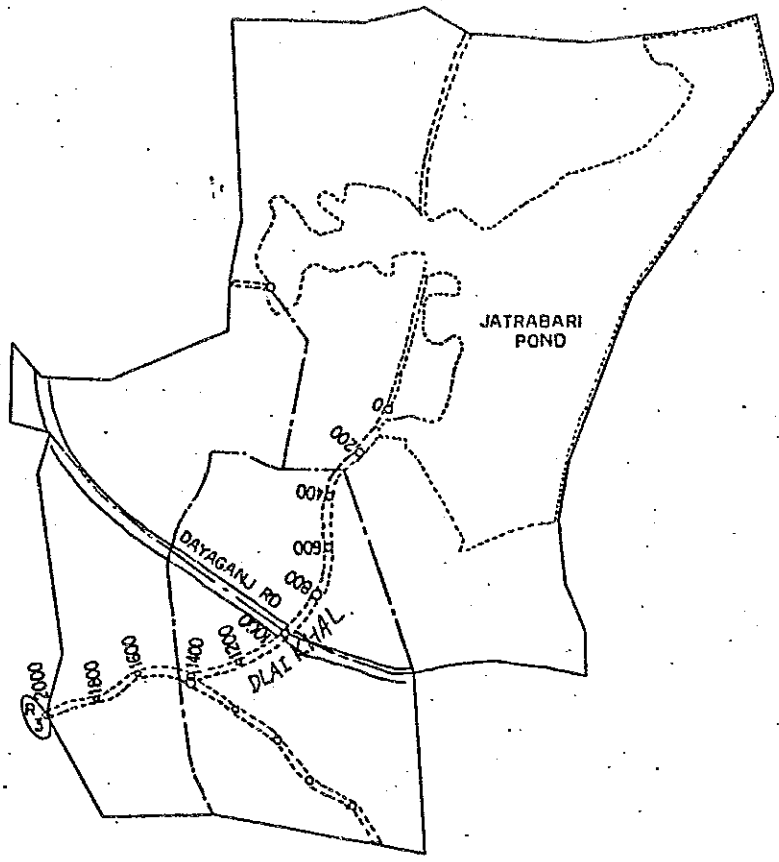
(SEGUNBAGICHA KHAL)



追加距離 L(M)	区間距離 DX(M)	粗度係数 N	流量 Q(M3/S)	断面積 A(M2)	水面幅 B(M)	径深 R(M)	流速 V(M/S)	限界水深 HC(M)	河床高 HO(M)	水深 DH(M)	水位 H(M)
0.0	0.0	0.025	52.2	38.393	13.697	2.264	1.359	1.837	0.000	4.000	4.000
200.0	200.0	0.025	52.2	39.763	13.961	2.302	1.312	1.761	0.100	3.981	4.081
400.0	200.0	0.025	52.2	39.364	13.901	2.288	1.325	1.754	0.200	3.951	4.151
600.0	200.0	0.025	52.2	30.864	11.799	2.049	1.690	2.118	0.300	3.899	4.199
800.0	200.0	0.025	41.5	30.703	11.772	2.044	1.350	1.872	0.400	3.886	4.286
1000.0	200.0	0.025	41.5	30.542	11.746	2.039	1.357	1.861	0.500	3.873	4.373
1200.0	200.0	0.025	37.8	27.988	11.156	1.953	1.352	1.876	0.600	3.842	4.442
1400.0	200.0	0.025	37.8	28.158	11.172	1.961	1.343	1.907	0.700	3.836	4.536
1600.0	200.0	0.025	37.8	28.739	7.500	1.894	1.316	1.374	0.800	3.832	4.632
1800.0	200.0	0.025	35.7	26.675	7.000	1.822	1.338	1.385	0.900	3.811	4.711
2000.0	200.0	0.025	35.7	25.970	7.000	1.799	1.375	1.385	1.100	3.710	4.810
2200.0	200.0	0.025	35.7	29.050	7.500	1.904	1.229	1.372	1.000	3.923	4.923
2400.0	200.0	0.025	26.1	22.559	6.000	1.668	1.157	1.245	1.200	3.760	4.960
2600.0	200.0	0.025	26.1	22.465	6.000	1.665	1.161	1.245	1.300	3.744	5.044
2800.0	200.0	0.025	26.1	21.378	9.451	1.701	1.220	1.878	1.400	3.726	5.126
3000.0	200.0	0.025	10.1	20.572	9.278	1.669	0.490	1.133	1.500	3.639	5.139

Result of Nonuniform Flow Calculation

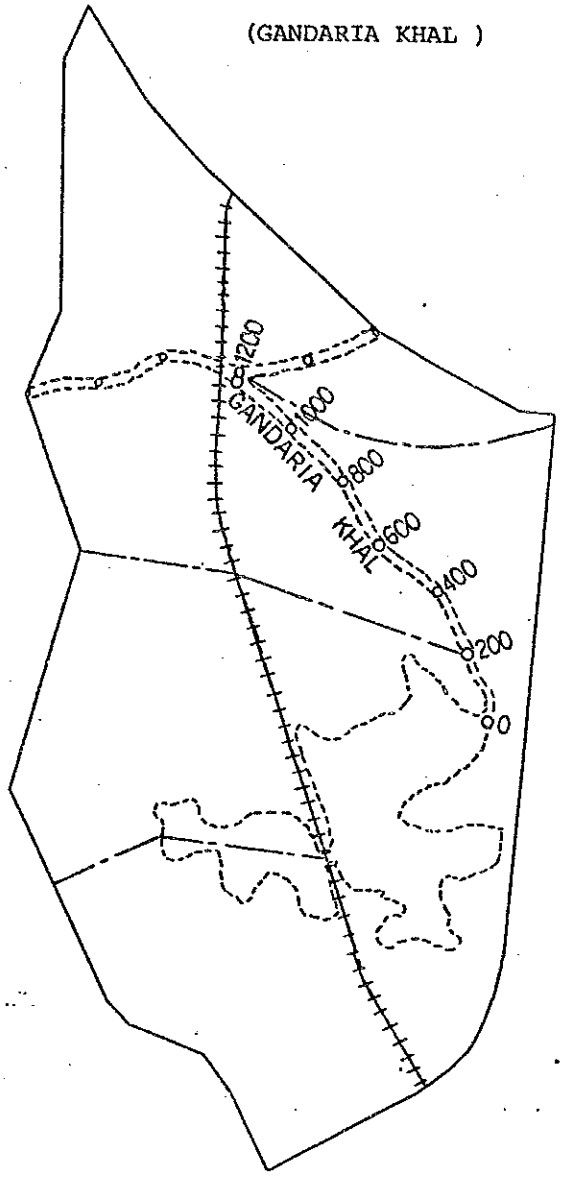
(DHOLAI KHAL)



追加距離 L(M)	区間距離 DX(M)	粗度係数 N	流量 Q(M3/S)	断面積 A(M2)	水面幅 B(M)	径深 R(M)	流速 V(M/S)	限界水深 HC(M)	河床高 HO(M)	水深 DH(M)	水位 H(M)
0.0	0.0	0.035	13.0	43.228	16.614	2.263	0.301	0.795	0.000	4.000	4.000
200.0	200.0	0.035	13.0	43.360	16.645	2.265	0.300	0.795	0.000	4.007	4.007
400.0	200.0	0.035	13.0	43.491	16.676	2.268	0.299	0.795	0.000	4.015	4.015
600.0	200.0	0.035	13.0	38.998	15.384	2.172	0.333	0.888	0.000	4.022	4.022
800.0	200.0	0.035	13.0	42.500	16.072	2.272	0.306	0.799	0.000	4.032	4.032
1000.0	200.0	0.035	13.0	47.619	17.500	2.302	0.273	0.913	0.000	4.040	4.040
1200.0	200.0	0.035	13.0	47.724	17.500	2.306	0.272	0.913	0.000	4.046	4.046
1400.0	200.0	0.035	13.0	45.595	19.844	2.098	0.285	0.949	0.000	4.052	4.052
1600.0	200.0	0.035	13.0	66.642	32.052	1.977	0.195	0.772	0.000	4.060	4.060
1800.0	200.0	0.035	13.0	69.073	38.855	1.710	0.188	0.766	0.000	4.064	4.064
2000.0	200.0	0.035	13.0	53.655	21.355	2.303	0.242	0.770	0.000	4.067	4.067

Result of Nonuniform Flow Calculation

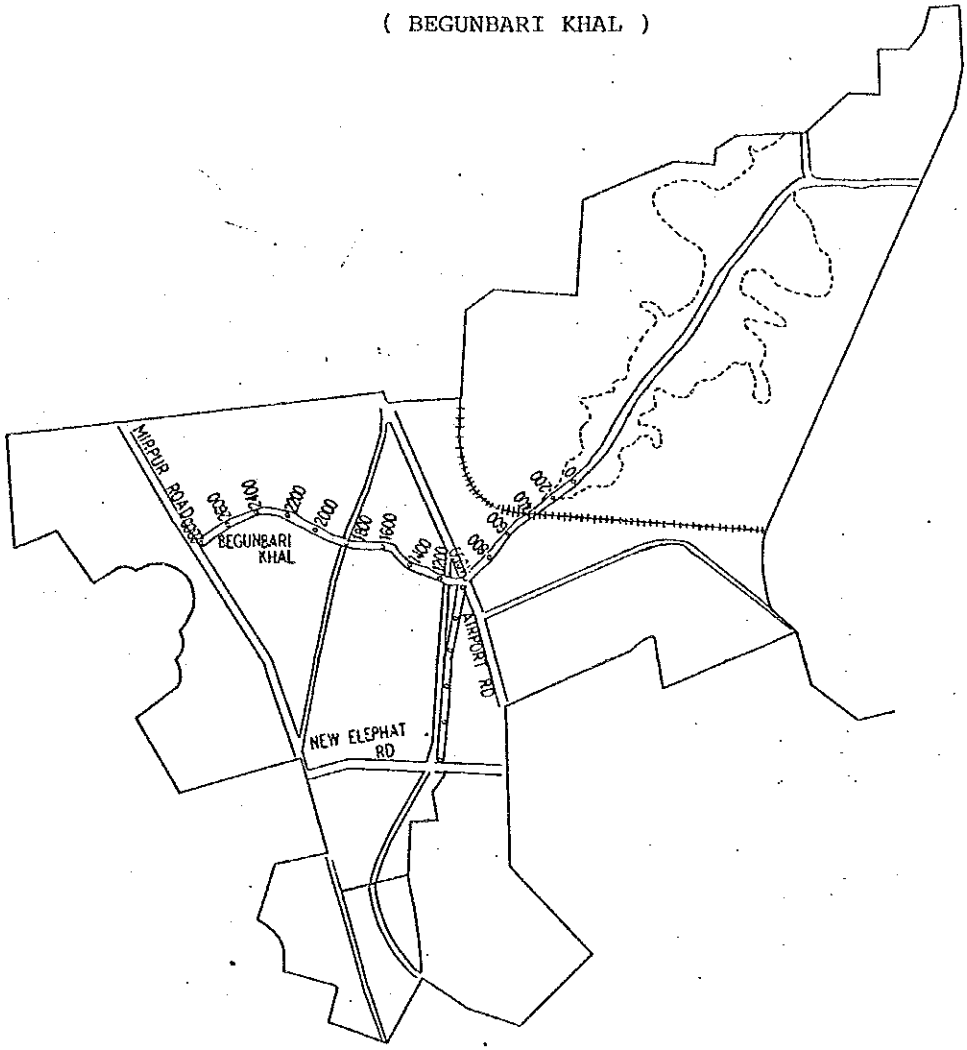
(GANDARIA KHAL)



追加距離 L(M)	区間距離 DX(M)	粗度係数 N	流量 Q(M3/S)	断面積 A(M2)	水面幅 B(M)	径深 R(M)	流速 V(M/S)	限界水深 HC(M)	河床高 HO(M)	水深 DH(M)	水位 H(M)
0.0	0.0	0.035	4.2	9.000	3.000	1.000	0.467	0.585	1.000	3.000	4.000
200.0	200.0	0.035	4.2	8.862	3.000	0.994	0.474	0.585	1.100	2.954	4.054
400.0	200.0	0.035	4.2	8.731	3.000	0.989	0.481	0.585	1.200	2.910	4.110
600.0	200.0	0.035	4.2	8.605	3.000	0.983	0.488	0.585	1.300	2.868	4.168
800.0	200.0	0.035	4.2	8.487	3.000	0.979	0.495	0.585	1.400	2.829	4.229
1000.0	200.0	0.035	4.2	8.374	3.000	0.974	0.502	0.585	1.500	2.791	4.291
1200.0	200.0	0.035	4.2	8.268	3.000	0.970	0.508	0.585	1.600	2.756	4.356

Result of Nonuniform Flow Calculation

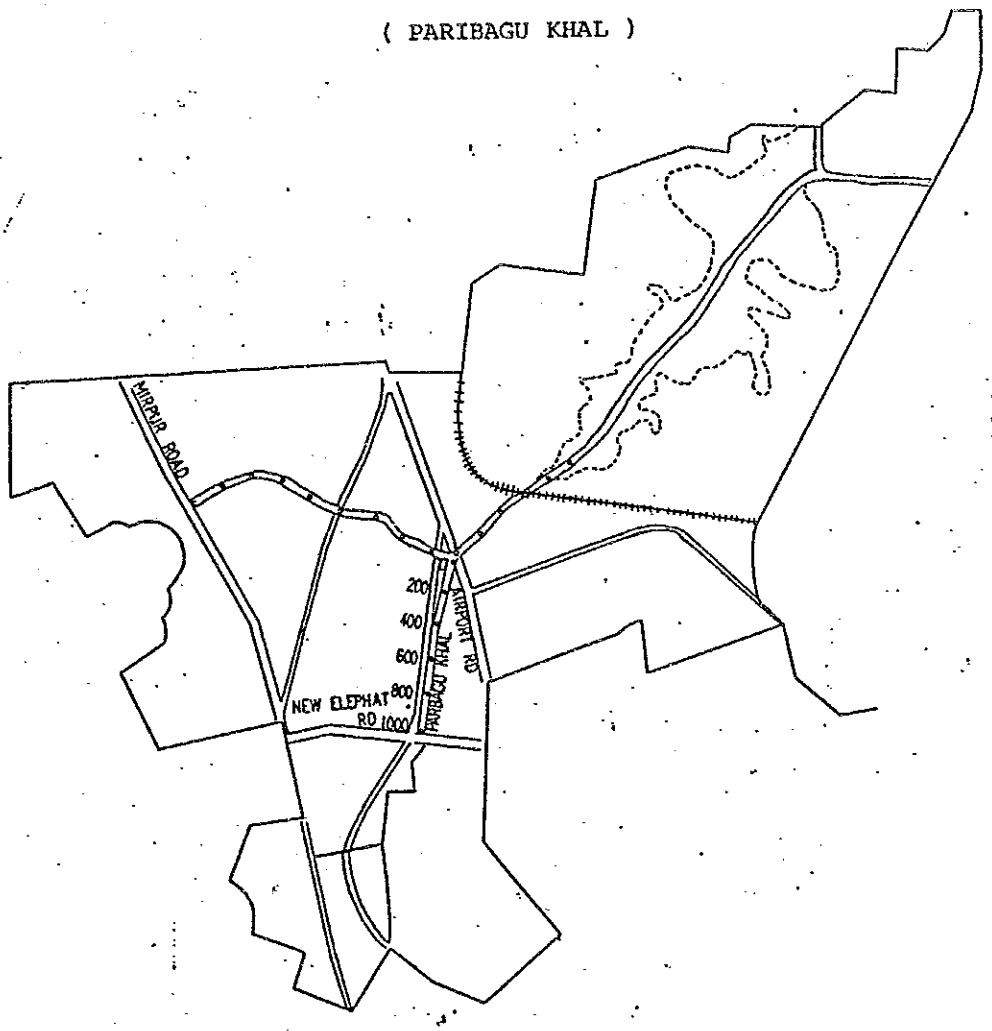
(BEGUNBARI KHAL)



追加距離 L(M)	区間距離 DX(M)	粗度係数 N	流量 Q(M3/S)	断面積 A(M2)	水面幅 B(M)	径深 R(M)	流速 V(M/S)	限界水深 HC(M)	河床高 HO(M)	水深 DH(M)	水位 H(M)
0.0	0.0	0.035	55.0	55.372	12.700	2.583	0.993	1.242	1.000	4.360	5.360
200.0	200.0	0.035	55.0	63.455	23.000	2.529	0.867	1.736	1.000	4.433	5.433
400.0	200.0	0.035	55.0	62.766	14.000	2.733	0.876	1.163	1.000	4.483	5.483
500.0	100.0	0.035	55.0	62.919	23.000	2.508	0.874	1.723	1.100	4.410	5.510
900.0	400.0	0.035	55.0	64.520	23.000	2.562	0.852	1.729	1.100	4.517	5.617
1000.0	100.0	0.035	55.0	56.790	13.100	2.607	0.968	1.216	1.300	4.335	5.635
1100.0	100.0	0.035	30.8	54.304	12.500	2.574	0.567	0.852	1.300	4.344	5.644
1450.0	350.0	0.035	30.8	48.736	18.174	2.353	0.632	1.466	1.300	4.387	5.687
1800.0	350.0	0.035	28.6	29.848	7.000	1.921	0.958	1.194	1.500	4.264	5.764
1850.0	50.0	0.035	28.6	45.080	18.882	2.146	0.634	1.684	1.500	4.307	5.807
2800.0	950.0	0.035	28.6	48.035	19.502	2.217	0.595	1.684	1.500	4.465	5.965

Result of Nonuniform Flow Calculation

(PARIBAGU KHAL)

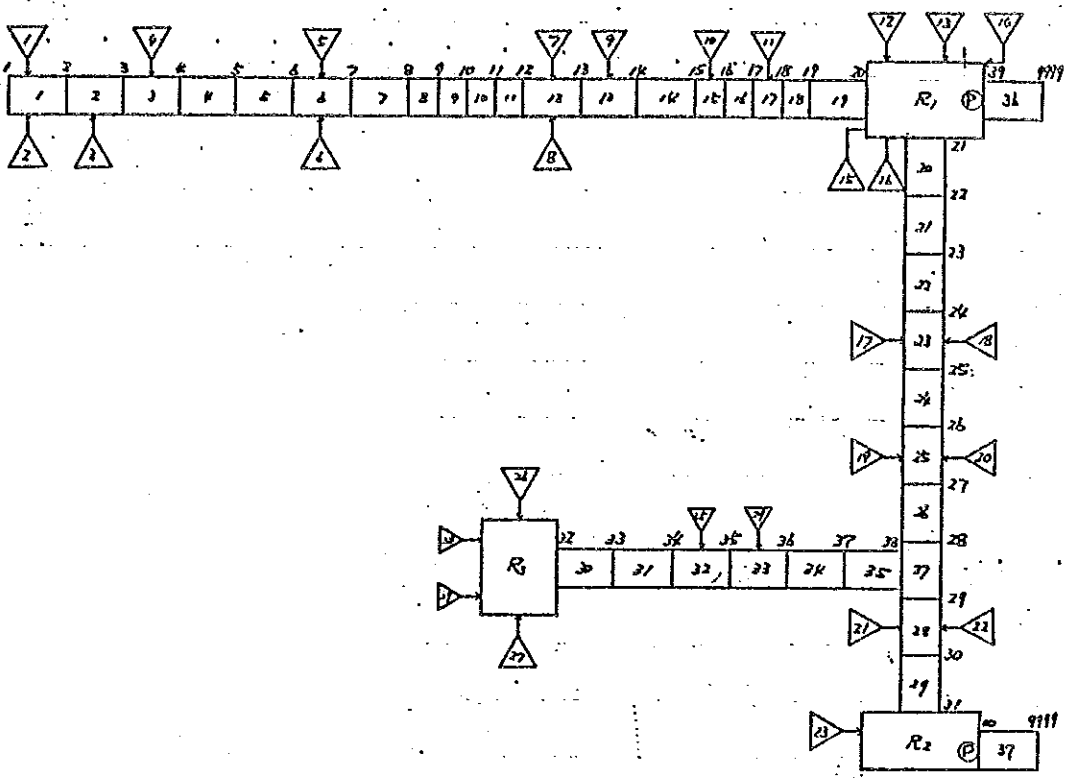


追加距離 L(M)	区間距離 DX(M)	粗度係数 N	流量 Q(M3/S)	断面積 A(M2)	水面幅 B(M)	径深 R(M)	流速 V(M/S)	限界水深 HC(M)	河床高 H0(M)	水深 DH(M)	水位 H(M)
0.0	0.0	0.025	25.1	24.864	6.000	1.776	1.009	1.213	1.500	4.144	5.644
200.0	200.0	0.025	25.1	24.619	6.000	1.759	1.020	1.213	1.600	4.103	5.703
400.0	200.0	0.025	25.1	24.386	6.000	1.742	1.029	1.213	1.700	4.064	5.764
600.0	200.0	0.025	25.1	24.165	6.000	1.726	1.039	1.213	1.800	4.028	5.828
800.0	200.0	0.025	25.1	23.952	6.000	1.736	1.048	1.213	1.900	3.992	5.892
1000.0	200.0	0.025	25.1	23.749	6.000	1.706	1.057	1.213	2.000	3.958	5.958

Simulation Model and Hydraulic Condition

of

Unsteady Flow Calculation



BLOCK NUMBER	LENGTH (M)
1	200
2	200
3	200
4	200
5	200
6	200
7	200
8	100
9	100
10	100
11	100
12	200
13	200
14	200
15	100
16	100
17	100
18	100
19	200
20	200
21	200
22	200
23	200
24	200
25	200
26	200
27	200
28	200
29	200
30	200
31	200
32	200
33	200
34	200
35	200
36	200
37	200

H~A Data (pond)

R1 (Jatrabari pond)

E.L.m	Area(m²)						
1.5	0.0	2.0	410000.	2.5	860000.	3.0	1150000.
3.5	1260000.	4.0	1280000.	4.5	1340000.	5.0	1420000.
5.5	1430000.						

R2 (Narinda Pump St.)

-1.7	1575.53	-1.5	1632.30	-1.0	1778.62	-0.5	1931.23
0.0	2090.11	0.5	2255.27	1.0	2426.72	1.5	2604.44
2.0	2788.45	2.5	2978.73	3.0	3175.29	3.5	3378.14
4.0	3587.26	4.5	3802.67	5.0	4024.35	5.5	4252.31
6.0	4486.56	6.1	4534.16				

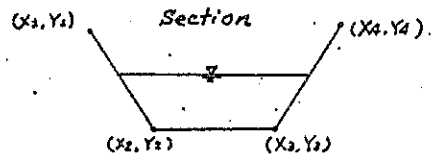
R3

2.5	0.0	3.0	70000.	3.5	220000.	4.0	360000.
4.5	470000.	5.0	560000.	5.5	620000.	6.0	630000.
6.5	670000.						

LEGEND

Section Number	Data #
1	4

	x1	Y1	x2	Y2	x3	Y3	x4	Y4
Section Data	0.00	6.30	4.80	1.50	6.80	1.50	11.60	6.30



Section Data of Segunbagicha Khal

1	4		
0.00 6.30	4.80 1.50	6.80 1.50	11.60 6.30
2	4		
0.00 6.00	4.60 1.40	6.60 1.40	11.20 6.00
3	4		
0.00 6.00	0.00 1.30	6.00 1.30	6.00 6.00
4	4		
0.00 6.30	0.00 1.20	6.00 1.20	6.00 6.30
5	4		
0.00 6.50	0.00 1.10	7.00 1.10	7.00 6.50
6	4		
0.00 6.30	0.00 1.00	7.00 1.00	7.00 6.30
7	4		
0.00 6.30	0.00 0.90	7.00 0.90	7.00 6.30
8	4		
0.00 6.00	0.00 0.80	7.50 0.80	7.50 6.00
9	4		
0.00 6.00	2.65 0.75	8.15 0.75	10.80 6.00
10	4		
0.00 6.00	5.30 0.70	8.80 0.70	14.10 6.00
11	4		
0.00 6.00	5.35 0.65	8.85 0.65	14.20 6.00
12	4		
0.00 6.00	5.40 0.60	8.90 0.60	14.30 6.00
13	4		
0.00 6.00	5.50 0.50	9.50 0.50	15.00 6.00
14	4		
0.00 6.00	5.55 0.40	9.55 0.40	15.20 6.00
15	4		
0.00 6.00	5.70 0.30	9.70 0.30	15.40 6.00
16	4		
0.00 6.00	5.75 0.25	10.75 0.25	16.50 6.00
17	4		
0.00 6.00	5.80 0.20	11.80 0.20	17.60 6.00
18	4		
0.00 6.05	5.90 0.15	11.90 0.15	17.80 6.05
19	4		
0.00 6.10	6.00 0.10	12.00 0.10	18.00 6.10
20	4		
0.00 6.10	6.00 0.00	11.50 0.00	18.00 6.10

Section Data of Dholai Khal

21	5		
0.00 5.70	8.00 0.00	13.00 0.00	19.00 4.00
24.00 5.80			
22	5		
0.00 5.70	8.00 0.00	13.00 0.00	19.00 4.00
24.00 5.80			
23	5		
0.00 5.70	8.00 0.00	13.00 0.00	19.00 4.00
24.00 5.80			
24	4		
0.00 5.30	7.00 0.00	11.00 0.00	19.00 5.30
25	5		
0.00 5.20	7.00 0.00	12.00 0.00	19.00 5.00
21.00 5.50			
26	8		
0.00 5.10	0.00 3.90	8.00 0.00	11.00 0.00
17.50 2.30	17.50 4.60	20.00 4.70	21.00 5.20
27	8		
0.00 5.10	0.00 3.90	8.00 0.00	11.00 0.00
17.50 2.30	17.50 4.60	20.00 4.70	21.00 5.20
28	5		
0.00 4.60	8.70 0.00	11.70 0.00	17.00 2.50
22.00 4.50			
29	8		
0.00 5.00	5.00 2.70	10.50 2.30	15.00 0.00
20.00 0.00	25.00 2.50	28.00 2.70	41.00 5.60
30	8		
0.00 4.90	7.00 2.70	11.70 2.30	16.50 0.00
21.50 0.00	27.70 2.90	55.00 5.20	57.00 5.30
31	5		
0.00 5.00	10.00 0.00	15.00 0.00	24.50 4.70
26.00 5.20			

Section Data of Gandaria Khal

32	4		
0.00 5.50	0.00 1.60	3.00 1.60	3.00 5.50
33	4		
0.00 5.50	0.00 1.50	3.00 1.50	3.00 5.50
34	4		
0.00 5.50	0.00 1.40	3.00 1.40	3.00 5.50
35	4		
0.00 5.50	0.00 1.30	3.00 1.30	3.00 5.50
36	4		
0.00 5.50	0.00 1.20	3.00 1.20	3.00 5.50
37	4		
0.00 5.50	0.00 1.10	3.00 1.10	3.00 5.50
38	4		
0.00 5.50	0.00 1.00	3.00 1.00	3.00 5.50

Runoff from Sub-Drainage Area (Rational Method)

	N001	N002	N003	N004	N005	N006	N007	N008	N009	N010	N011	N012	N013	N014	N015	N016	N017	N018	N019	N020	N021	N022	N023	N024	N025	N026	N027	N028	N029
A (HA)	79.00	60.00	58.00	83.00	58.00	39.00	23.00	18.00	60.00	143.00	7.00	59.00	49.00	61.00	42.00	25.00	29.00	14.00	12.00	14.00	33.00	24.00	265.00	20.00	30.00	14.00	21.00	49.00	49.00
C (%)	28.00	23.00	55.00	38.00	50.00	55.00	50.00	55.00	45.00	43.00	59.00	51.00	50.00	55.00	50.00	52.00	52.00	52.00	55.00	50.00	46.00	52.00	49.00	50.00	51.00	50.00	51.00	50.00	55.00
Tc (MIN)	39.00	40.00	34.00	40.00	34.00	30.00	31.00	31.00	45.00	56.00	21.00	34.00	28.00	39.00	33.00	17.00	34.00	23.00	22.00	28.00	35.00	33.00	52.00	19.00	23.00	21.00	19.00	34.00	34.00
5. 1. 0. 0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
10.	0.241	0.147	0.395	0.335	0.359	0.298	0.155	0.133	0.256	0.482	0.081	0.372	0.264	0.365	0.267	0.311	0.187	0.130	0.123	0.104	0.183	0.159	1.087	0.215	0.274	0.137	0.230	0.303	0.333
20.	0.481	0.293	0.789	0.670	0.717	0.596	0.310	0.267	0.516	0.963	0.161	0.744	0.727	0.730	0.534	0.535	0.373	0.261	0.246	0.208	0.366	0.317	2.174	0.410	0.548	0.273	0.439	0.606	0.667
30.	0.722	0.440	1.184	1.005	1.076	0.894	0.465	0.400	0.773	1.445	0.175	1.117	1.026	1.095	0.801	0.556	0.560	0.308	0.280	0.293	0.548	0.476	3.261	0.426	0.647	0.297	0.456	0.909	1.000
40.	0.943	0.586	1.375	1.340	1.250	0.929	0.498	0.429	1.031	1.927	0.182	1.297	1.067	1.430	0.907	0.577	0.650	0.320	0.291	0.305	0.653	0.539	4.348	0.443	0.672	0.309	0.474	1.056	1.162
50.	0.986	0.614	1.431	1.403	1.301	0.985	0.518	0.446	1.189	2.408	0.189	1.350	1.107	1.496	0.944	0.598	0.677	0.333	0.302	0.316	0.680	0.561	5.434	0.459	0.699	0.321	0.492	1.099	1.209
5. 1. 1. 0.	1.029	0.641	1.488	1.465	1.352	1.001	0.537	0.462	1.247	2.767	0.197	1.403	1.157	1.561	0.980	0.626	0.703	0.347	0.315	0.330	0.707	0.583	5.916	0.479	0.729	0.333	0.513	1.142	1.257
10.	1.072	0.668	1.553	1.528	1.412	1.061	0.566	0.489	1.304	2.939	0.208	1.465	1.219	1.627	1.026	0.657	0.734	0.362	0.330	0.348	0.734	0.611	6.245	0.506	0.760	0.352	0.542	1.193	1.312
20.	1.125	0.696	1.657	1.590	1.507	1.120	0.601	0.517	1.362	3.112	0.220	1.563	1.282	1.707	1.093	0.701	0.783	0.386	0.351	0.366	0.786	0.649	6.575	0.536	0.811	0.373	0.574	1.273	1.400
30.	1.218	0.756	1.761	1.728	1.601	1.180	0.634	0.546	1.420	3.284	0.234	1.661	1.372	1.847	1.157	0.750	0.833	0.410	0.373	0.392	0.839	0.688	6.905	0.572	0.862	0.400	0.612	1.353	1.488
40.	1.310	0.816	1.865	1.866	1.696	1.295	0.693	0.596	1.584	3.457	0.253	1.759	1.482	1.987	1.231	0.804	0.882	0.448	0.404	0.423	0.892	0.731	7.235	0.619	0.941	0.429	0.663	1.432	1.576
50.	1.402	0.877	2.090	2.004	1.900	1.410	0.762	0.656	1.749	3.629	0.280	1.971	1.591	2.127	1.385	0.892	0.988	0.488	0.435	0.455	0.982	0.823	8.119	0.680	1.026	0.474	0.728	1.605	1.765
5. 1. 2. 0.	1.554	0.937	2.344	2.142	2.131	1.525	0.832	0.716	1.913	4.405	0.315	2.211	1.812	2.357	1.539	0.996	1.108	0.548	0.503	0.518	1.110	0.915	9.372	0.769	1.153	0.534	0.824	1.801	1.981
10.	1.844	1.137	2.599	2.599	2.363	1.803	0.965	0.831	2.078	5.331	0.360	2.452	2.061	2.797	1.694	1.164	1.229	0.628	0.570	0.589	1.238	1.007	10.625	0.879	1.320	0.611	0.942	1.996	2.196
20.	2.134	1.337	3.140	3.055	2.854	2.081	1.142	0.983	2.634	6.257	0.420	2.961	2.310	3.236	2.136	1.371	1.484	0.730	0.682	0.660	1.366	1.270	11.879	1.040	1.533	0.712	1.114	2.411	2.652
30.	2.424	1.537	4.108	3.512	3.735	2.359	1.319	1.135	3.583	7.183	0.523	3.875	3.179	3.676	2.651	1.638	1.942	0.916	0.805	0.908	1.980	1.575	13.132	1.223	1.928	0.886	1.310	2.155	3.471
40.	3.004	1.736	5.077	3.969	4.615	3.690	1.759	1.514	4.532	8.109	0.725	4.789	4.047	4.557	3.165	2.332	2.400	1.103	1.155	1.156	2.593	1.881	15.491	1.790	2.319	1.229	1.917	3.899	4.289
50.	4.021	2.323	6.045	5.309	5.496	5.021	2.463	2.121	5.481	9.056	0.938	5.702	4.946	6.098	3.864	3.209	2.858	1.669	1.656	1.413	3.204	2.296	19.509	2.453	3.507	1.590	2.627	4.643	5.107
5. 1. 3. 0.	5.037	2.909	6.903	6.650	6.275	6.352	3.167	2.727	6.430	10.083	1.195	6.511	5.965	7.640	4.747	4.067	3.263	2.276	1.927	1.704	3.539	2.821	23.527	2.951	4.783	2.026	3.360	5.301	5.832
10.	6.053	3.496	7.760	7.990	7.054	5.768	3.407	2.933	6.158	11.111	1.395	7.320	6.984	9.181	5.631	4.309	3.668	2.258	1.851	1.995	3.591	3.346	27.544	3.430	4.746	2.365	3.673	5.960	6.556
20.	6.168	4.082	8.617	9.331	7.834	5.184	2.950	2.540	5.886	12.138	1.086	8.128	7.087	9.355	6.153	3.114	4.074	1.624	1.726	2.025	3.642	3.657	31.562	2.592	3.833	1.840	2.776	6.618	7.280
30.	5.380	3.576	8.208	8.174	7.462	4.600	2.493	2.146	5.613	13.165	0.776	7.743	5.819	8.161	5.235	2.445	3.880	1.464	1.416	1.662	3.694	3.111	34.102	1.819	3.078	1.314	1.949	6.304	6.935
40.	4.593	3.070	6.956	7.018	6.323	4.072	2.110	1.816	5.341	14.193	0.693	6.561	4.550	6.967	4.316	2.126	3.288	1.280	1.105	1.300	3.235	2.565	30.727	1.637	2.689	1.174	1.753	5.342	5.876
50.	3.806	2.564	5.703	5.861	5.184	3.543	1.898	1.634	4.987	13.817	0.610	5.379	3.840	5.773	3.398	1.905	2.696	1.095	0.999	1.097	2.777	2.019	27.353	1.466	2.301	1.035	1.571	4.380	4.818
5. 1. 4. 0.	3.349	2.058	4.639	4.705	4.218	3.015	1.687	1.452	4.552	12.506	0.562	4.376	3.502	5.079	3.086	1.715	2.193	1.007	0.893	1.001	2.318	1.834	23.979	1.347	2.117	0.952	1.442	3.563	3.920
10.	3.111	1.932	4.334	4.416	3.940	2.828	1.502	1.293	4.116	11.195	0.517	4.088	3.185	4.719	2.842	1.603	2.049	0.920	0.831	0.904	2.032	1.689	20.604	1.243	1.933	0.876	1.331	3.329	3.662
20.	2.874	1.805	4.029	4.126	3.662	2.642	1.423	1.225	3.681	9.884	0.489	3.800	2.981	4.358	2.598	1.515	1.904	0.866	0.780	0.852	1.919	1.544	17.230	1.174	1.819	0.828	1.258	3.094	3.404
30.	2.637	1.679	3.723	3.837	3.385	2.455	1.345	1.157	3.245	8.573	0.465	3.512	2.835	3.999	2.447	1.451	1.760	0.826	0.745	0.818	1.805	1.454	16.516	1.119	1.736	0.788	1.198	2.860	3.145
40.	2.512	1.552	3.574	3.548	3.249	2.379	1.270	1.094	3.138	7.262	0.448	3.371	2.689	3.809	2.359	1.403	1.689	0.793	0.719	0.768	1.691	1.402	15.802	1.083	1.667	0.760	1.160	2.745	3.019
50.	2.435	1.512	3.464	3.456	3.349	2.304	1.237	1.065	3.032	7.057	0.435	3.267	2.619	3.692	2.271	1.361	1.637	0.771	0.698	0.748	1.647	1.350	15.088	1.052	1.621	0.738	1.127	2.660	2.926
5. 1. 5. 0.	2.357	1.472	3.353	3.364	3.048	2.228	1.204	1.037	2.925	6.853	0.425	3.163	2.550	3.576	2.197	1.332	1.585	0.750	0.682	0.728	1.603	1.305	14.374	1.028	1.577	0.721	1.100	2.575	2.833
10.	2.280	1.432	3.265	3.272	2.968	2.189	1.171	1.008	2.818	6.648	0.417	3.079	2.486	3.459	2.155	1.307	1.543	0.737	0.667	0.710	1.558	1.281	13.660	1.008	1.549	0.707	1.079	2.507	2.758
20.	2.236	1.391	3.208	3.180	2.917	2.149	1.152	0.991	2.744	6.443	0.410	3.026	2.445	3.392	2.113	1.286	1.517	0.724	0.656	0.699	1.525	1.256	13.282	0.991	1.521	0.695	1.061	2.464	2.711
30.	2.200	1.371	3.152	3.134	2.866	2.109	1.132	0.975	2.702	6.239	0.403	2.973	2.404	3.337	2.071	1.265	1.490	0.712	0.645	0.687	1.502	1.231	12.988	0.975	1.497	0.683	1.044	2.421	2.663
40.	2.164	1.351	3.096	3.088	2.815	2.081	1.113	0.958	2.659	5.991	0.397	2.920	2.350	3.283	2.021	1.244	1.464	0.701	0.636	0.671	1.479	1.201	12.693	0.959	1.474	0.673	1.027	2.378	2.616
50.	2.129	1.331	2.911	3.042	2.647	2.054	1.050	0.904	2.617	5.677	0.393	2.746	2.274	3.229	1.970	1.233	1.376	0.671	0.628	0.650	1.457	1.171	12.398	0.941	1.410	0.666	1.007	2.236	2.460
5. 1. 6. 0.	1.954	1.311	2.726	2.996	2.479	2.026	0.982	0.846	2.575	5.363	0.369	2.572	2.197	2.984	1.920	1.148	1.289	0.621	0.561	0.628	1.321	1.141	12.104	0.921	1.305	0.626	0.987	2.094	2.303
10.	1.764	1.167	2.542	2.668	2.310	1.732	0.914	0.787	2.323	5.049	0.300	2.397	1.983	2.675	1.738	0.889	1.201	0.564	0.480	0.566	1.186	1.033	11.402	0.736	1.185	0.508	0.789	1.952	2.147
20.	1.574	1.023	2.332	2.339	2.120	1.438	0.827	0.712	2.071	4.736	0.242	2.200	1.675	2.387	1.501	0.753	1.103	0.480	0.422	0.479	1.051	0.892	10.429	0.533	1.010	0.410	0.571	1.791	1.970
30.	1.384	0.880	2.107	2.011	1.915	1.144	0.734	0.632	1.818	4.422	0.230	1.987	1.368	2.099	1.263	0.699	0.996	0.397	0.378	0.391	0.958	0.750	9.454	0.533	0.834	0.390	0.571	1.618	1.780
40.	1.332	0.736	1.882	1.682	1.711	1.144	0.641	0.552	1.566	4.205	0.220	1.775	1.307	2.020	1.120	0.693	0.889	0.388	0.352	0.373	0.909	0.666	8.683	0.533	0.816	0.373	0.571	1.445	1.590
50.	1.279	0.736	1.701	1.682	1.547	1.144	0.613	0.528	1.440	4.012	0.220	1.605	1.307	1.940	1.120	0.693	0.804	0.388	0.352	0.373	0.859	0.666	7.509	0.533	0.816	0.373	0.571	1.307	1.437
5. 1. 7. 0.	1.227	0.736	1.701	1.682	1.547	1.144	0.613	0.528	1.440	3.819	0.220	1.605	1.307	1.861	1.120	0.693	0.804	0.388	0.352	0.373	0.810	0.666	6.925	0.533	0.816	0.373	0.571	1.307	1.437
10.	1.180	0.736	1.701	1.682	1.547	1.144	0.613	0.528	1.440	3.627	0.220	1.605	1.307	1.789	1.120	0.693	0.804	0.388	0.352	0.373	0.810	0.666	6.925	0.533	0.816	0.373	0.571	1.307	1.437
20.	1.180	0.736	1.701	1.682	1.547	1.144	0.613	0.528	1.440	3.434	0.220	1.605	1.307	1.789	1.120	0.693	0.804	0.388	0.352	0.373	0.810	0.666	6.925	0.533	0.816	0.373	0.571	1.307	1.437
30.	1.180	0.736	1.701	1.682	1.547	1.144	0.613	0.528	1.440	3.279	0.220	1.605	1.307	1.789	1.120	0.693	0.804	0.388	0.352	0.373	0.810	0.666	6.925	0.533	0.816	0.373	0.571	1.307	1.437
40.	1.180	0.736	1.701	1.682	1.547	1.144	0.613	0.528	1.440	3.279	0.220	1.605	1.307	1.789	1.120	0.693	0.804	0.388	0.352	0.373	0.810	0.666	6.925	0.533	0.816	0.373	0.571	1.307	1.437
50.	1.180	0.736	1.701	1.682	1.547	1.144	0.613	0.528	1.440	3.279	0.220	1.605	1.307	1.789	1.120	0.693	0.804	0.388	0.352	0.373	0.810	0.666	6.925	0.533	0.816	0.373	0.571	1.307	1.437
5. 1. 8. 0.	1.180	0.736	1.701	1.682	1.547	1.144	0.613	0.528	1.440	3.279	0.220	1.605	1.307	1.789	1.120	0.693	0.804	0.388	0.352	0.373	0.810	0.666	6.925	0.533	0.816	0.373	0.571	1.307	1.437
10.	1.180	0.736	1.701	1.682	1.547	1.144	0.613	0.528	1.440	3.279	0.220	1.605	1.307	1.789	1.120	0.693	0.804	0.388	0.352	0.373	0.810	0.666	6.925	0.533	0.816	0.373	0.571	1.307	1.437
20.	1.180	0.736	1.701	1.682	1.547	1.144	0.613	0.528	1.440	3.279	0.220	1.605	1.307	1.789	1.120	0.693	0.804	0.388	0.352	0.373	0.810	0.666	6.925	0.533	0.816	0.373	0.571	1.307	1.437
30.	1.166	0.736	1.701	1.682	1.547	1.144	0.613	0.528	1.440	3.154	0.220	1.605	1.307	1.768	1.120	0.693	0.804	0.388	0.352	0.373	0.810	0.666	6.925	0.533	0.816	0.373	0.571	1.307	1.437
40.	1.119	0.736	1.642	1.682	1.493	1.144	0.613	0.528	1.440	2.945	0.220	1.549	1.307	1.698	1.120	0.693	0.776	0.388	0.352	0.373	0.810	0.666	6.925	0.533	0.816	0.373	0.571	1.261	1.388
50.	1.073	0.644	1.584	1.472	1.440	1.144	0.579	0.498	1.440	2.736	0.205	1.494	1.307	1.627	1.077	0.665	0.749	0.379	0.337	0.373	0.744	0.640	6.106	0.533	0.797	0.348	0.571	1.216	1.338
5. 1. 9. 0.	1.026	0.552	1.525	1.262	1.386	1.144	0.464	0.399	1.440	2.527	0.175	1.438	1.040	1.556	0.861	0.569	0.721	0.291	0.265	0.297	0.611	0.512	5.266	0.403	0.612	0.297	0.439	1.171	1.288
10.	0.896	0.480	1.236	1.051	1.124	0.763	0.349	0.301	1.120	2.317	0.127	1.166	0.707	1.359	0.645	0.343	0.584	0.203	0.192	0.202	0.479	0.383	4.467	0.241	0.427	0.216	0.258	0.949	1.044
20.	0.640	0.368	0.795	0.841	0.722	0.381	0.241	0.207	0.800	2.108	0.052	0.750	0.373	0.971	0.429	0.031	0.376	0.121	0.105	0.107	0.347	0.255	3.647	0.116	0.255	0.089	0.127	0.610	0.671
30.	0.384	0.276	0.353	0.631	0.321	0.	0.158	0.136	0.480	1.732	0.	0.333	0.240	0.582	0.296	0.	0.167	0.040	0.017	0.069	0.248	0.176	2.828	0.	0.085	0.	0.	0.271	0.298
40.	0.128	0.184	0.	0.421	0.	0.	0.075	0.064	0.160	1.355	0.	0.	0.107	0.194	0.173	0.	0.	0.	0.	0.030	0.149	0.103	2.264	0.	0.	0.	0.	0.	0.
50.	0.	0.092	0.	0.210	0.	0.	0.	0.	0.	0.979	0.	0.	0.	0.	0.049	0.	0.	0.	0.	0.	0.050	0.029	1.742	0.	0.	0.	0.	0.	0.