

Fig. 4 Inner Slipform in 6 M x 1 M Size

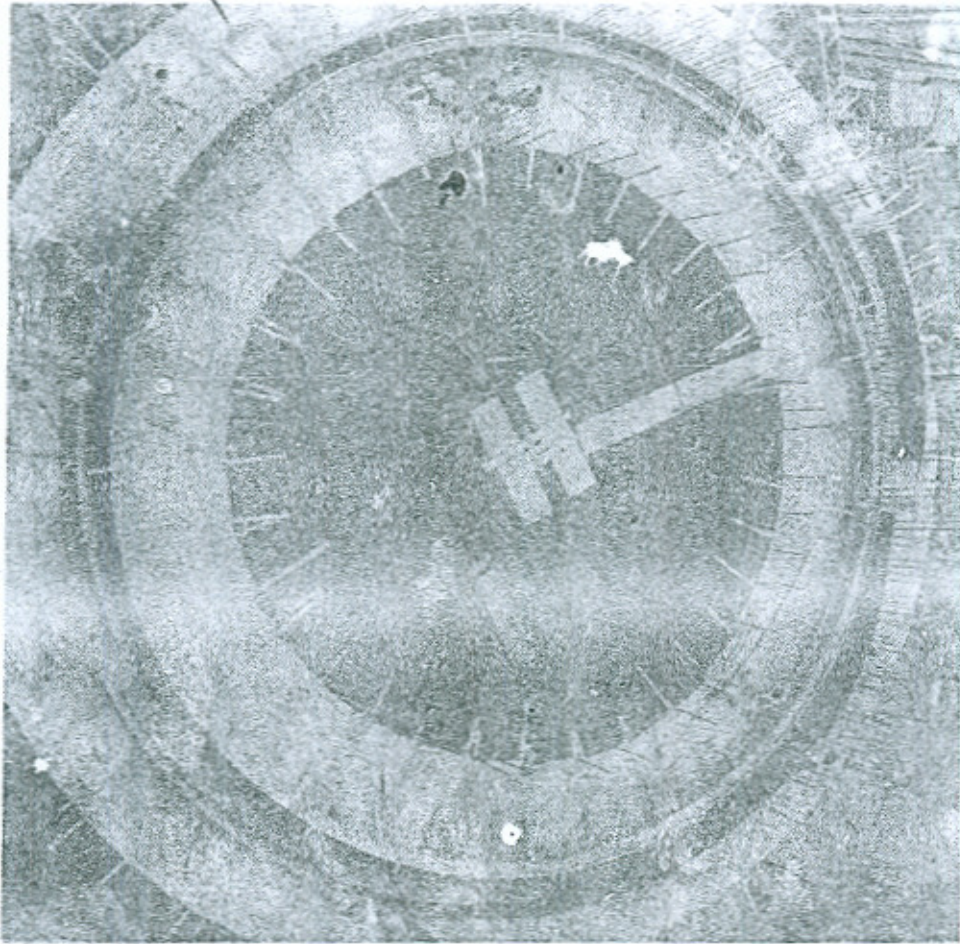
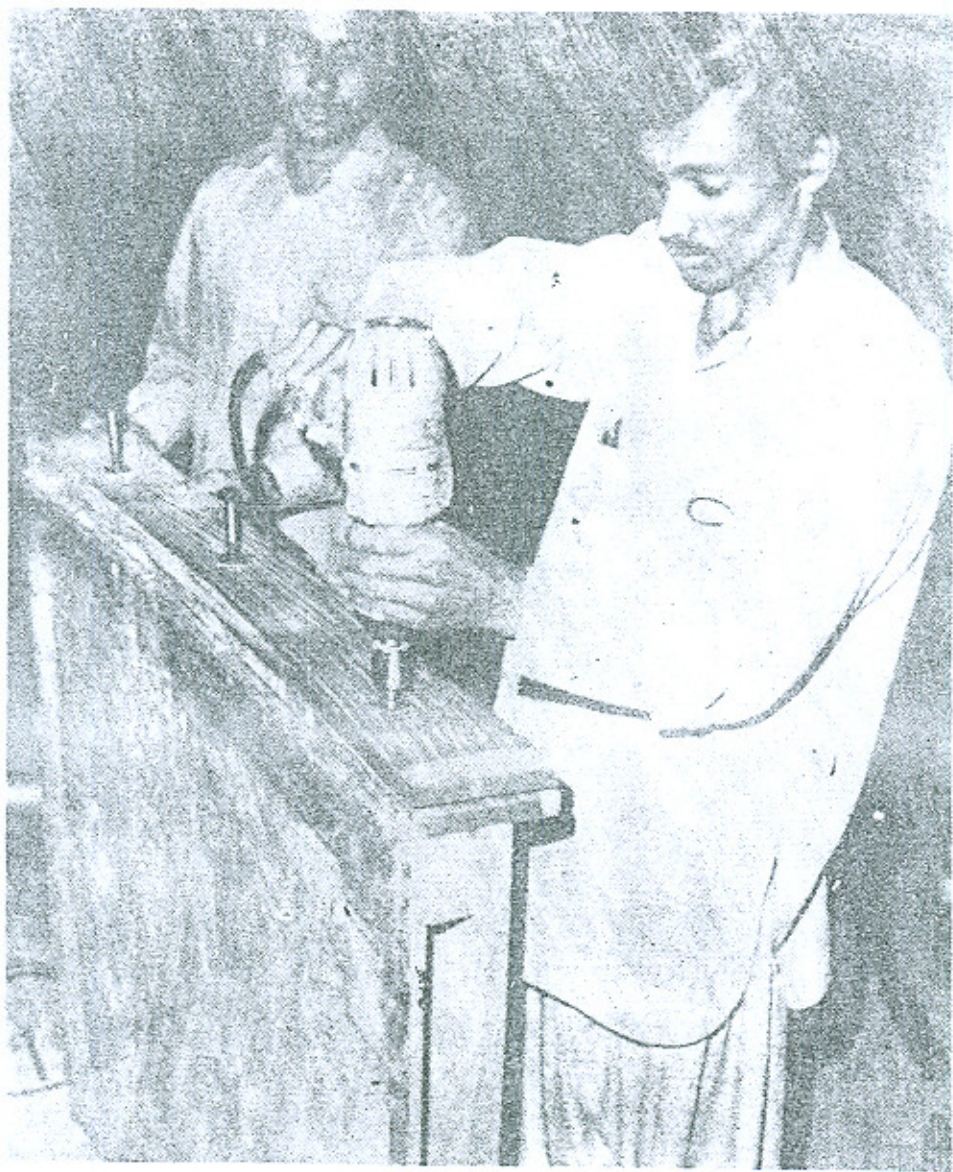


Fig.5 Placing of Inner & Outer Slipform



16 Fabrication of Removable Jittering (Size 11) W

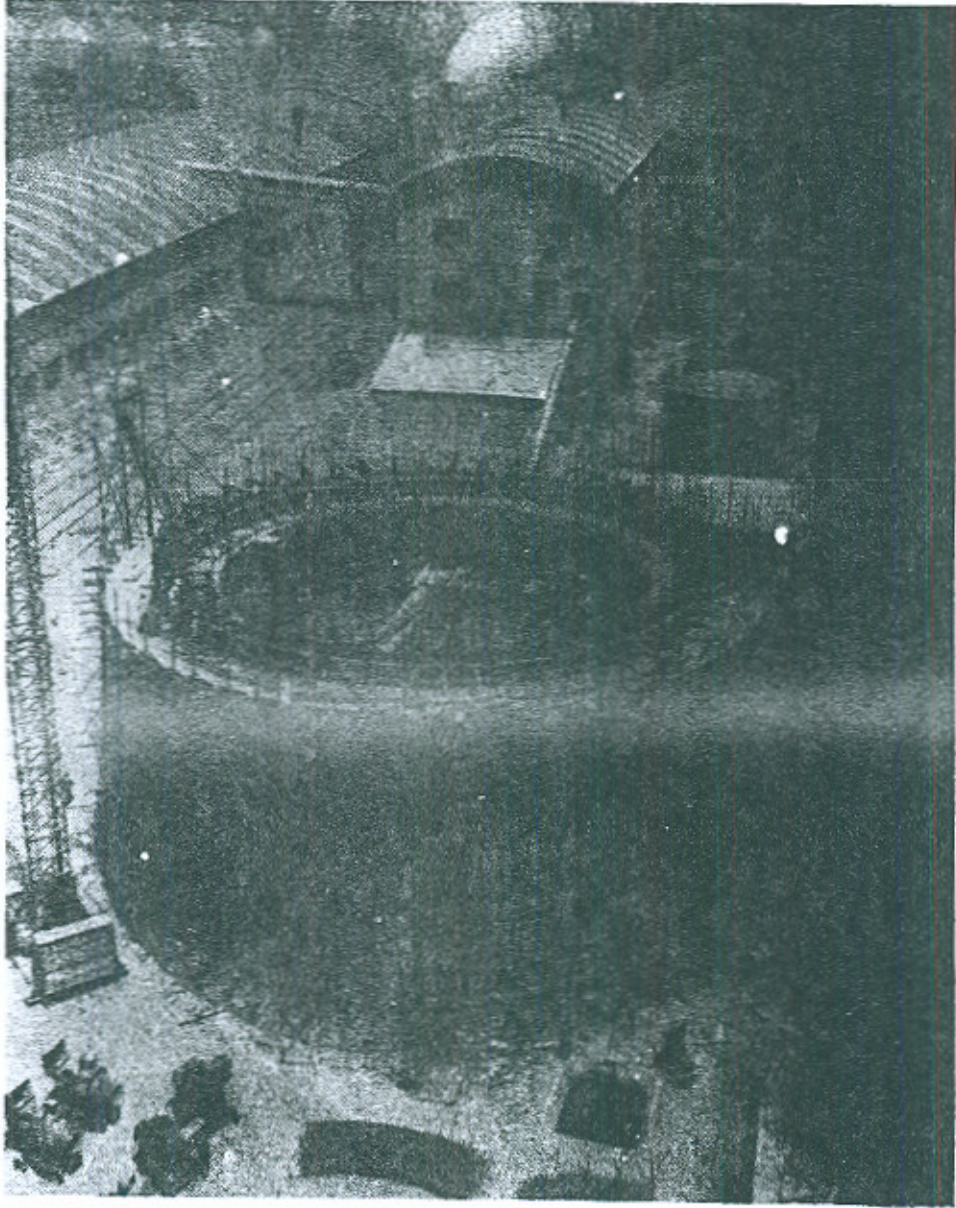


Fig. 7 Arrangement of Yokes

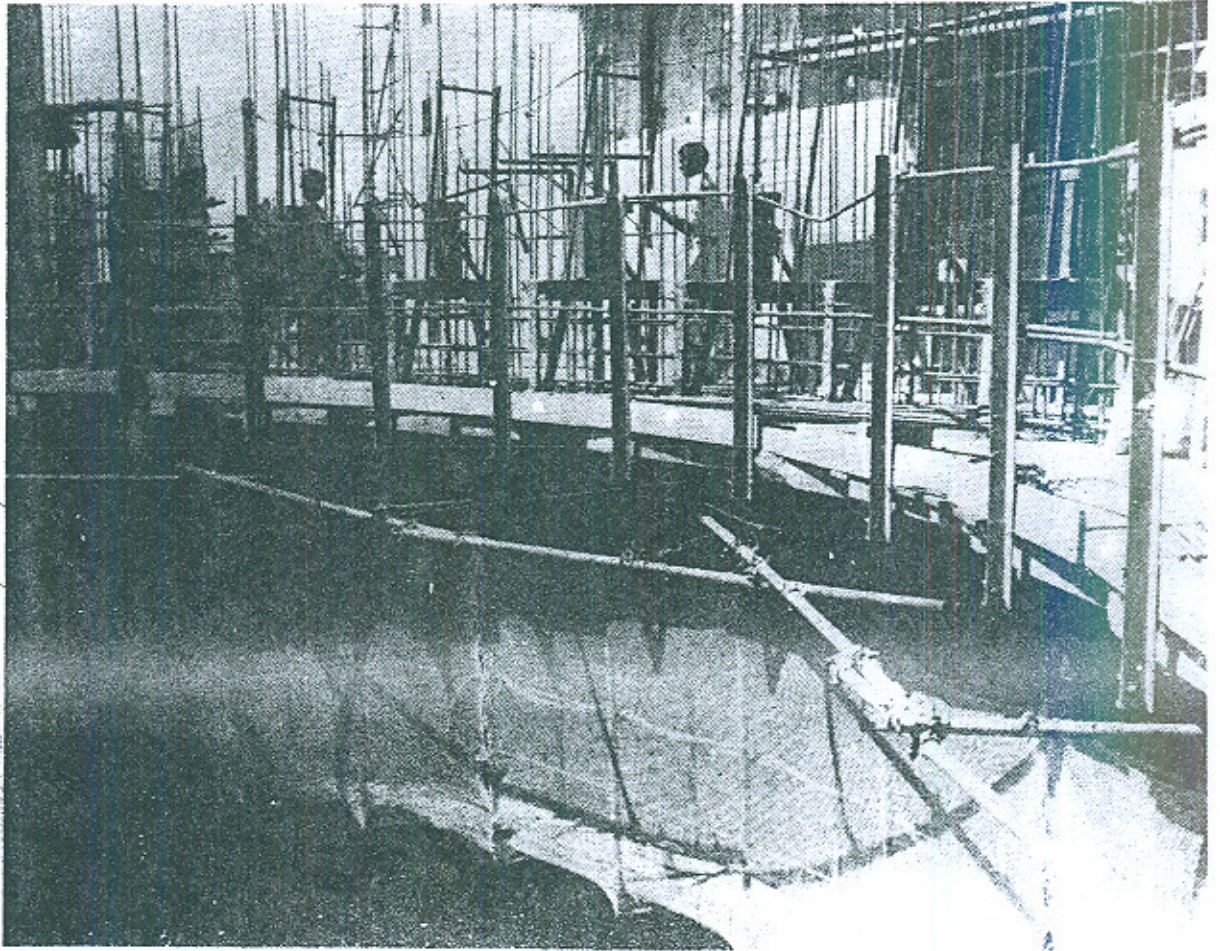


Fig. 8 Arrangement of Steel

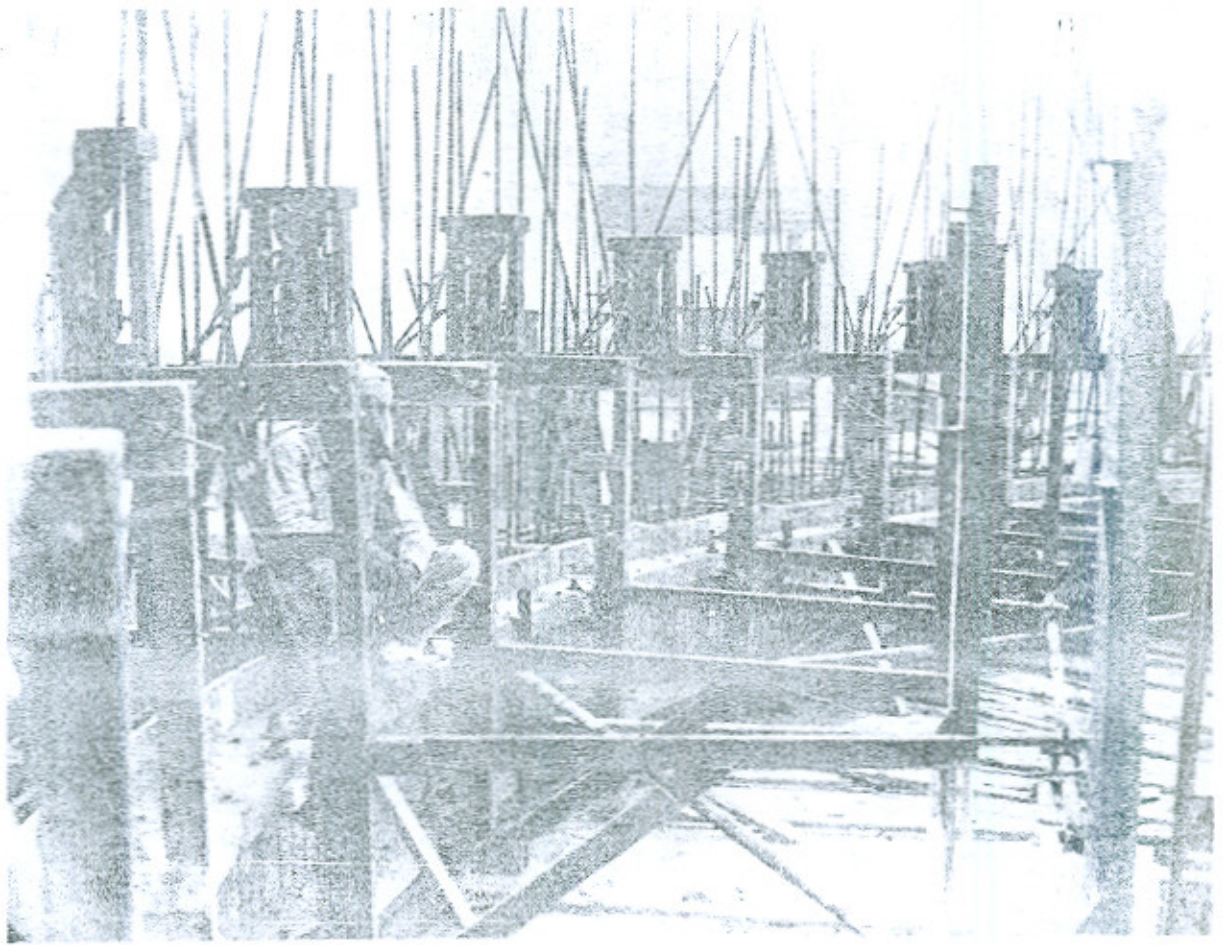


Fig. 1. Detail of the Rebar Rackets

3. Based on studies recommended above an upto-date seismic zoning map for whole of Pakistan should be prepared indicating the realistic seismic risk to be considered for the future planning.
4. On the basis of upto-date seismic zoning map buildings and bridges codes should be prepared for different regions of Pakistan.

ACKNOWLEDGEMENT

We are grateful to Mr. Irshad Ahmad Managing Director, N E S P A K whose encouragement has been a great source of inspiration in all stages of our work. The authors would like to express their deep gratitude to Dr. Munir Ahmed Khan Chairman P A E C , Mr. Manzoor Ahmed and Mr. Mohammad Shafique for providing the opportunity to carry out these studies . Thanks are also extended to Dr. Naeem Ahmed Khan and Dr. Mubarik of PINS-TECH for their cooperation and providing the data recorded by their seismic network. We would also like to acknowledge the valuable assistance rendered by Mr. M. Ilyas in the Earthquake studies.

TABLE - 1
HYPOCENTRES OF MAIN EVENT AND AFTERSHOCKS

<u>COLUMN</u>												
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	
770214	022	37.13	3337.49	7312.50	14.46	0.05	0.4	0.2	B AB	5.8	1	
770214	036	14.48	3341.00	7311.00	0.00	0.34	2.3	7.7	D CD	0.9	2	
770214	037	49.31	3339.01	7313.72	12.75	0.17	2.2	1.3	C BD	1.2	3	
770214	040	53.68	3339.67	7313.61	0.00	0.14	1.0	7.7	D CD	0.5	4	
770214	042	56.85	3339.64	7313.49	13.47	0.12	1.9	1.2	C BD	0.3	5	
770214	045	9.05	3337.63	7313.52	13.41	0.07	1.2	0.7	C BD	1.1	6	
770214	047	52.69	3339.41	7313.59	12.84	0.13	1.7	1.1	C BD	0.5	7	
770214	059	4.81	3337.92	7313.68	17.54	0.08	1.6	3.9	C BD	2.0	8	
770214	1 4	6.62	3338.84	7313.00	14.79	0.07	0.9	0.5	C AD	2.0	9	
770214	117	32.20	3338.11	7313.75	17.59	0.09	1.9	5.0	C BD	2.3	10	
770214	121	10.17	3337.38	7312.88	16.03	0.07	1.1	3.1	C BD	2.5	11	
770214	127	30.28	3338.55	7313.26	14.76	0.06	0.8	0.5	C AD	2.2	12	
770214	131	3.93	3340.06	7309.08	13.38	0.15	1.1	0.9	C BD	1.8	13	
770214	159	27.20	3338.77	7313.15	12.69	0.15	1.8	1.1	C BD	0.6	14	
770214	204	16.66	3336.36	7313.75	21.71	0.05	1.2	2.2	C BD	3.5	15	
770214	207	49.09	3337.66	7313.78	17.54	0.05	1.8	5.1	D CD	1.9	16	
770214	220	45.95	3338.45	7313.94	14.48	0.09	1.4	0.8	C BD	1.0	17	
770214	244	43.44	3338.87	7313.32	20.00	0.14	3.6	8.5	D CD	0.2	18	
770214	247	38.22	3338.98	7314.02	12.57	0.08	1.3	0.9	C BD	0.4	19	
770214	305	24.92	3337.95	7312.76	15.22	0.07	1.2	0.9	C BD	0.8	20	
770214	311	3.31	3338.28	7312.02	12.91	0.07	1.1	0.7	C BD	0.8	21	
770214	330	46.83	3339.33	7313.45	16.77	0.05	0.9	2.8	C BD	2.0	22	
770214	729	46.56	3337.79	7313.02	16.00	0.07	1.2	3.6	C BD	1.9	23	
770214	745	41.76	3339.58	7312.86	11.95	0.09	0.9	0.6	C AD	0.3	24	
770214	750	52.18	3338.89	7313.70	12.78	0.08	1.1	0.6	C BD	0.0	25	
770214	1333	52.26	3338.66	7314.00	14.22	0.03	0.4	0.2	C AD	0.0	26	
770214	1400	46.66	3337.14	7313.06	18.11	0.14	2.6	5.6	D CD	0.9	27	
770214	1501	0.58	3339.73	7312.76	11.59	0.06	0.4	0.6	B AB	0.6	28	
770214	1531	16.16	3338.28	7313.94	15.00	0.10	2.7	1.7	C CC	0.8	29	
770214	1600	54.16	3339.51	7312.49	12.04	0.14	1.2	1.2	B BB	0.2	30	
770214	1622	4.74	3337.76	7314.42	16.44	0.12	0.6	0.7	B AC	1.4	31	
770214	1723	18.51	3338.22	7312.67	11.00	0.16	1.0	1.2	C BC	0.2	32	
770214	1817	40.83	3339.68	7313.55	12.22	0.09	0.7	0.6	B AB	0.2	33	
770214	1927	12.56	3338.59	7312.88	15.00	0.16	1.2	0.8	C BC	3.1	34	
770215	830	16.06	3337.78	7314.52	16.52	0.05	0.8	0.5	B AC	3.6	35	
770215	1324	18.15	3338.86	7312.90	10.12	0.10	1.0	1.6	B AC	0.2	36	

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>
770216	1118	41.69	3338.93	7313.29	14.03	0.05	0.5	0.4	B AC	2.2	37
770216	1808	29.24	3337.77	7312.41	15.00	0.08	2.4	1.6	C BC	0.4	38
770217	956	19.09	3337.50	7312.75	15.89	0.12	1.4	1.8	C BC	1.8	39
770217	1036	23.35	3338.73	7313.68	13.85	0.10	1.0	0.7	B AC	0.9	40
770217	2012	58.57	3337.03	7315.23	16.95	0.05	0.8	0.8	C AD	0.4	41
770218	105	52.30	3336.04	7314.58	18.57	0.12	2.1	2.3	C BD	0.7	42
770218	1416	2.80	3338.88	7313.59	14.10	0.09	1.1	0.8	C BC	0.1	43
770219	545	20.28	3338.96	7313.24	13.25	0.10	1.1	0.8	C BC	1.0	44
770220	1741	45.00	3336.79	7313.56	17.60	0.10	1.8	2.1	C BD	1.7	45
770220	1943	34.45	3337.75	7312.89	15.99	0.10	1.2	1.6	C BC	1.9	46
770222	1635	59.73	3338.55	7313.60	13.59	0.07	0.7	0.5	B AC	0.1	47
770304	1344	24.46	3337.35	7313.18	15.59	0.11	1.4	1.7	C BC	1.3	48
770305	1454	53.88	3337.69	7312.79	15.42	0.08	1.1	0.6	C BC	3.2	49
770305	1526	30.38	3337.70	7313.44	16.02	0.05	0.7	0.9	B AC	1.7	50
770305	1655	15.40	3336.71	7313.56	15.00	0.13	2.0	1.1	C BD	0.6	51
770305	2042	8.29	3337.13	7313.17	15.30	0.11	1.4	0.8	C BD	1.6	52
770317	1522	34.06	3332.54	7324.85	16.61	0.10	5.3	2.8	D DD	0.6	53
770325	316	11.30	3338.51	7313.04	15.00	0.12	2.5	1.7	C CC	1.9	54
770331	1628	20.48	3338.31	7313.71	15.00	0.10	2.1	1.3	C BC	2.7	55
770402	310	14.87	3337.90	7313.39	16.55	0.07	0.9	1.2	B AC	1.5	56
770417	1706	31.88	3338.72	7312.52	13.97	0.15	1.3	0.8	C BC	3.2	57
770417	2143	18.27	3339.21	7312.74	11.01	0.10	0.9	0.9	B AC	-0.4	58

Legend

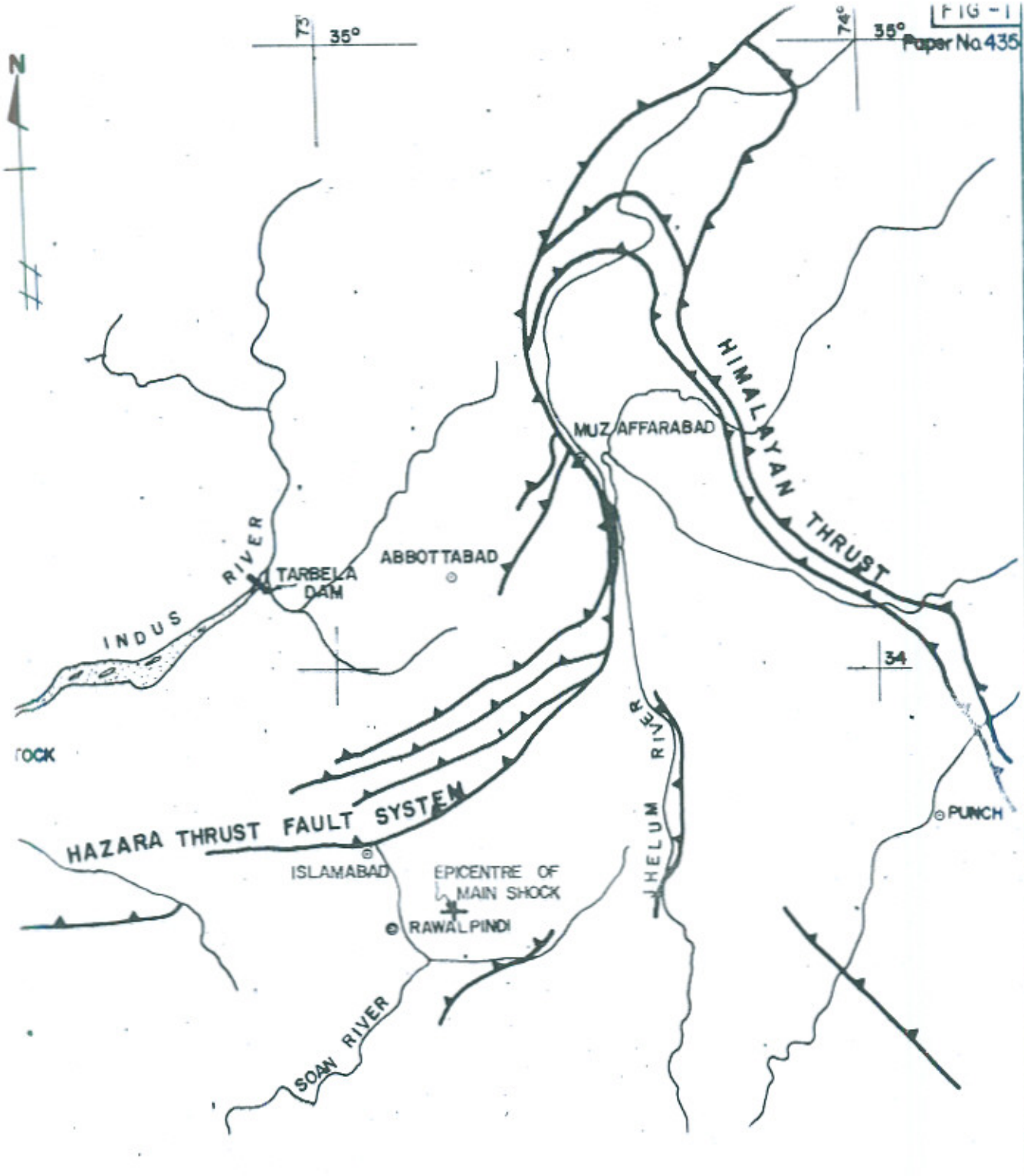
Column

- 1,2 & 3 Origin Time Year, Month, Day, Hour, Minute, Second; GMT
- 4. Latitude, North
- 5. Longitude, East
- 6. Depth
- 7. RMS, Root Mean Square Error
- 8. ERH, Error in Horizontal location, kilometers
- 9. ERZ, Error in Vertical location kilometers
- 10. Quality
- 11. Magnitude of event
- 12. Ser. Number of event

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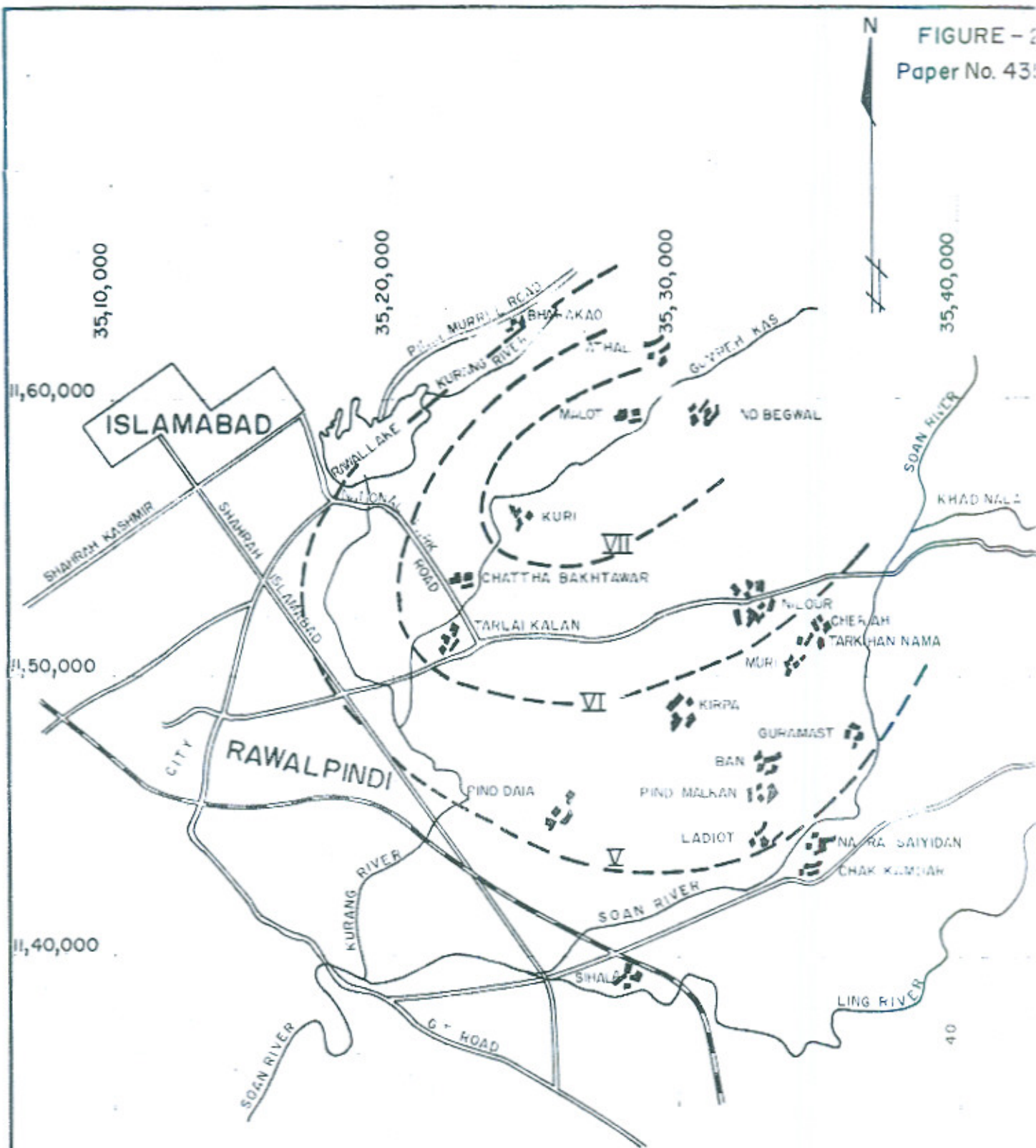
LEGEND

-  THRUST FAULTS AFTER GANSSER
-  RIVER
-  TOWN

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SCALE: - 1:10,00000

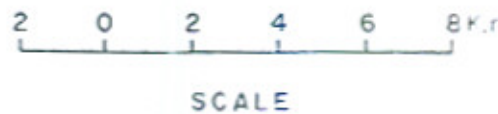
RAWALPINDI EARTHQUAKE FEB. 14 1977
TECTONIC MAP

FIGURE - 2
Paper No. 431



NOTE

Intensities given are on Modified Mercalli (MM) scale,

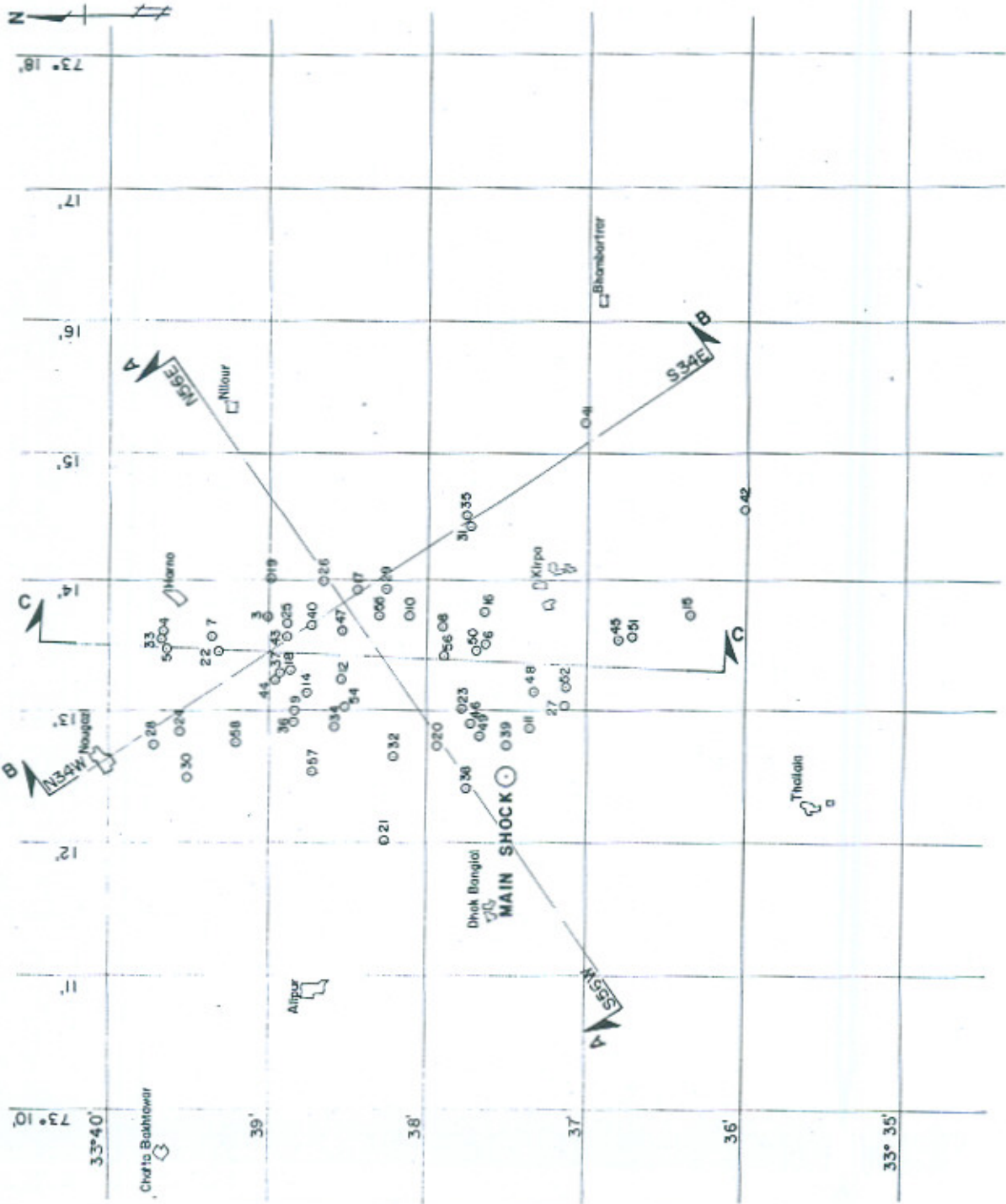


RAWALPINDI EARTHQUAKE FEB. 14, 1977
ISOSEISMAL MAP

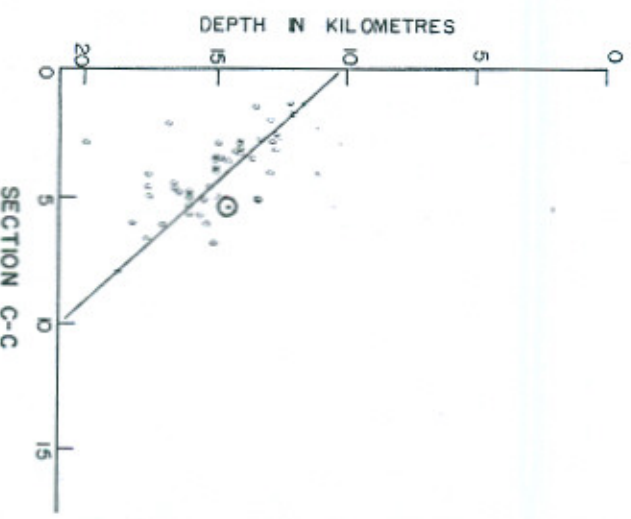
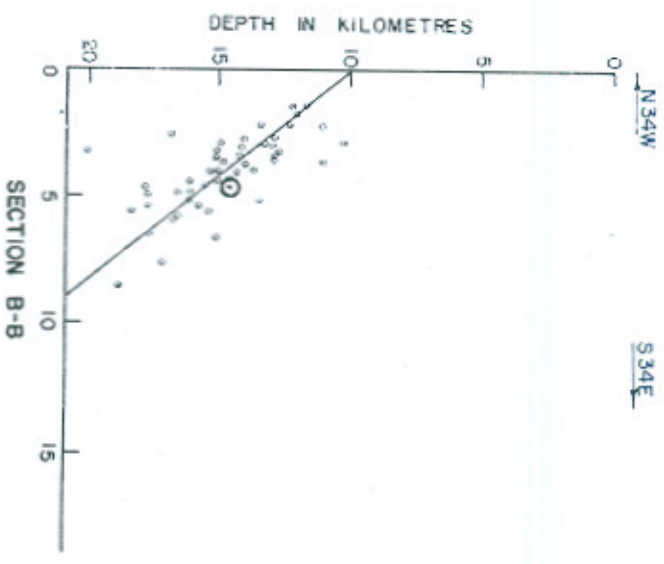
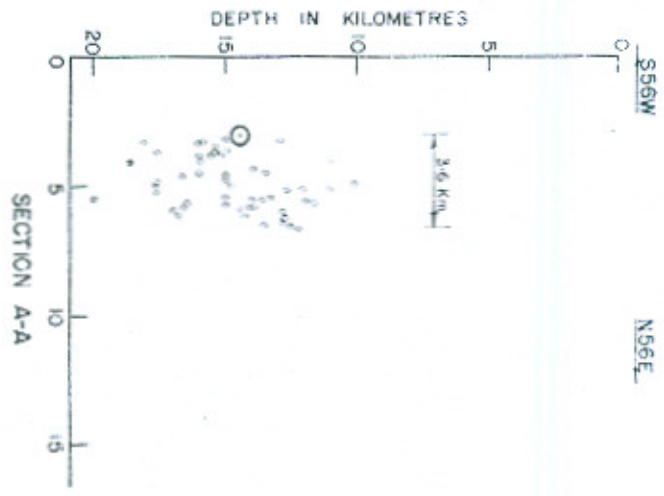
LEGEND

- EPICENTRE OF AFTERSHOCK WITH ORDER OF OCCURRENCE
- EPICENTRE OF MAINSHOCK

NOTE :-
For Cross Sections AA, BB and CC refer Fig-4



RAWALPINDI EARTHQUAKE FEB 14, 1977
EPICENTRE OF MAIN SHOCK & AFTERSHOCKS

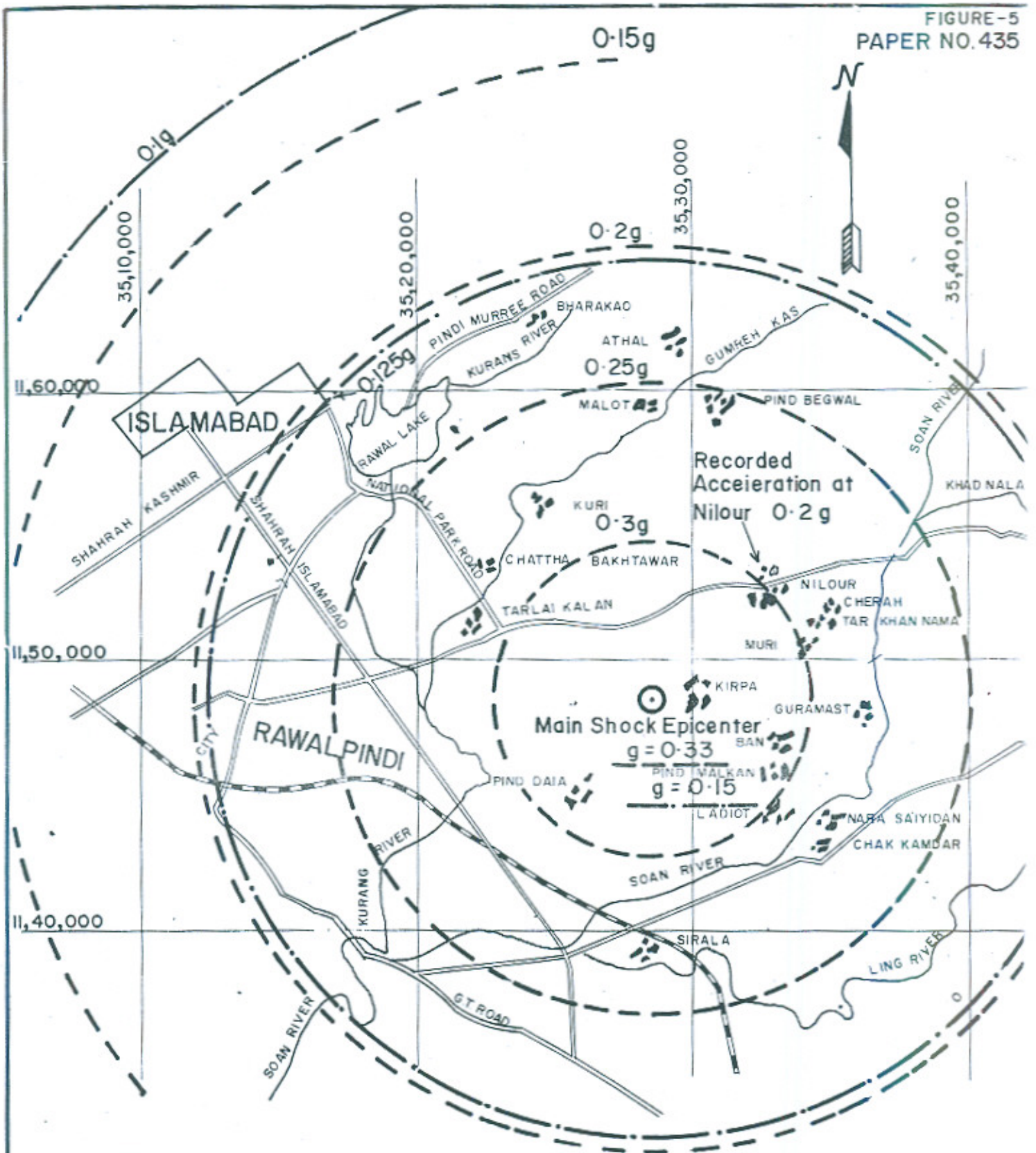


- LEGEND**
- HYPOCENTRE OF AFTERSHOCK
 - HYPOCENTRE OF MAINSHOCK


NOTE:
For location of cross Sections AA, BB, CC refer Fig 3



RAWALPINDI EARTHQUAKE FEB. 14, 1977
CROSS-SECTIONS AA, BB & CC



LEGEND

-  ACCELERATION COMPUTED FROM ORPHAL AND LAHOUD RELATIONSHIP
-  ACCELERATION COMPUTED FROM DONOVAN RELATIONSHIP



RAWALPINDI EARTHQUAKE FEB.14,1977
ACCELERATION RECORDED
AND COMPUTED



Plate No.1 Partial collapse & cracks in houses being repaired-Athal



Plate No. 2 Collapse of a House near Pind Begwal

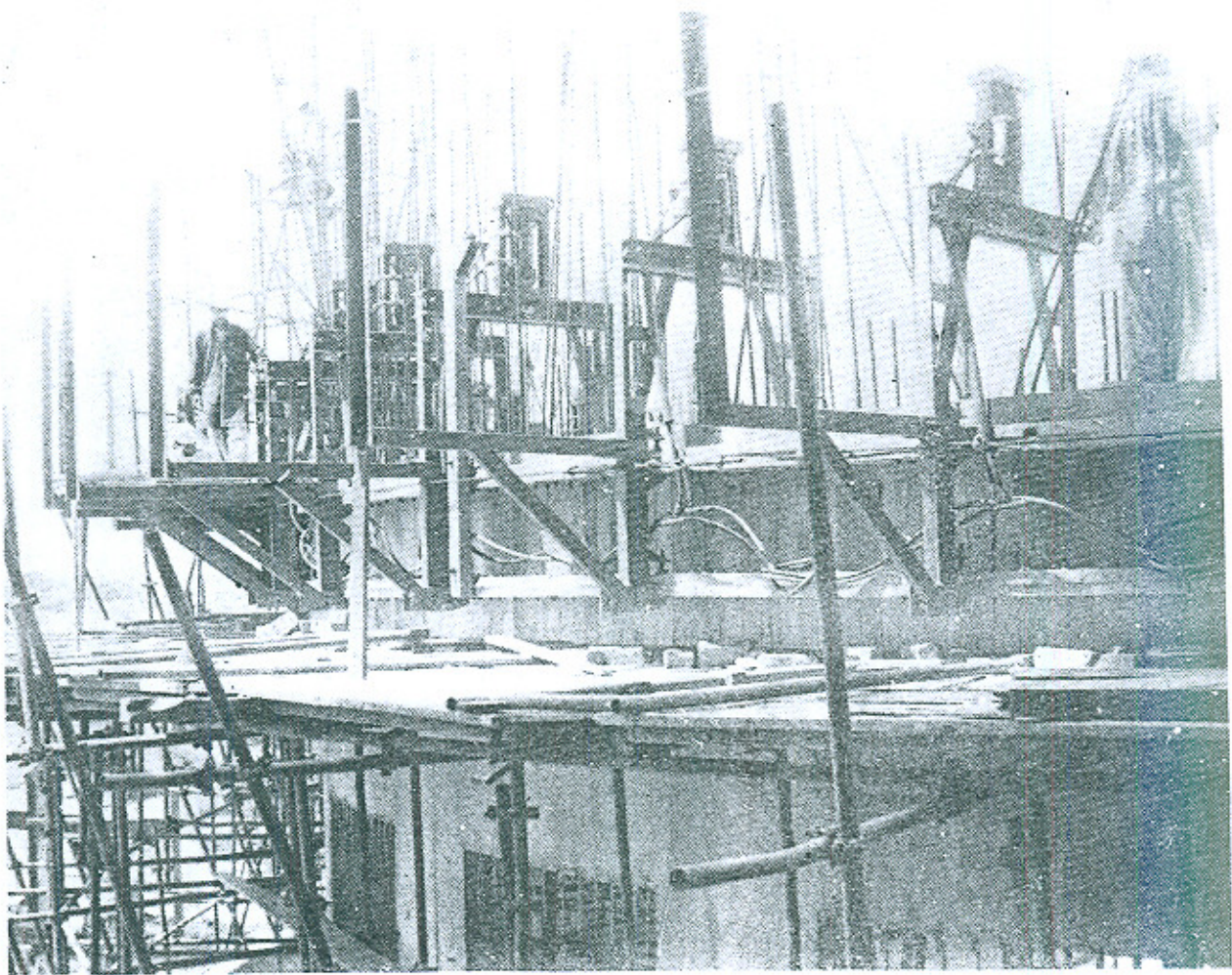


Fig. 10 Fixing of Plumbing Post

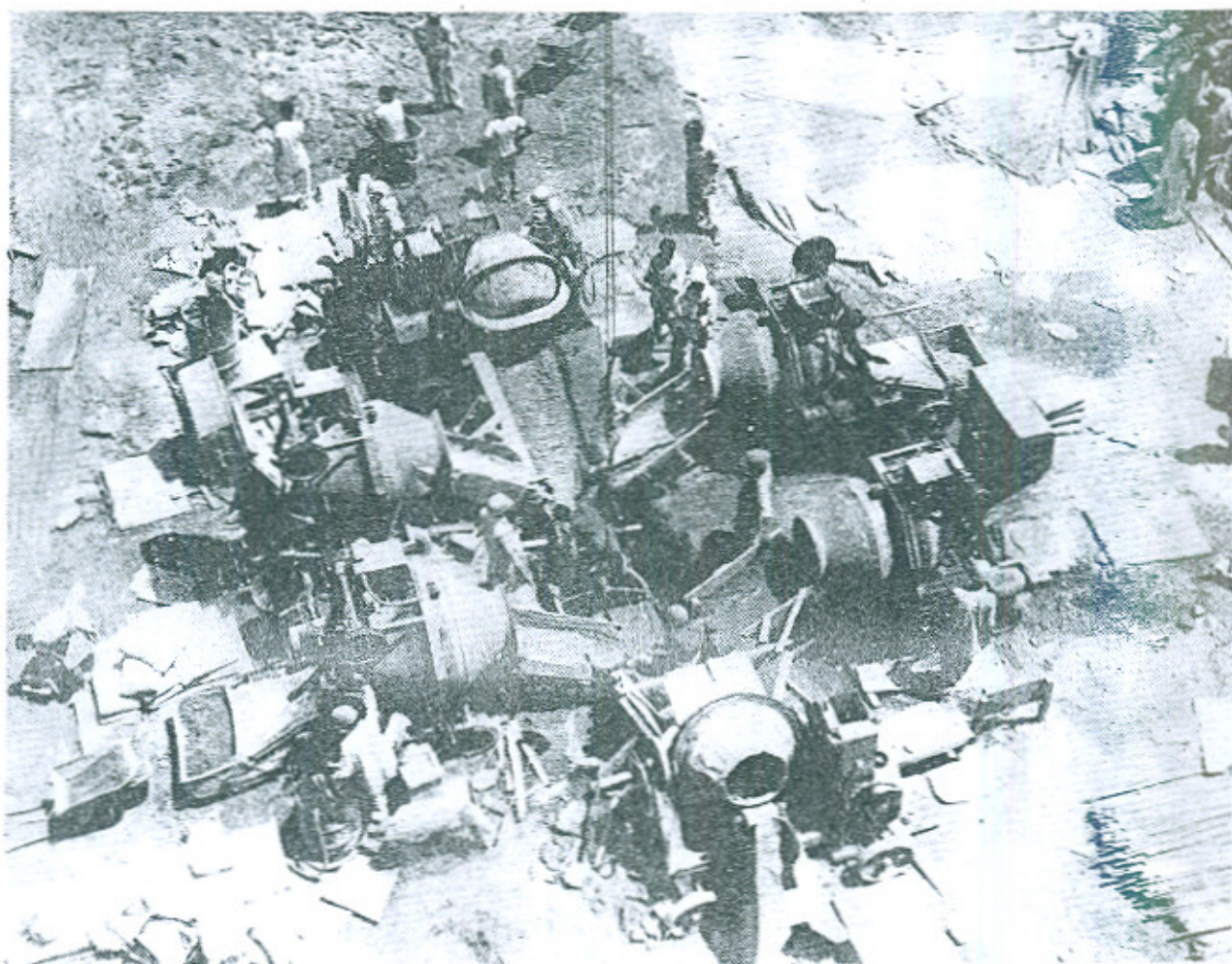
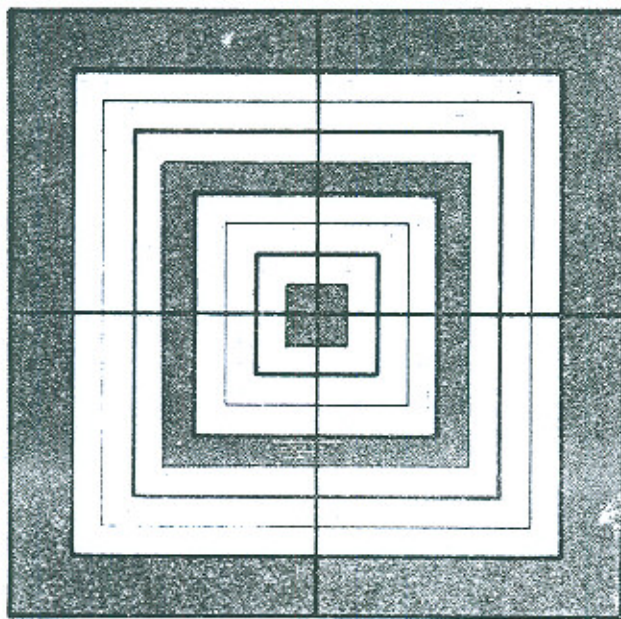
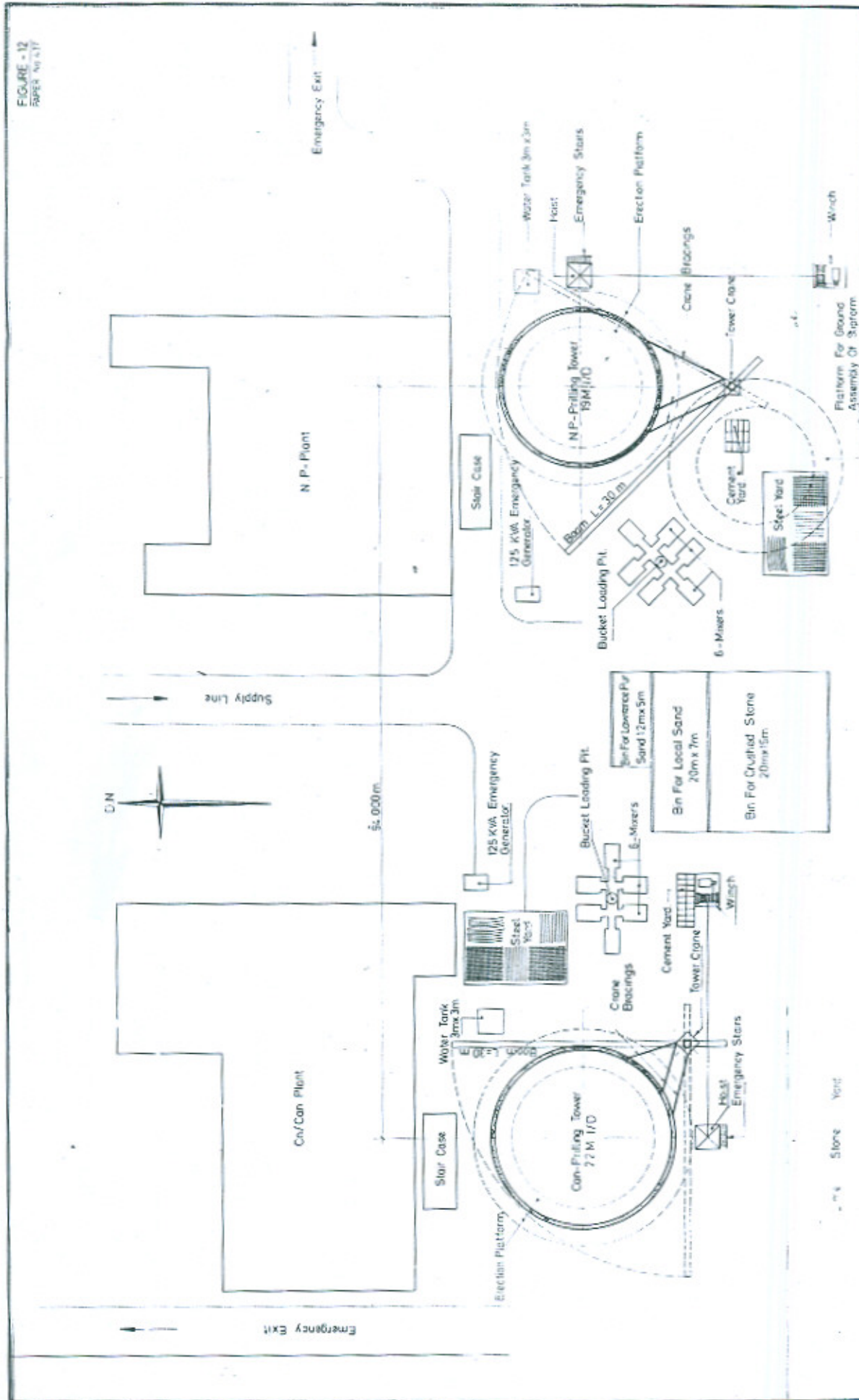


Fig. 13 Arrangement of Mixers

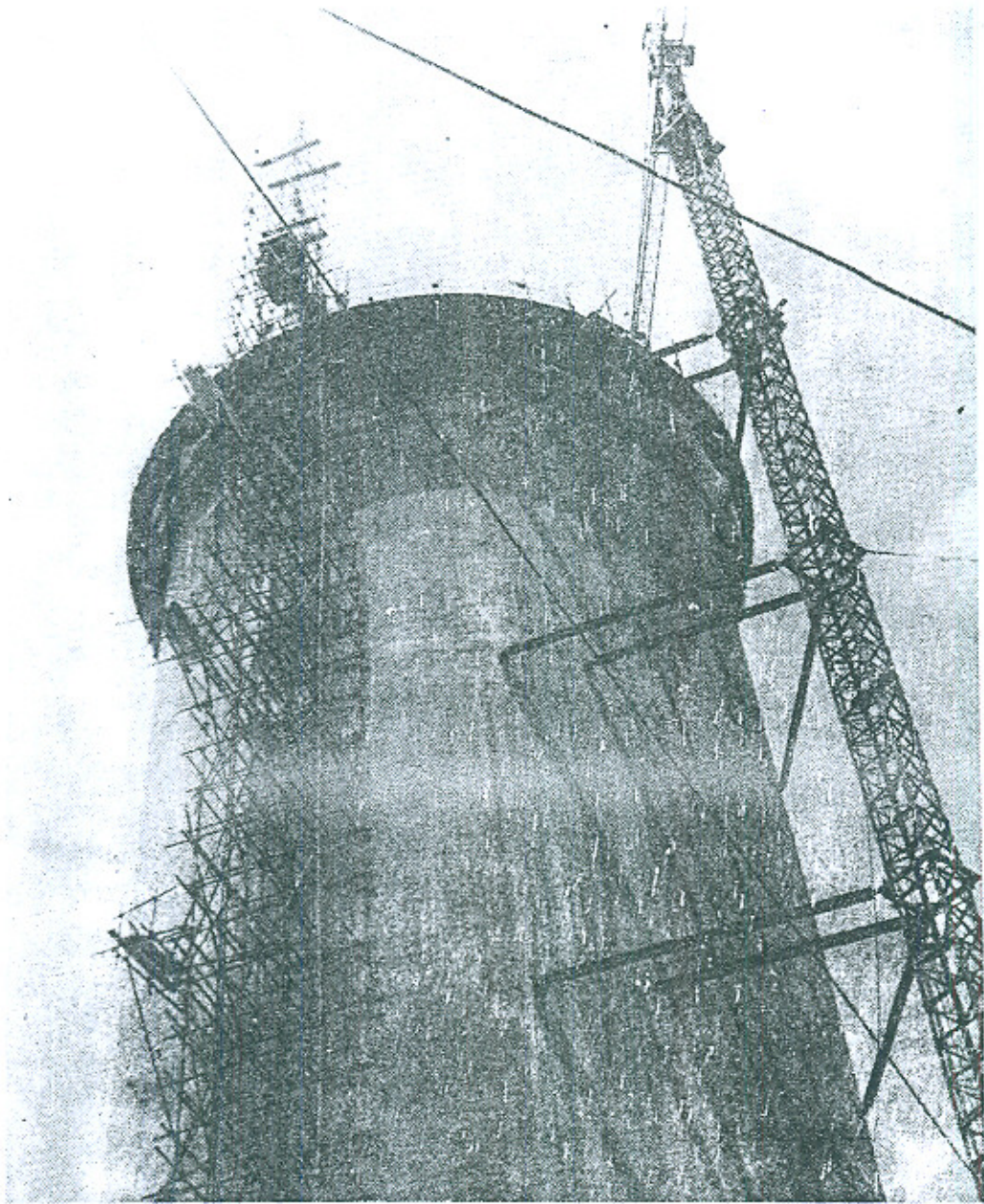


PLASTIC COATED TARGET

FIGURE -12
 PAPER No. 137



GENERAL LAYOUT PLAN SHOWING ARRANGEMENT
 OF EQUIPMENT DURING CONSTRUCTION OF
 PRILLING TOWERS WITH SLIPFORM.



*Fig. 14 Bracing of Crane and Location
of Hoist on CAN Prilling Tower*

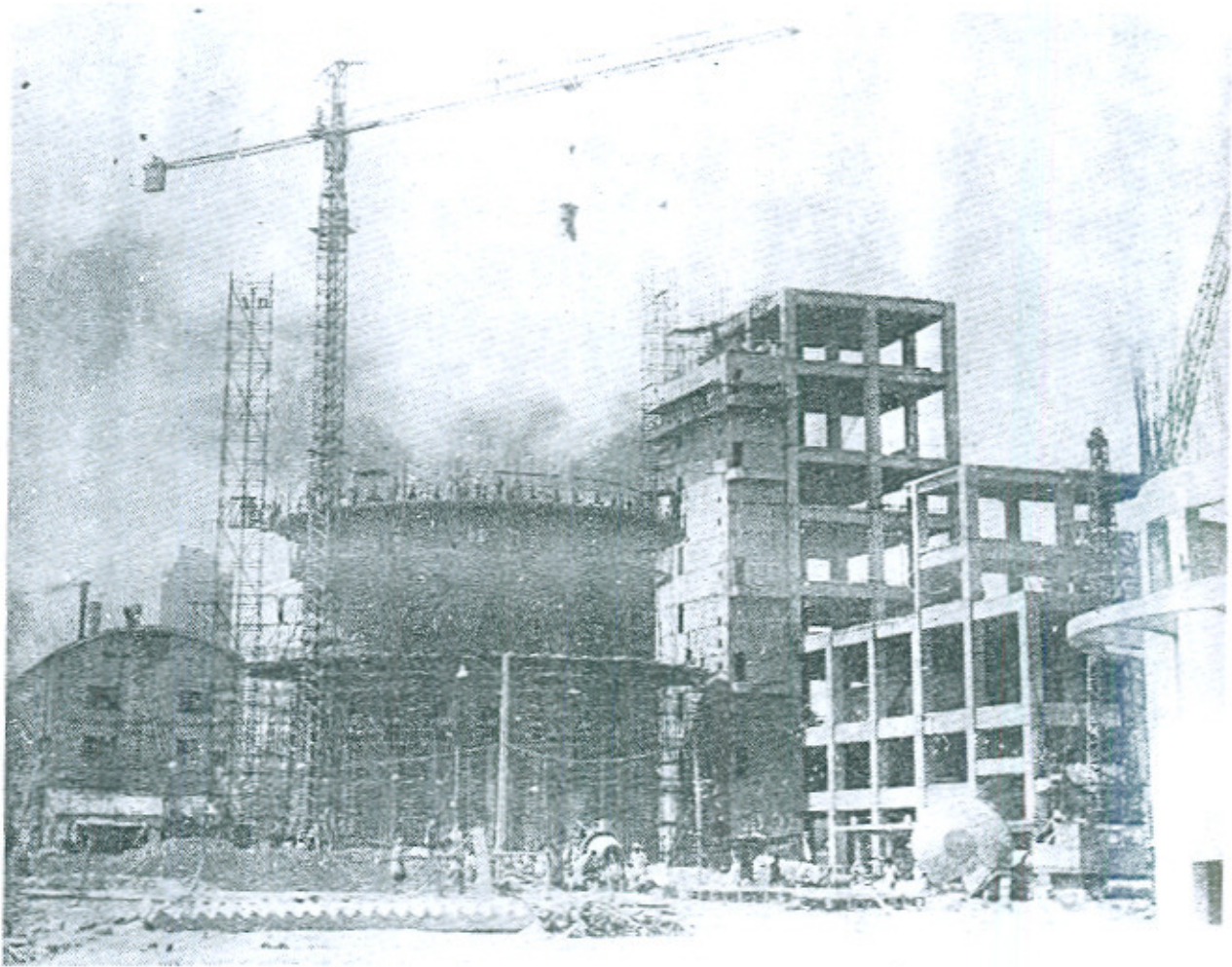
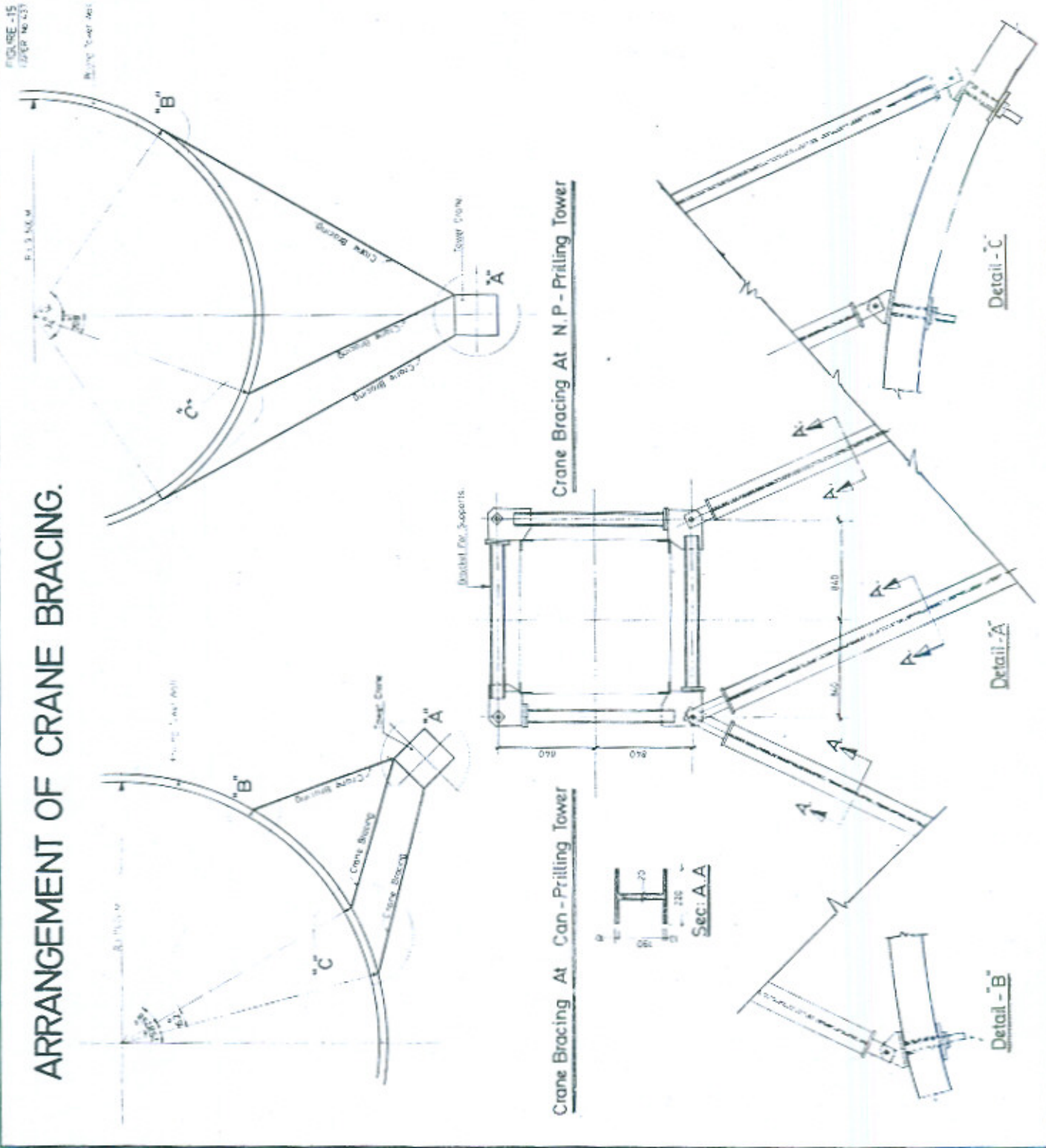
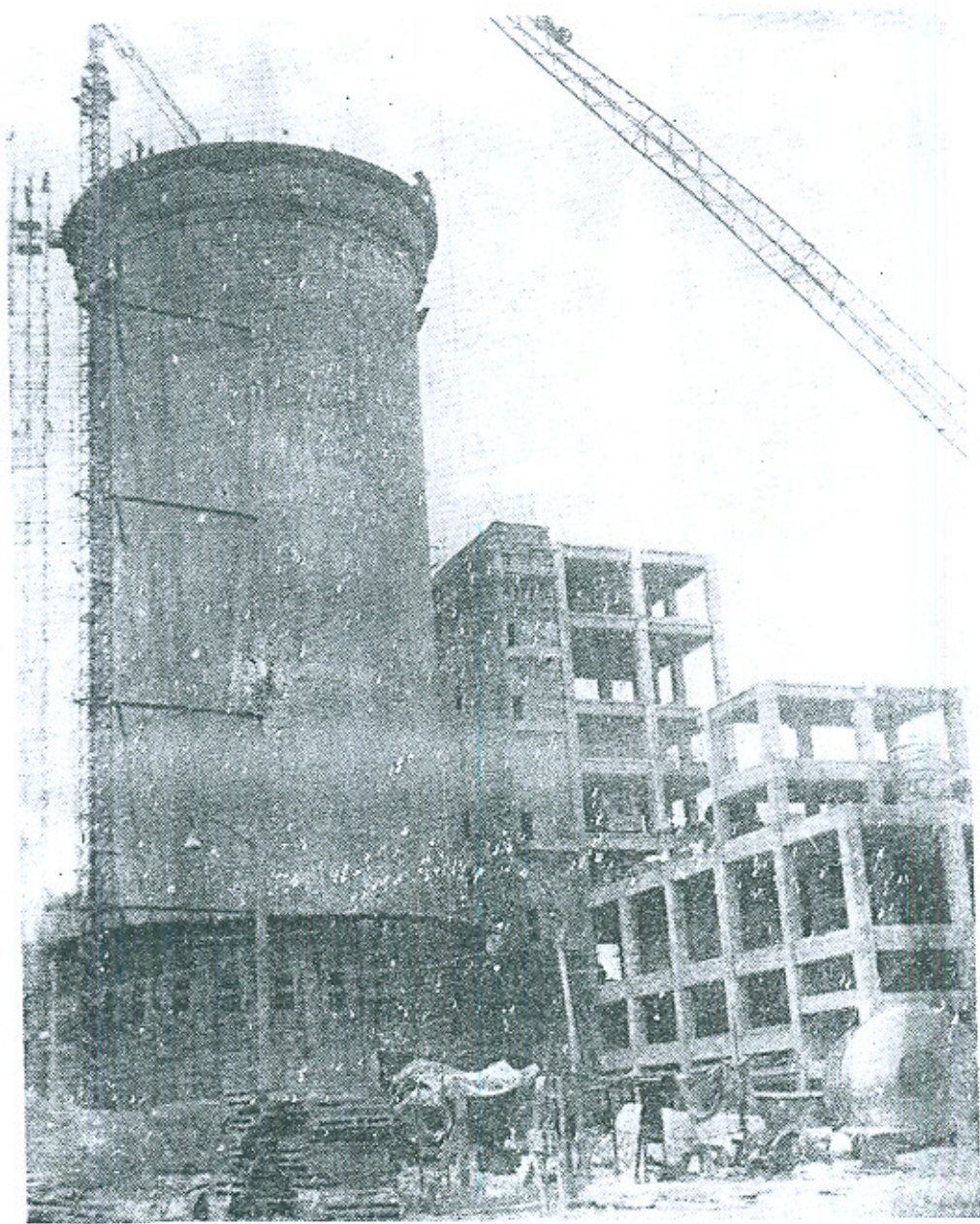


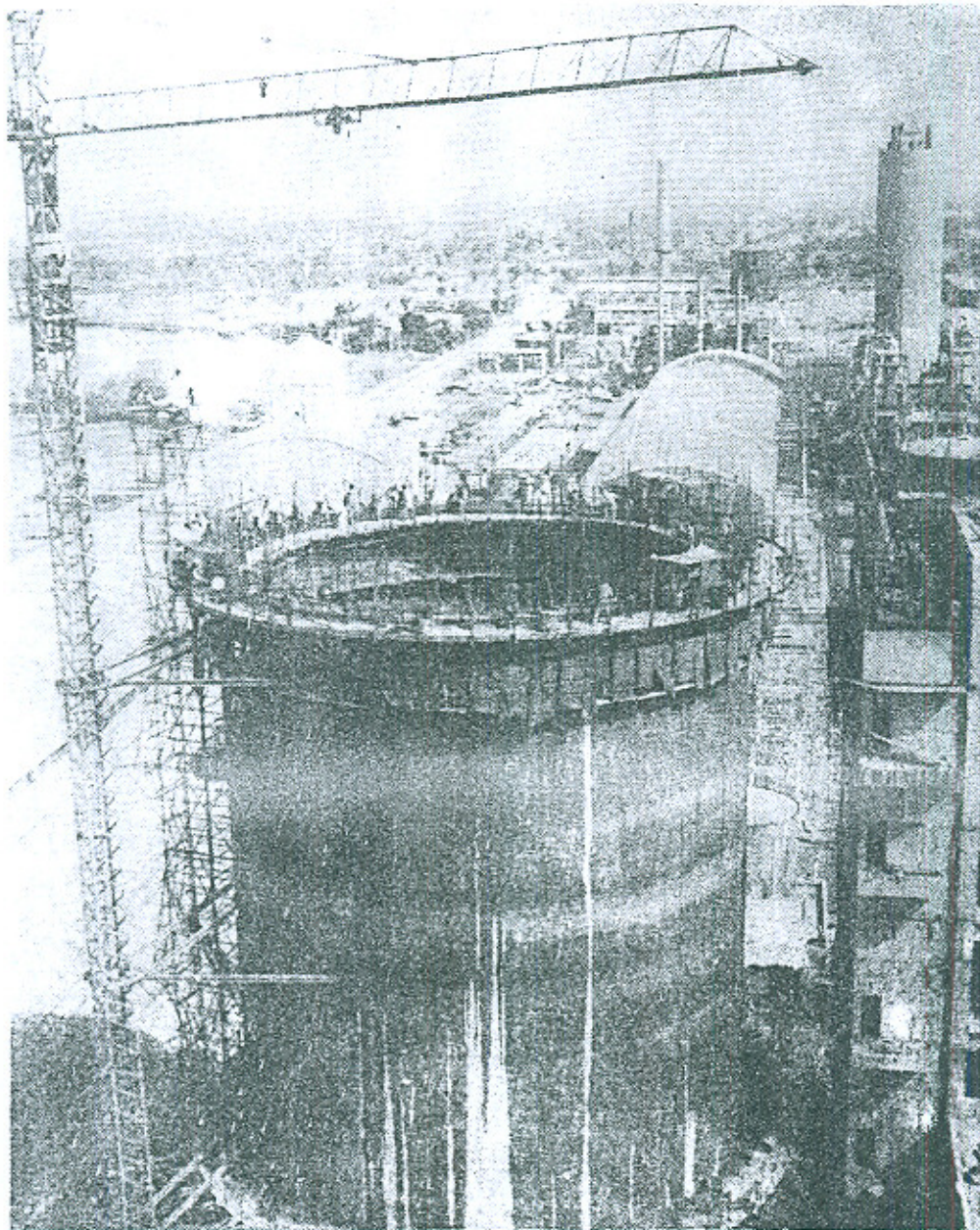
Fig. 16 CAN Prilling Tower as on 15th June, 1977 Elevation+119.75 M

ARRANGEMENT OF CRANE BRACING.





*Fig. 17 CAN Prilling tower as on 30th June, 1977
Elevation + 154.10 M*



*Fig. 18 Water for Curing being Sprinkled
on the Outer Surface of Tower*

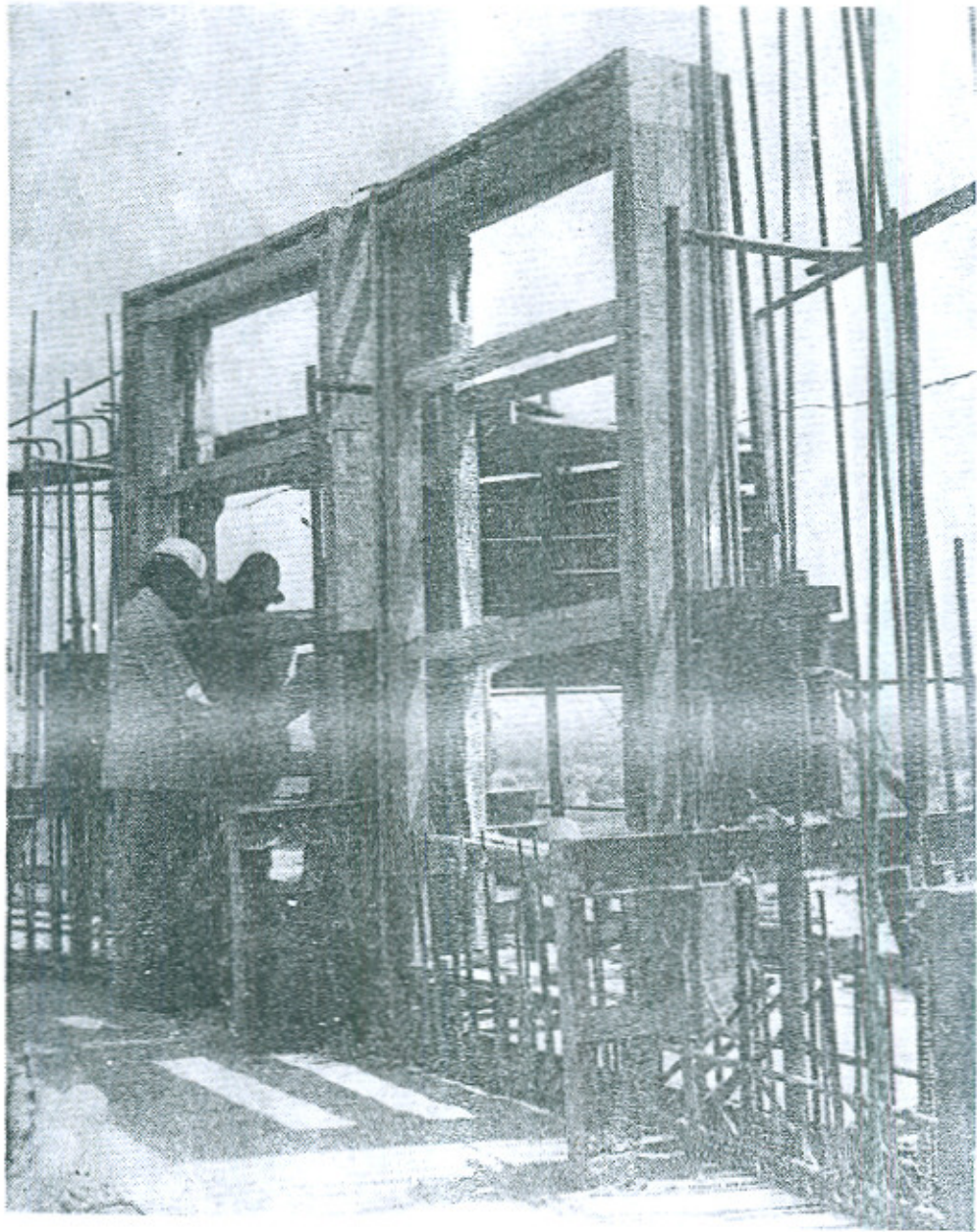


Fig. 19 Arrangement for Opening



Fig. 21. Illumination for Night Work at NP Prilling Tower