

GOVERNMENT OF PUNJAB
IRRIGATION DEPARTMENT



FLOOD FIGHTING PLAN 2025

BHAKKAR CANAL DIVISION BHAKKAR.

BHAKKAR CANAL CIRCLE, BHAKKAR

SARGODHA IRRIGATION ZONE SARGODHA



OFFICE OF THE
CHIEF ENGINEER DRAINAGE & FLOOD ZONE
IRRIGATION DEPARTMENT

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To

The Executive Engineer,
Bhakkar Canal Division,
Bhakkar.

No.DAF/2024/ 602 /25/70,

Dated 07 /04/2025.


SUBJECT: - FLOOD FIGHTING PLANS FOR FLOOD SEASON 2025.

Ref:- Your office letter No.163/84-G, Dated 26.02.2025.

The Flood Fighting Plan 2025 received from your Division under above reference is hereby vetted and returned.

Therefore, it is requested, to circulate the same copies of Flood Fighting Plan 2025, after approved by the competent authority to all stakeholders as well as 04 copies (soft copy of Flood Fighting Plans through E-mail:cednf@yahoo.com) to this office and 01 copy to Director Hydraulic Structure Safety Evaluation Cell situated at Government Engineering Academy Punjab, Thokar Niaz Baig, Lahore.

o/c


DIRECTOR FLOODS/
SECRETARY PUNJAB FLOOD COMMISSION
Drainage & Flood Zone
Irrigation Department Punjab, Lahore.

C.C..

1. The Chief Engineer, Irrigation Sargodha Zone, Sargodha.
2. The Superintending Engineer, Bhakkar Canal Circle, Bhakkar.

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PART-A

CHAPTER-1

SALIENT FEATURE OF THE BHAKKAR CANAL DIVISION BHAKKAR

1.1 LOCATION.

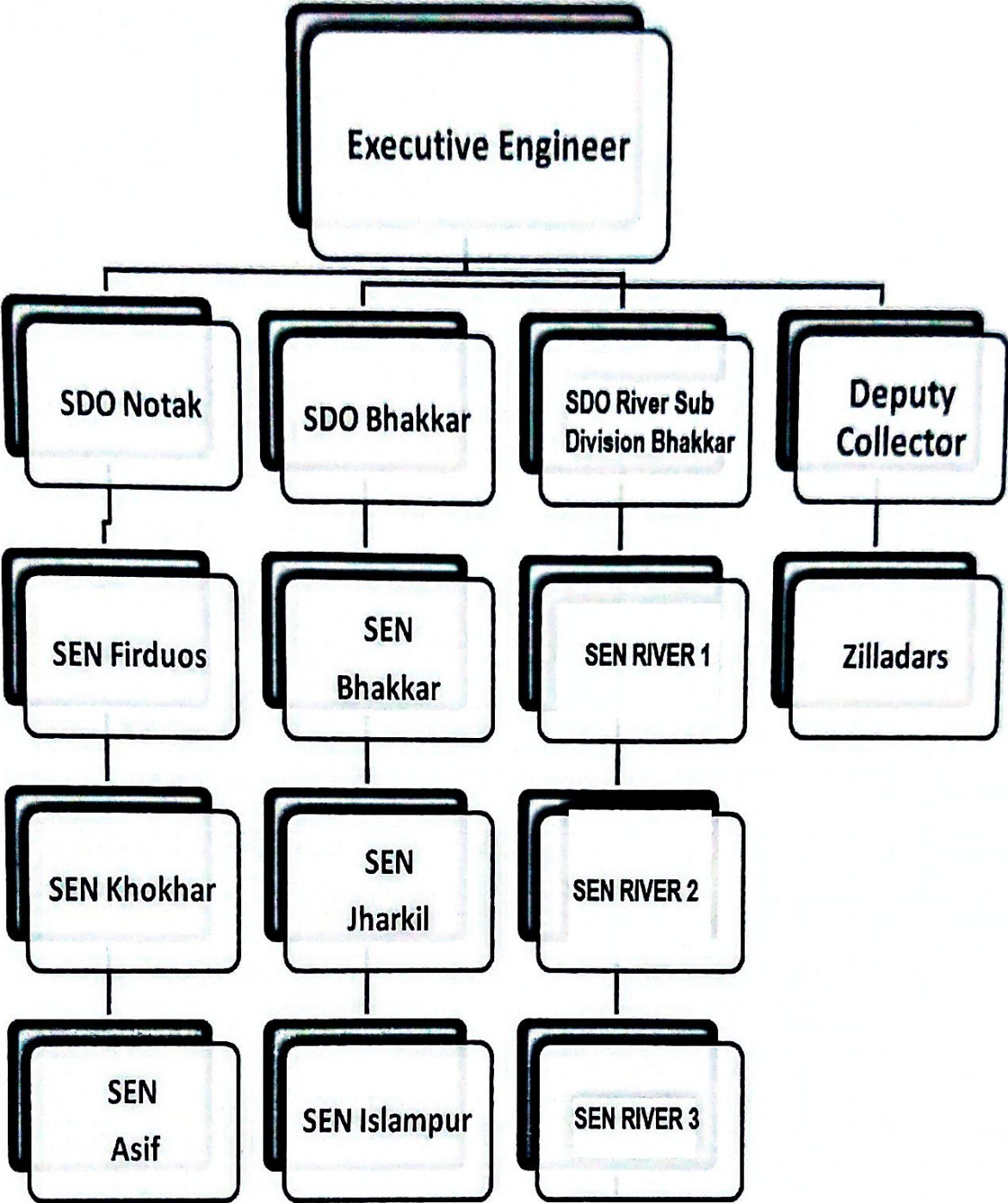
Bhakkar Canal Division is located at District Headquarter of Bhakkar. Divisional Headquarter is at 80 miles Down Stream of Chashma Barrage along left bank of River Indus. The jurisdiction of Bhakkar Canal Division starts from Tehsil Darya Khan of District Bhakkar 45 miles Down Stream Chashma Barrage along left bank of River Indus and upto Tehsil Karor of District Layyah.

1.2 GENERAL DESCRIPTION.

Bhakkar Canal Division comprises of Three Sub Divisions namely Bhakkar, Notak & River Sub Division. All Sub Divisions are located in Canal Colony at Bhakkar City. Executive Engineer Canal Division Bhakkar is overall incharge of the Division. His primary duty is equitable distribution of canal water and safe running of irrigation channels in addition to proper watch and ward of flood structures built for safety of Bhakkar City. The jurisdiction of Bhakkar Canal Division starts from RD 291+000 Thal Canal Main Line Lower and extends up to RD 448+000 with its off taking distributaries and minors. The length of channels is 330.18 Miles. The gross commanded area of Bhakkar Canal Division is 326955 acres. The area of Thal Canal Main Line lower falling in the jurisdiction of Bhakkar Canal Division is spread over in two Districts as under.

Name of District	G.C.A (Acres)	C.C.A (Acres)
Bhakkar	243530	198129
Layyah	83425	68510
Total	326955	266639


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CHAPTER-2

FLOOD PROTECTION AND RIVER TRAINING WORKS

2.1 DESIGN PARAMETERS OF TRAINING WORKS:

S. No	Name of Flood Structures	Length	Mile	Top width	Side Slope		Free board	Condition
				Feet	River side	Country side	Feet	
1	Bhakkar Flood Bund RD 0+000 – 105+000	105000	21	25	3:1	2:1	6	Satisfactory
2	J-Head Spur at RD 5+000 of Bhakkar Flood Protection Bund	3510	0.70	30	3:1	2:1	6	Satisfactory
3	Solid Stone Stud at RD 7+500	210	0.042	15	1:1	1:1	6	Satisfactory
4	Solid Stone Stud at RD 8+600	75	0.015	15	1:1	1:1	6	Satisfactory
5	Solid Stone Stud at RD 9+140	35	0.007	15	1:1	1:1	6	Satisfactory
6	Solid Stone Stud at RD 10+000	60	0.012	20	1:1	1:1	6	Satisfactory
7	J-Head spur No.1 RD 14+700	4263	0.85	25	3:1	2:1	6	Satisfactory
8	J-Head spur No.2 RD 27+175	2843	0.57	25	3:1	2:1	6	Satisfactory
9	J-Head spur No.3 RD 38+550	5000	1.00	25	1:1	1:1	6	Satisfactory
10	Hockey stud at RD 43+500	1312	0.26	15	3:1	2:1	6	Satisfactory
11	J-Head spur No.4 at RD 47+000	4000	0.80	30	3:1	2:1	6	Satisfactory
12	J-Head spur No.5 at RD 52+800	4100	0.82	30	3:1	2:1	6	Satisfactory
13	Inverted hockey stud at RD 56+800	206	0.041	12	1:1	1:1	0	Satisfactory
14	Solid stone stud at RD 57+500	100	0.020	15	1:1	1:1	0	Satisfactory
15	Solid stone stud at RD 58+050	94	0.01	30	3:1	2:1	0	Satisfactory
16	J-Head Spur at RD 58-800 of Bhakkar Flood Protection Bund	2660	0.53	30	3:1	2:1	6	Satisfactory
17	Concavo Convex Guide wall b/w RD 58-59	1450	0.29	15	1:1	1:1	6	Satisfactory
18	Solid stone stud at RD 59+500	200	0.04	12	3:1	2:1	0	Satisfactory
19	Solid Stone inverted Hockey Stud at RD 60+250	418	0.084	12	3:1	2:1	0	Satisfactory
20	Mole Head spur RD 60+700	1060	0.21	30	1:1	1:1	6	Satisfactory.
21	Solid stone stud at RD 62+500	75	0.039	15	1:1	1:1	0	Satisfactory
22	Solid stone stud at RD 63+000	75	0.031	15	1:1	1:1	0	Satisfactory

23	Inverted Hockey stud at RD 63+700	762	0.152	20	3:1	1:1	0	Restoration of apron near to completion.
24	J-Head Spur at RD 70+000 of Bhakkar Flood Protection Bund	5462	1.09	30	3:1	2:1	6	Restoration near to completion.
25	Mole head spur at RD 71+750	1525	0.30	30	3:1	2:1	6	Satisfactory
26	Inverted Hockey Stud at RD 73+000	826	0.165	20	1:1	1:1	0	Under construction
27	Solid Stone Stud at RD 74+250.	60	0.011	20	1:1	1:1	0	Satisfactory
28	Solid Stone Stud at RD 74+500.	60	0.011	20	1:1	1:1	0	Satisfactory
29	Solid Stone Stud at RD 74+800.	60	0.011	20	1:1	1:1	0	Satisfactory
30	Solid Stone Stud at RD 75+000.	60	0.011	20	1:1	1:1	0	Satisfactory
31	Hockey Stud at RD 75+800	350	0.070	25	3:1	2:1	6	Satisfactory
32	Inverted Hockey Stud at RD 77+100	550	0.100	20	1:1	1:1	0	Satisfactory
33	Concavo Convex Guide Wall at RD 105+000 of Bhakkar Flood Bund.	1000	0.20	30	1:2	1:3	6	Satisfactory
34	Concavo Convex Guide Wall in front of Basti Maharan.	1000	0.20	30	1:2	1:3	6	Satisfactory
35	Concavo Convex Guide Wall in front of Basti Cheema.	1000	0.20	30	1:2	1:3	6	Satisfactory
36	Concavo Convex Guide Wall in front of Basti Warah Seeran.	1000	0.20	30	1:2	1:3	6	Satisfactory


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CHAPTER-3

BRIEF HISTORY OF PAST FLOOD EVENTS

Bhakkar Flood Bund was constructed from RD 0+000 – 42+000 during the year 1996-97 to protect low lying Katcha agricultural area, abadies, schools, basic health units and other infrastructures. Bhakkar flood bund was further extended from RD 42+000 – 105+000 with allied structures during the year 2006-07 by development Division Mianwali. After completion of the project Bhakkar Flood Bund from 0+000 – 105+000 along with allied structure was handed over to the Bhakkar Canal Division in June 2012. River Indus D/S Chashma Barrage passed exceptionally high flood in 2010 which passed safely from the jurisdiction of Bhakkar Canal Division Bhakkar.

Bhakkar Flood Bund remained under direct hit of aggressive action of River Indus from 2012 -14 due to which a number of flood protection works were executed during last three years. In order to have a permanent remedy to check the continuous river action and a permanent threat to Bhakkar Flood Bund, model study was conducted to determine the suitable interventions and to eradicate the erosive action of river Indus between RD 0+000 – 76+000, following river training works were proposed by model study.

1. Construction of J-Head Spur at RD 5+000 of Bhakkar flood bund.
2. Construction of J-Head Spur at RD 58+800 of Bhakkar flood bund.
3. Restoration of Existing J-Head Spur, Shank at RD 70+000 of Bhakkar flood bund.

The aforementioned works are in progress under ADP 2014-15 which have been completed. During Flood 2018, it was experienced that maximum discharge of 286554 cusecs passed through Bhakkar Flood Bund and no damage occurred in said reach due to blessing of these under construction structures.

At the instant the reach of River Indus beyond RD 105+000 of Bhakkar Flood Bund were under severe threat and river was penetrating further towards left due to continuous tendency of erosion. Some thickly populated villages namely "**Basti Metala, Basti Manchra & Basti Tarkhani of Tehsil Bhakkar**" had since been gulped by the river and following were under threat "**Bast Moharan, Basti Cheema, Basti Mongar, Basti Warah Seeran, Basti Sohla, Basti Bahar Shah and Basti Rakhwan of Tehsil Bhakkar and Tehsil Karor Lal Essan**". There was every likely hood of their burial if not protected on the dot.

In order to comply with the directions imported by the high-ups detailed precise survey was carried out at site, the depicted on the plan afresh presented to Irrigation Research Institute Lahore for conducting model study on the basis of fresh survey.

The outcomes of model study issued vide Irrigation Research Institute Lahore No. 1213/PRO (H)/836-C/II dated 23.11.2017, reveals that construction of 5 No. Concavo Convex shaped Guide Walls at different locations as depicted in the plan by the Irrigation Research Institute Lahore will certainly fructify in checking, drifting and training the river in the affected vicinity of District Bhakkar and Layyah. Afterwards due to site conditions,

1 No. concavo convex guide wall was deleted.

The following interventions were constructed and their locations are here under:-

- 1) Concavo convex Guide Wall at RD 105+000 of Bhakkar Flood Bund.
- 2) Concavo Convex Guide Wall in front of Basti Maharan.
- 3) Concavo Convex Guide Wall in front of Basti Cheema.
- 4) Concavo Convex Guide Wall in front of Basti Warah Seeran.

In spite of giving alignment of proposed flood bund from RD 105+000 – RD 200+000 along with interventions "it was advised in the said technical report that the River morphology may be monitored after construction of above recommended Guide Walls. It was observed on the model that the River morphology will be improved after construction of Guide Walls. The assessment of change of the river morphology for a period of 4 years may be recorded to ascertain the need of extension of existing Bhakkar Flood Bund. If the river regime of this reach after above assessment attracts the requirement of the extension of the existing Bhakkar Flood Bund, then a fresh model study may be got conducted with the site prevailing conditions for alignment of the proposed extension of Bhakkar Flood Bund along with other training works as Phase-II.

Sequel to above, in order to comply with the directions imported by the high-ups detailed survey was carried out at site, the depicted on the plan afresh presented to Irrigation Research Institute Lahore for conducting model study on the basis of fresh survey. Model study conducted at Research station Nandipur and final outcome of Model study issued vide Final Technical Report No. IRR-1396 dated: 27.02.2024. Survey work on the purposed alignment as per Model Study Final Technical Report No. IRR-1396 is underway and further proceedings will be carried out accordingly. The works proposed by Model Study may be taken up as a permanent engineering solution for safety of abadies in vicinity of District Bhakkar and Layyah.


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CHAPTER-4.

DESIGN DATA, HISTORIC PEAK FLOOD DATA AND PREVIOUS FIVE YEARS FLOOD DATA OF HEAD WORKS / BARRAGES AND OTHER CONTROL POINTS

4.1 FLOOD LIMITS

Since there is no Head` works / Barrage in the jurisdiction of Bhakkar Canal Division. Therefore this Division has to come active with respect to discharge of River Indus downstream Chashma Barrage. The terminology of different kind of flood as low, Medium, High, Very high and exceptionally high will be taken as such in the light of discharge received from downstream Chashma Barrage.

S.No	Site	Low Flood	Medium Flood	High Flood	Very High Flood	Exceptionally High Flood
1	River Indus downstream Chashma Barrage	250000 Cs to 375000 Cs	375000 Cs to 500000 Cs	500000 Cs to 650000 Cs	650000 Cs to 800000 Cs	800000 Cs and above

4.2 TIME LAG OF FLOODS

S.No	Site	Mile	Hours
1	Distance from Attock to Jinnah Barrage Kalabagh	106	48
2	Distance from Jinnah Barrage Kalabagh to Chashma Barrage	41	18
3	Distance from Chashma Barrage to Kallurkot	25	7.30

4.3.HIGHEST FLOODS

YEAR	DATE	DISCHARGE
1976	1976	7,87,000 Cs
1998	17-07-1998	5,02,948 Cs
2005	18-07-2005	5,15,581 Cs
2010	01-08-2010	10,38,873Cs
2013	15-08-2013	5,59,935 Cs
2015	03-08-2015	6,18,626 Cs
2016	06-07-2016	3,74,610 Cs
2017	05-08-2017	4,46,361 Cs
2019	11-08-2019	3,63,783 Cs
2020	03-09-2020	4,91,184 Cs
2021	02.08.2021	3,30,102 Cs
2022	28.08.2022	5,23,937 Cs
2023	25.07.2023	4,00,511 Cs
2024	09.08.2024	4,29,760 Cs


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4.4 PEAK DISCHARGES (Last 10 Years)

YEAR	DATE	DISCHARGE
2015	03-08-2015	6,18,626 Cs
2016	06-07-2016	3,74,610 Cs
2017	05-08-2017	4,46,361 Cs
2018	16-08-2018	2,86,554 Cs
2019	11-08-2019	3,63,783 Cs
2020	03.09.2020	4,91,184 Cs
2021	02.08.2021	3,30,102 Cs
2022	28.08.2022	5,23,937 Cs
2023	25.07.2023	4,00,511 Cs
2024	09.08.2024	4,29,760 Cs


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CHAPTER-5
FLOOD FIGHTING STRATEGY

All precautionary measures will be adopted to cope with any eventuality during flood 2025, Flood fighting strategy would be adopted for the safe passage of flow.

In **low flood**, the temporary watching huts will be established and flood fighting material will be shifted. Watching establishment employed for this purpose will remain busy under the supervision of concerned Sub Engineer.

When river water enters in to **medium stage**, it will start spreading on adjoining area touching toe of Bunds. Then it becomes necessary to be vigilant, watching of Bunds and deploying of machinery will be started to avoid any leakage from bunds. Sub Engineers will shift their camps to site as per duty rosters. The Telegraph office of Bhakkar Canal Division will act as flood information center and flood situation will be conveyed to Civil Administration and flood warning centers. SDO, River Sub Division, Bhakkar will keep the Executive Engineer apprised about latest development regarding flood situation.

When river water enters in **high flood** range and above, the Sub Divisional Officers, River, Bhakkar and Notak shall also shift their camps at vulnerable sites as planned in the duty roaster. Executive Engineer will keep liaison with Civil Administration, Army & Public representatives.


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CHAPTER-6
FLOOD DAMAGES / RESTORATION WORKS
INESCAPABLE WORKS TO BE CARRIED BEFORE FLOOD 2025

S.No	Name of Work	Amount (In Millions)
1	Maintaining Design Parameters of Bhakkar Flood Protection Bund in Reach RD 10+200-10+500.	1.023
2	Restoration of Inverted Hockey Stud at RD 63+700 of Bhakkar Flood Protection Bund.	48.441
3	Restoration of J-Head Spur at RD 70+000 of Bhakkar Flood Protection Bund.	199.983
4	Protection of Bhakkar Flood Protection Bund in Reach RD 73+000-75+000.	64.151
5	Restoration of Hockey Stud at RD 75+800 of Bhakkar Flood Protection Bund.	30.000
	TOTAL:-	343.598

Note.

The work at Sr. No. 2 & 3 are in progress and estimates of remaining works are under the preparation and will be executed after sanction by competent authority and allocation of necessary funds in this behalf.


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CHAPTER-7

FLOOD FIGHTING / WATCHING ARRANGEMENTS

7.1 PRE FLOOD ARRANGEMENTS

Flood season starts from 15th June every year and watching establishment as per detail will be engaged during flood season for watching operation and flood fighting activities on monthly basis from 15-06-2025 to 15-10-2025. However, in case of very high flood or in emergency, strength of watching establishment will be increased as per site condition and requirements as provided in duty roaster.

Sr. No.	Item	Scale
1	Lamps Hurricane	1 per beldar, 1 per mate and 20% extra of total only for the night shift
2	Wicks	9 inch per lamp
3	Chimneys	1 spare for each lamp
4	Burners & caps	1 spare for each lamp
5	Torches – 3 cell	1 for Executive Engineer, 1 for Sub Divisional Officer, 1 for Sub Engineer 1 one spare
6	Cells for Torches	1 full and six spare sets
7	Patromix lamp	At depressions, old breach sites and dangerous sites each lamp with 2 spare chimneys, 2 nozzles, 2 funnels fitted with wire gauze
8	Fuel for lighting fire	To be collected by beldar establishment
9	Kerosine Oil	As per practice 1/3 bottle per lantern per night and one bottle per patromax per night (22 nights per month)
10	Match Boxes	1 match box per month
11	Spirit	1 bottle per patromax per month
12	Funnels	2 No. per watching hut
13	Oil Extractor (Ordy)	2 No. per watching hut
14	Spirit cans	1 per patromax
15	Larmal 50 feet long	50 per watching hut
16	Mallets wooden	5 mallets per watching hut
17	Tranger wire	1 roll of 14 BSW gauge at each bund
18	Gunny bags	100 bags per mile
19	Axes	2 No per mile
20	Kassies with handles	1 for each beldar + 10% (for one shift only)
21	Hammer 2.5 lbs	1 per mile
22	Hammer 10 lb	2 per mile
23	Buckets (12 inch size)	5 No. per mile
24	Sledge hammer 14 lbs	1 per mile
25	Bhan (Cow Dung) in ECbags	20 bags per mile for dangerous portions
26	Sand	Collection of 200 cft. Every mile for dangerous portions
27	Stacks (6-8 feet) long	100 stacks per mile
28	Khajji mats 3'x4'	50 Nos per mile

29	Baskets	1 foot /2 Pilchi baskets per beldar of shift twice a month
30	Sutli	1 lb per 100 bags
31	Needles	4 Nos per beldar huts
32	Kassi Handles	50% of the no. of kassies as spare
33	Munj/Patha/Pees/ Taranger 3 cft capacity of stone.	500 No.s for each structure.
34	Tooth basket	100 Nos each Sub Engineer

Additional Information

Sr.No	Site	Sanction Limit Lac Cft	Available Lac Cft	Balance Required
1	J-Head Spur No.1 at RD 14+700 of Bhakkar Flood Protection Bund	1.50	-	1.50
2	J-Head Spur No.1 at RD 14+700 of Bhakkar Flood Protection Bund	1.50	1.50	-
3	Head Spur No.2 at RD 27+175 of Bhakkar Flood Protection Bund	1.50	1.360	0.140
4	J-Head Spur No.3 at RD 38+550 of Bhakkar Flood Protection Bund	1.50	1.013	0.397
5	J-Head Spur No.4 at RD 47+000 of Bhakkar Flood Protection Bund	1.50	1.03	0.47
6	J-Head Spur No.5 at RD 52+000 of Bhakkar Flood Protection Bund	1.50	1.00	0.50
7	Guide-Head Spur at RD 58+800 of Bhakkar Flood Protection Bund	1.50	-	1.50
8	Solid stone Hockey stud at RD 60+250 of Bhakkar Flood Protection Bund	1.00	-	1.00
9	Mole Head Spur No.6 at RD 60+700 of Bhakkar Flood Protection Bund	1.50	0.909	0.591
10	J-Head Spur at RD 70+000 of Bhakkar Flood Protection Bund	1.50	-	1.50
11	J-Head Spur at RD 71+750 of Bhakkar Flood Protection Bund	1.50	1.015	0.485
12	Hockey spur at RD 75+800 of Bhakkar Flood Protection Bund	1.50	0.295	1.205
	TOTAL	17.50	8.10	9.40

Note:-

Minimum required quantity of reserve stock will be procured after allocation of necessary funds.


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7.2 WATCHING ESTABLISHMENT

BHAKKAR CANAL DIVISION BHAKKAR

Statement showing establishment (in Addition to the Regular Establishment) During Floods

River Sub Division Bhakkar

Name of flood Bund with length in miles

Sr.No	Period/scale of Establishment	Low Flood		Medium Flood		High Flood		Very High Flood		Exceptionally High Flood	
		Beldar	Mate	Beldar	Mate	Beldar	Mate	Beldar	Mate	Beldar	Mate
1	Bhakkar Flood Bund at RD 0+105 (21 Mile)	14	-	84	-	252	-	378	-	504	-
2	J-Head spur at RD 5+000	1	-	6	-	12	-	18	-	24	-
3	Solid Stone Stud at RD 7+500	-	-	-	-	-	-	-	-	-	-
4	Solid Stone Stud at RD 8+600	-	-	-	-	-	-	-	-	-	-
5	Solid Stone Stud at RD 9+140	-	-	-	-	-	-	-	-	-	-
6	Solid Stone Stud at RD 10+000	-	-	-	-	-	-	-	-	-	-
7	J-Head spur at RD 14+700	1	-	3	-	12	-	18	-	24	-
8	J-Head spur at RD 27+175	1	-	4	-	12	-	18	-	24	-
9	J-Head spur at RD 38+550	1	-	5	-	12	-	18	-	24	-
10	Hockey Stud at RD 43+500	1	-	6	-	12	-	18	-	24	-
11	J-Head spur at RD 47+000	1	-	6	-	12	-	18	-	24	-
12	J-Head spur at RD 52+800	1	-	6	-	12	-	18	-	24	-
13	Hockey Stud at RD 56+800	-	-	-	-	-	-	-	-	-	-
14	Solid Stone inverted Hockey Stud at RD 57+500	1	-	6	-	12	-	18	-	24	-
15	Solid Stone Stud at RD 58+050	-	-	-	-	-	-	-	-	-	-
16	Concavo Convex Guide wall b/w RD 58-59 (0.10Mile)	1	-	3	-	12	-	18	-	24	-
17	Guide-Head spur at RD 58+800	1	-	6	-	12	-	18	-	24	-
18	Solid Stone Stud at RD 59+500	-	-	-	-	-	-	-	-	-	-
19	Solid Stone Inverted Hockey Stud at RD 60+250	-	-	-	-	-	-	-	-	-	-
20	Mole Head spur RD 60+700 (0.21Mile)	1	-	3	-	12	-	18	-	24	-

21	Solid Stone Stud at RD 62+500	-	-	-	-	-	-	-	-	-	-
22	Solid Stone Stud at RD 63+000	-	-	-	-	-	-	-	-	-	-
23	Inverted Hockey Stud at RD 63+700	1	-	3	-	12	-	18	-	24	-
24	J-Head spur at RD 70+000	1	-	6	-	12	-	18	-	24	-
25	Mole Head spur at RD 71+750	1	-	3	-	12	-	18	-	24	-
26	Inverted Hockey Stud at RD 73+000	1	-	3	-	12	-	18	-	24	-
27	Solid Stone Stud at RD 74+250	-	-	-	-	-	-	-	-	-	-
28	Solid Stone Stud at RD 74+500	-	-	-	-	-	-	-	-	-	-
29	Solid Stone Stud at RD 74+750	-	-	-	-	-	-	-	-	-	-
30	Solid Stone Stud at RD 75+000	-	-	-	-	-	-	-	-	-	-
31	Hockey Stud at RD 75+800 (0.070Mile)	1	-	3	-	12	-	18	-	24	-
32	Inverted Hockey Stud at RD 77+100 (0.070Mile)	1	-	3	-	12	-	18	-	24	-
33	Concavo Convex Guide wall at RD 105+000 (0.20 Mile)	1	-	3	-	12	-	18	-	24	-
34	Concavo Convex Guide wall at Basti Maharan (0.20 Mile)	1	-	3	-	12	-	18	-	24	-
35	Concavo Convex Guide wall at Basti Cheema (0.20 Mile)	1	-	3	-	12	-	18	-	24	-
36	Concavo Convex Guide wall at Basti Wara Sechran (0.20 Mile)	1	-	3	-	12	-	18	-	24	-

Note:

- One No. Chowkidar per watching hut from 1-07-2025 to 15-10-2025 shall be employed.
- In case of extreme emergency due to river action and side erosion due to parallel flow, the Executive Engineer should be authorized to arrange flood / watching material upto any extent in consultation with Superintending Engineer.
- Payment for labour subject to verification by TPM .
- No extra labour will be employed.



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7:3 ARRANGEMENTS AT SENSITIVE SITES.

In case of emergency at Sensitive sites, the arrangements for the duty roaster are already attached on page No.20.-27



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WATCHING MATERIAL

Watching material will be provided in ample quantity as the experience shows that flood material's deployment is very necessary. The particular care would be taken to ensure that there is adequate quantity of the required material shown as to be readily available everywhere particularly at dangerous site.

Sr#	Description	Unit	Quantity Required	Quantity Available	Quantity Net (Balance)	Remarks
1	Kassies with handle	No.	528	36	492	Flood fighting material will be purchase as per necessity and subject to approval of competent authority.
2	Torches	No.	35	12	23	
3	Cell for Torches	No.	500	0	500	
4	Shouldari double fly	No.	4	4	0	
5	Generator 2.5 KV (Mitsubishi) China	No.	3	1	2	
6	Axes	No.	70	36	34	
7	Umbrella.	No.	18	18	0	
8	Hammer Wooden	No.	50	14	36	
9	Patha Ban	No.	504	35	469	
10	Life Jacket	No.	14	6	8	
11	PVC insulated twin core Copper conductor cable 7/0.036	Meter	300	100	200	
12	Electric bulb 200 watt.	No.	70	25	45	
13	Toot baskets.	No.	200	00	200	
14	Diesel.	Ltr	2100	0	2100	
15	Gunny bags.	No.	2100	000	2100	
16	Chairs.	No.	42	18	24	
17	Table.	No.	11	3	8	
18	Munj / patha tranger	No.	12500	0	12500	
19	Steel Charpoy	No.	9	3	6	
20	Teak Wood Board	No.	7	3	4	
21	Brass Holder	No.	32	12	20	
22	Switch Open Type	No.	14	10	4	

Note: Full quantum of material will be purchased before flood season on receipt of funds.

7.5 ARRANGEMENT FOR SOUNDING AND PROBING

The arrangement for sounding and probing will be taken up with the boat.

7.6 LIGHTING ARRANGEMENT

Generator along with all accessories i.e. electric insulated conductor cable and bulb etc will be kept available at site.

7.7 RATION ARRANGEMENT

Ration will be arranged by the local agencies and through NGO's etc.

7.8 P.O.L ARRANGEMENT FOR VEHICLE.

The arrangements of P.O.L will be made as per site requirement.



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7.9 TRANSPORTATION

Transportation arrangements will be made with the help of Civil Administration.

7.10 LAW AND ORDER

Situation of Law & Order will be controlled with the help of law enforcing agencies, i.e. Police

7.11 MEDICAL ARRANGEMENT FOR LABOUR

Medical facilities will be provided with the help of Health Department.

7.12 LIAISON WITH OTHER DEPARTMENT

The Executive Engineer Bhakkar will keep liaison with Civil Administration, Police, Health and Civil Defense Department and fully apprise the other Departments about flood situation.

7.13 ROLE OF THE ARMY

Pak Army will play his role in evacuating the Flood affected community, Livestock, Armed Forces will also help in controlling the law and order situation in case of emergency.

7.14 DUTIES OF TELEPHONE ATTENDANT

The telephone attendant will remain present 24 hours turn wise. They will receive gauges from all related stations and pass on to concerned quarter for necessary action.

Sr. No	Name of officials	Time of Duties	
		From	To
1	Muhammad Javed Signaler Cell No. 0344-7988130 Muhammad Awais Naib Qasid Cell No 0333-8040556	6:00 AM	02:00 PM
2	Jamshed Iqbal Signaler Cell No 0345-7642139 Mohsin Shah T.A Cell No 0344-7642465	02:00 PM	10:00 PM
3	Asim Niwaz Signaler Cell No. 0307-4303639 Muhammad Iqbal Naib Qasid Cell No. 0343-1747420	10:00 PM	06:00 AM

7.15 WIRELESS ARRANGEMENTS

Wireless set will be installed in the vehicles of the Executive Engineer Bhakkar, Sub Divisional officer River, Bhakkar flood emergency center of Canal division Bhakkar with the help of police Department.


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CHAPTER-8

DETAIL OF ENCROACHMENT

The flood bunds and spurs are constructed to train the river and to ensure safe passage of the flood water. During flood season, inhabitants of river area evacuate their houses and take shelter on the flood bunds along with their animals. However no encroachments exist on the river training works / Flood bunds in Bhakkar Division.

Ordinary Encroachment

Total Encroachments	Removed	Action To Be Taken
Nil	Nil	Nil



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CHAPTER -9

DUTY ROASTER / FLOOD FIGHTING PROGRAM.

Phase-I (Pre Flood Period)

This phase covers the pre flood period starting from start of the flood season upto the time the flood water raises up to 1.0 foot above general Natural Surface Level (NSL) along the flood bunds.

WATCHING:

Flood watching establishment will be arranged through Government contractor on hire & fire basis according to flood scales / stages and other essential needs at site.

Stage	Strength
Water level is 1 feet above NSL or below along the flood bund	1 watchman per mile per shift in two shifts during 24 hours on Bhakkar flood bund.
Water level is more than 1 foot above NSL along the flood bund	1 watchman per mile per shift in three shifts during 24 hours on Bhakkar flood bunds

During this phase concerned Sub Divisional officer of the bunds and respective Sub Engineers of the sections of the bunds will be the controlling officers under the overall supervision of the Executive Engineer, Bhakkar Canal Division Bhakkar.

Phase-II (Low Flood from 250000-375000 Cs.

This phase starts when the discharge downstream Chashma barrage is between 250000 Cs to 375000 Cs. The detail of actions to be taken during this phase is as follows.

Activity	Action
Shifting of watching and necessary flood material to watching huts	Respective Sub Engineers.

Stage	Strength
The discharge ranges between 2.5 to 3.75 lac cusecs	1 person per mile per shift in three shifts during 24 hours on Bhakkar flood bund. 1 Chowkidar per watching hut for round the clock duty till the time watching material is taken back from the watching huts after recession of the flood to a level 1 foot above NSL.


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Supervisory Staff

1	Bhakkar Flood Bund RD 0+000 – 58+000	Incharge SDO River, SEN Bhakkar.
2	Solid Stone Stud at RD 7+500	//
3	Solid Stone Stud at RD 8+600	//
4	Solid Stone Stud at RD 9+140	//
5	Solid Stone Stud at RD 10+000	//
6	J-Head spur No.1 RD 14+700	//
7	J-Head spur No.2 RD 27+175	//
8	J-Head spur No.3 RD 38+550	//
9	Hockey stud at RD 43+500	//
10	J-Head spur RD 47+000	//
11	J-Head spur No.5 at RD 52+800	//
12	Solid stone inverted hockey stud at RD 57+500	//
13	Hockey stud at RD 56+800	//
	Bhakkar Flood Bund RD 58+000-105+000	//
14	Solid stone stud at RD 58+050	//
15	Concavo Convex Guide wall b/w RD 58-59	//
16	Solid stone stud at RD 59+500	//
17	Solid Stone inverted Hockey Stud at RD 60+250	//
18	Mole Head spur RD 60+700	//
19	Inverted Hockey stud at RD 63+700	//
20	Mole head spur at RD 71+750	//
21	Hockey Stud at RD 75+800	//
22	Hockey Stud at RD 77+100	//
23	J-Head spur at RD 05+000 of Bhakkar Flood Bund	Incharge SDO River, SEN Bhakkar
24	J-Head spur at RD 58+800 of Bhakkar Flood Bund	//
25	J-Head spur at RD 70+000 of Bhakkar Flood Bund	Incharge SDO River, SEN ISP.
26	Hockey Stud at RD 73+000 of Bhakkar Flood Bund	//
	GUIDE WALLS	
1	Concavo Convex Guide Wall at RD 105+000 of Bhakkar Flood Bund	Incharge SDO River, SEN River.
2	Concavo Convex Guide Wall in front of Basti Maharan	Incharge SDO River, SEN River.
3	Concavo Convex Guide Wall in front of Basti Cheema	Incharge SDO River SEN River.
4	Concavo Convex Guide Wall in front of Basti Warah Seeran	Incharge SDO River SEN River.

Phase-III (Medium Flood From 375000 - 500000 Cs.

This phase starts when the discharge downstream Chashma crosses to flood limits 375000 - 500000

Cs. The detail of the action to be taken during this phase are as follows :-

Stage	Strength
The discharge ranges between 3.75 to 5.0 Cs.	2 persons per mile per shift in three shifts during 24 hours on Bhakkar flood bund. 1 Chowkidar per watching hut for round the clock duty till the time watching material is taken back from the watching huts after recession of the flood to a level 1 foot above NSL.


XENBKR

Supervisory Staff

S.No	Name of Flood Structures	Duty of Officers / Officials
1	Bhakkar Flood Bund RD 0+000 – 58+000	Incharge SDO River, SEN Bhakkar.
2	J-Head spur at RD 05+000 of Bhakkar Flood Bund	//
3	Solid Stone Stud at RD 7+500	//
4	Solid Stone Stud at RD 8+600	//
5	Solid Stone Stud at RD 9+140	//
6	Solid Stone Stud at RD 10+000	//
7	J-Head spur No.1 RD 14+700	//
8	J-Head spur No.2 RD 27+175	//
9	J-Head spur No.3 RD 38+550	//
10	Hockey stud at RD 43+500	//
11	J-Head spur RD 47+000	//
12	J-Head spur No.5 at RD 52+800	//
13	Solid stone inverted hockey stud at RD 57+500	//
14	Hockey stud at RD 56+800	//
	Bhakkar Flood Bund RD 58+000-105+000	//
15	Solid stone stud at RD 58+050	//
16	J J-Head spur at RD 58+800 of Bhakkar Flood Bund	//
17	Concavo Convex Guide wall b/w RD 58-59	//
18	Solid stone stud at RD 59+500	//
19	Solid Stone inverted Hockey Stud at RD 60+250	//
20	Mole Head spur RD 60+700 of Bhakkar Flood Bund	//
21	Inverted Hockey stud at RD 63+700	//
22	J-Head spur at RD 70+000 of Bhakkar Flood Bund	//
23	Mole head spur at RD 71+750	//
24	Hockey Stud at RD 73+000 of Bhakkar Flood Bund	//
25	Hockey Stud at RD 75+800	//
26	Hockey Stud at RD 77+100	//
	GUIDE WALLS	
1	Concavo Convex Guide Wall at RD 105+000 of Bhakkar Flood Bund	Incharge SDO River, SEN Khokhar.
2	Concavo Convex Guide Wall in front of Basti Maharan	Incharge SDO River, SEN Bkr&ISP
3	Concavo Convex Guide Wall in front of Basti Cheema	Incharge SDO River, SEN Bkr&ISP,
4	Concavo Convex Guide Wall in front of Basti Warah Seeran	Incharge SDO River, SEN Asif

This duty roster during this phase of the officers/officials is tabulated below. The officials under the overall control of the Sub Divisional Officers concerned will perform the duties.

Phase-IV (High Flood From 500000-650000 Cs.

This phase starts when the discharge downstream Chashma crosses to flood limits 500000 Cs to 650000 Cs. The detail of the action to be taken during this phase is as follows:-

Stage	Strength
The discharge ranges between 5.0 to 6.5 Cs.	4 persons per mile per shift in three shifts during 24 hours on Bhakkar flood bund. 1 Chowkidar per watching hut for round the clock duty till the time watching material is taken back from the watching huts after recession of the flood to a level 1 foot above NSL.

Breach Closing Squad

When the discharge will exceed 4.50 Lac cusecs, the mobile units consisting of following items are to be raised. It will be ensured that pick up and tractor trolly are in proper working condition.

Stack bullies 16 foot long	=	140 No.
Killas	=	200 No.
Munj Ban Course	=	140 Kg
Showels	=	50 No.
Gunny bags	=	700 No.
Sutli	=	3 Kg
Needles	=	28 No.
Baskets	=	350 No.

Bhakkar Sub Division, a unit will be deployed at Bhakkar Flood Bund.

A gang of 10 persons and a mate will move along with the unit at a moment notice. At the same time the Army Authorities will also be requested to provide manpower for closing leakage/breach.

Supervisory Staff

This duty roster during this phase of the officers/officials is tabulated below. The officials under the overall control of the Sub Divisional Officers concerned will perform the duties.

S. No	Name of Flood Structures	Duty of Officers / Officials
1	Bhakkar Flood Bund RD 0+000 – 42+000	Incharge SDO River, SEN Bhakkar.
2	J-Head spur at RD 05+000 of Bhakkar Flood Bund	//
3	Solid Stone Stud at RD 7+500	//
4	Solid Stone Stud at RD 8+600	//
5	Solid Stone Stud at RD 9+140	//
6	Solid Stone Stud at RD 10+000	//
7	J-Head spur No.1 RD 14+700	//
8	J-Head spur No.2 RD 27+175	//
9	J-Head spur No.3 RD 38+550	//
	Bhakkar Flood Bund RD 43+000 – 76+000	Incharge SDO River, SEN Islampur.
10	Hockey stud at RD 43+500	//
11	J-Head spur RD 47+000	//
12	J-Head spur No.5 at RD 52+800	//
13	Solid stone inverted hockey stud at RD 57+500	//
14	Hockey stud at RD 56+800	//
15	Solid stone stud at RD 58+050	//
16	J J-Head spur at RD 58+800 of Bhakkar Flood Bund	//
17	Concavo Convex Guide wall b/w RD 58-59	//

18	Solid stone stud at RD 59+500	//
19	Solid Stone inverted Hockey Stud at RD 60+250	//
20	Mole Head spur RD 60+700	//
21	Inverted Hockey stud at RD 63+700	//
22	J-Head spur at RD 70+000 of Bhakkar Flood Bund	//
23	Mole head spur at RD 71+750	//
24	Hockey Stud at RD 73+000 of Bhakkar Flood Bund	//
25	Hockey Stud at RD 75+800	//
26	Hockey Stud at RD 77+100	//
	GUIDE WALLS	
1	Concavo Convex Guide Wall at RD 105+000 of Bhakkar Flood Bund	Incharge SDO River, SEN Khokhar.
2	Concavo Convex Guide Wall in front of Basti Maharan	Incharge SDO River, SEN Bkr & ISP
3	Concavo Convex Guide Wall in front of Basti Cheema	Incharge SDO River, SEN Bkr & ISP
4	Concavo Convex Guide Wall in front of Basti Warah Seeran	Incharge SDO River, SEN Asif

Phase-V (Very High Flood From. 650000 - 800000 Cs.

This phase starts when the discharge at the River Indus is in very high flood stage i.e. between 6.5 to 8.0 Lac cusecs. During this phase, special attention will be given to watch most vulnerable reaches of the bunds. Concerned officer In charge is responsible for proper up keeping of their reaches that these points. The details of the actions to be taken during this phase are as follows:-

Stage	Strength
The discharge ranges between 5.0 to 6.50 Cs.	8 persons per mile per shift in three shifts during 24 hours on Bhakkar flood bund. 1 Chowkidar per watching hut for round the clock duty till the time watching material is taken back from the watching huts after recession of the flood to a level 1 foot above NSL.

Supervisory Staff

This duty roster during this phase of the officers/officials is tabulated below. The officials Under the Overall control of the Sub Divisional Officers concerned will perform the duties.

S.No	Name of Flood Structures	Duty of Officers / Officials
1	Bhakkar Flood Bund RD 0+000 – 42+000	Incharge SDO River, SEN Bhakkar,
2	J-Head spur at RD 05+000 of Bhakkar Flood Bund	
3	Solid Stone Stud at RD 7+500	//
4	Solid Stone Stud at RD 8+600	//
5	Solid Stone Stud at RD 9+140	//
6	Solid Stone Stud at RD 10+000	//
7	J-Head spur No.1 RD 14+700	//
8	J-Head spur No.2 RD 27+175	//

9	J-Head spur No.3 RD 38+550	//
	Bhakkar Flood Bund RD 43+000 – 76+000	Incharge SDO River, SEN ISP.
10	Hockey stud at RD 43+500	//
11	J-Head spur RD 47+000	//
12	J-Head spur No.5 at RD 52+800	//
13	Solid stone inverted hockey stud at RD 57+500	//
14	Hockey stud at RD 56+800	//
15	Solid stone stud at RD 58+050	//
16	J-Head spur at RD 58+800 of Bhakkar Flood Bund	//
17	Concavo Convex Guide wall b/w RD 58-59	//
18	Solid stone stud at RD 59+500	//
19	Solid Stone inverted Hockey Stud at RD 60+250	//
20	Mole Head spur RD 60+700	//
21	Inverted Hockey stud at RD 63+700	//
22	J-Head spur at RD 70+000 of Bhakkar Flood Bund	//
23	Mole head spur at RD 71+750	//
24	Hockey Stud at RD 73+000 of Bhakkar Flood Bund	//
25	Hockey Stud at RD 75+800	//
26	Hockey Stud at RD 77+100	//
	GUIDE WALLS	
1	Concavo Convex Guide Wall at RD 105+000 of Bhakkar Flood Bund	Incharge SDO River, SEN Khokhar.
2	Concavo Convex Guide Wall in front of Basti Maharan	Incharge SDO River, SEN ISP
3	Concavo Convex Guide Wall in front of Basti Cheema	Incharge SDO River, SEN Bkr & ISP
4	Concavo Convex Guide Wall in front of Basti Warah Seeran	Incharge SDO River ,SEN Asif

Phase-VI (Exceptionally High Flood i.e. more than 800000 Cs.

This phase commence when the discharge downstream Chashma Barrage crosses the very High Flood limit of 8.0 Lac Cs. The detail of actions to be taken during the phase is as follows:-

Activity	Action By
Deputy Commissioner is to be informed to make arrangement for the evacuation of the marooned public within Bhakkar Flood Bund	Executive Engineer
Stage	Strength
The discharge ranges between 8.0 Lac Cs and above.	Six Watchmen per miles per shift in three shifts during 24 Hrs on Main embankments and other structures. 1 Chowkidar per watching hut for round the clock duty till the time watching material is taken back from the watching huts after recession of the flood to a level 1 Foot above NSL.


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Supervisory Staff

This duty roster during this phase of the officers/officials is tabulated below. The officials under the overall control of the Sub Divisional Officers concerned will perform the duties.

S.No	Name of Flood Structures	Duty of Officers / Officials
1	Bhakkar Flood Bund RD 0+000 – 42+000	Incharge SDO River, SEN Bhakkar,
2	J-Head spur at RD 05+000 of Bhakkar Flood Bund	
3	Solid Stone Stud at RD 7+500	//
4	Solid Stone Stud at RD 8+600	//
5	Solid Stone Stud at RD 9+140	//
6	Solid Stone Stud at RD 10+000	//
7	J-Head spur No.1 RD 14+700	//
8	J-Head spur No.2 RD 27+175	//
9	J-Head spur No.3 RD 38+550	//
	Bhakkar Flood Bund RD 43+000 – 76+000	Incharge SDO River, SEN ISP
10	Hockey stud at RD 43+500	//
11	J-Head spur RD 47+000	//
12	J-Head spur No.5 at RD 52+800	//
13	Solid stone inverted hockey stud at RD 57+500	//
14	Hockey stud at RD 56+800	//
15	Solid stone stud at RD 58+050	//
16	J J-Head spur at RD 58+800 of Bhakkar Flood Bund	//
17	Concavo Convex Guide wall b/w RD 58-59	//
18	Solid stone stud at RD 59+500	//
19	Solid Stone inverted Hockey Stud at RD 60+250	//
20	Mole Head spur RD 60+700	//
21	Inverted Hockey stud at RD 63+700	//
22	J-Head spur at RD 70+000 of Bhakkar Flood Bund	//
23	Mole head spur at RD 71+750	//
24	Hockey Stud at RD 73+000 of Bhakkar Flood Bund	//
25	Hockey Stud at RD 75+800	//
26	Hockey Stud at RD 77+100	//
	GUIDE WALLS	
1	Concavo Convex Guide Wall at RD 105+000 of Bhakkar Flood Bund	Incharge SDO River, SEN ISP.
2	Concavo Convex Guide Wall in front of Basti Maharan	Incharge SDO River, SEN ISP
3	Concavo Convex Guide Wall in front of Basti Cheema	Incharge SDO River, SEN River-3
4	Concavo Convex Guide Wall in front of Basti Warah Seeran	Incharge SDO River, SEN River-3

NOTE:-

1. All the Sub Engineers would perform their duties assigned above along with their establishment with necessary T & P.

2. Executive Engineers Bhakkar would be the overall In charge of the whole operation during very high and exceptionally high flood.
3. However the Sub Engineers with their establishment would be called any time, anywhere and at any point as desired and required by the SDO' Incharge under intimation to Executive Engineer Bhakkar the In charge of whole operation.

CHAPTER-10 EMERGENCY TELEPHONE NUMBERS

S. No	Designation	Office	Resd / Mobile
1	Secretary Irrigation Department Lahore.	042-99212117 042-99212118	042-99200954
2	Chief Engineer Drainage & Flood Lahore	042-9923551	042-35294102 0321-8969386
3	Director Flood Lahore	042-9923552	0323-4864378
4	Deputy Director Flood Lahore	042-35880700	042-99230282 0321-9485218
5	Flood Warning Center Lahore.	042-99205371	042-99205157
6	Chief Engineer Irrigation Sargodha Zone	048-9230445	0300-9608339 0322-4486727
7	Executive Engineer Operation Sargodha Zone	048-9230446	048-3740050 0345-5165764
8	Superintending Engineer Bhakkar Canal Circle, Bhakkar.	0453921316	0333-5901500
9	Executive Engineer Canal Division Bhakkar	0453-921016	0306-1577172
10	Sub Divisional Officer, River.	0453-921016	0300-6054595
11	Sub Engineer, Bhakkar.	0333-8301002	0333-8301002
12	Sub Engineer, Firdous.	0302-3303584	0302-3303584
13	Sub Engineer, Jharkil.	0318-7128551	0318-7128551
14	Chashma Barrage Exchange at Chashma Colony Kundian	0459-241289 0459-242858	0331-7233027

DISTRICT ADMINISTRATION BHAKKAR.

1	Deputy Commissioner Bhakkar	0453-921188 0453-921288	0453-921388 0304-0920077
2	Additional Commissioner Revenue Bhakkar	0453-921396	0313-5406772
3	Additional Deputy Commissioner General Bhakkar	0453-921307 0453-921312	0300-9148222
4	District Police Officer Bhakkar	0453-921350 0453-921351	0321-8888330
5	Assistant Commissioner Bhakkar	0453-921299	0310-8435465
6	Bhakkar Flood Control Room	0453-921082	0453-921082


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CHAPTER-11

STANDARD OPERATION PROCEDURE (SOP) FOR BREACHING SECTIONS

- 11.1 **HISTORY OF THE BREACHING SECTION.**
There is no breaching section in the jurisdiction of Canal Division Bhakkar.
- 11.2 **LOCATION, DESIGN, QUANTITY AND VARIETY OF THE EXPLOSIVE REQUIRED FOR DETONATION.**
Not Applicable.
- 11.3 **ARRANGEMENT OF EXPLOSIVES AND SECURITY OF EXPLOSIVE STORES.**
Not Applicable.
- 11.4 **LIST OF THE SECURITY STAFF ALONGWITH DETAIL OF THEIR TRAINING ETC.**
Not Applicable.
- 11.5 **DETAIL OF MECHANICAL MEANS AS A STANDBY ARRANGEMENTS IN CASE OF DETONATION FAILURE**
Not Applicable.
- 11.6 **DUTY ROSTER IN CASE OF CRITICAL SITUATION.**
Attached in Page.20 -.27
- 11.7 **BREACHING COMMITTEE WITH THEIR ACTION PLAN.**
Not Applicable.
- 11.8 **LIST OF THE VILLAGES LIKELY TO BE INUNDATED IN CASE OF BREACH**
Not Applicable.
- 11.9 **ANNOUNCEMENT AND DETAIL OF EVACUATION ARRANGEMENTS.**
Not Applicable.
- 11.10 **DETAILS OF COORDINATION WITH CIVIL / ARMY AUTHORITIES.**
Not Applicable.
- 11.11 **PARALLEL COMMUNICATION ARRANGEMENT.**
Not Applicable.
- 11.12 **INDEX PLAN.**
Attached



Executive Engineer
Bhakkar Canal Division,
Bhakkar

Superintending Engineer
Bhakkar Canal Circle
Bhakkar

Chief Engineer,
Sargodha Irrigation Zone,
Sargodha.

CHAPTER-12

VULNERABLE SITES ON FLOOD BUND / STRUCTURES

12.1 APPREHENDED BREACHES IN FLOOD BUNDS / STRUCTURES

Vulnerable sites are given as below.

S. No	Name of Flood Bund	Reach		Camp Location
		From RD	To RD	RD
1	Bhakkar Flood Protection Bund	60+000	70+000	58+050
2	Bhakkar Flood Protection Bund	73+000	74+000	70+500

12.2 Operation of breaching sections.

There is no such case in Bhakkar Canal Division Bhakkar.

12.3 Breaches due to rising of flood water, deterioration of flood bund.

There is no such case in Bhakkar Canal Division Bhakkar.


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CHAPTER-13

EMERGENCY CONTINGENCY PLAN FOR VULNERABLE SITES LISTED ABOVE

PLAN NO. 1

Bhakkar Flood Protection Bund RD 60+000 – 70+000

- 13.1 PLAN SHOWING ROUTE OF FLOOD WATER COMING OUT OF THE BREACH SUPPORTED WITH LEVELS.**

Plan Attached



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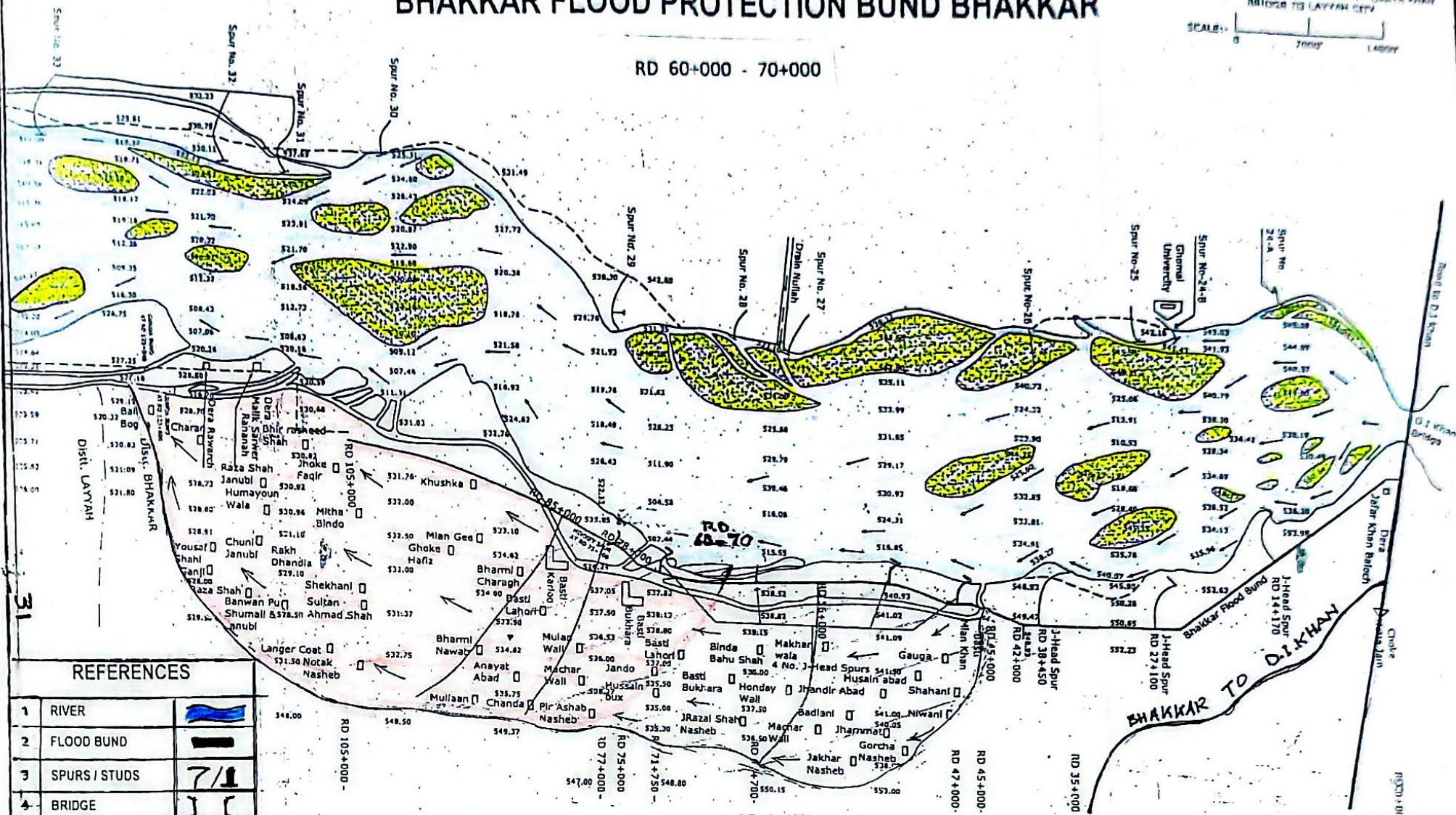
PLAN SHOWING VULNERABLE SITES OF BHAKKAR FLOOD PROTECTION BUND BHAKKAR

RD 60+000 - 70+000

PART PLAN

MODEL STUDY NO. 188-199 DATED 1988
OF RIVER INDUS FROM D.I. KHAN - DADPA KHAN
ADJACENT TO LAYYAH CITY

SCALE: 0 7000 14000
7000 14000



REFERENCES

1	RIVER	
2	FLOOD BUND	
3	SPURS / STUDS	
4	BRIDGE	
5	METTALLED ROAD	
6	VILLAGES	
7	BELLA	

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DETAIL OF VILLAGES ABADIES LIKELY TO BE EFFECTED.

S. No	Name of Villages Abadies
1	Bait Bogha
2	Basti Bachri
3	Basti Bokhara
4	Basti Jando
5	Basti Lahori
6	Basti Main Khan
7	Bawan pur Shumali
8	Bharmi Charagh
9	Bharmi Nawab
10	Binda Baho Shah
11	Chanda
12	Charar
13	Chuni Janubi
14	Ganji
15	Honday wali
16	Humayaoun wala
17	Hussain Abad
18	Hussain Bakhsh
19	Inayat Abad
20	Jhammat
21	Jhok Hafiz
22	Jhoke Tibba
23	Katchi Shahani
24	Khushka
25	Langer Kot
26	Machar wali
27	Mian
28	Mithu Bindo
29	Mulan wali
30	Notak Nasheb
31	Peer Ashab Nasheb
32	Rakh Dhandla
33	Rawana
34	Razai Shah Janobi
35	Sawar Nawan
36	Sultan Ahmad Shah
37	Yousaf Shah



XEN BKR

13.3 STRATEGY AND ACTION TO BE TAKEN.

The arrangements will be made to watch Flood Bund on round the clock basis. The Incharge Sub Engineer and Sub Divisional Officer will look after all the watching activities. They will keep liaison with the Civil Administration Public Representative, Police Department, Army authorities and Executive Engineer Bhakkar.

In case of any emergency, the proclamation on loudspeakers will be arranged with the coordination of Civil Administration for evacuation of abadies inside the flood plain. Flood fighting activities will be carried out with the permission and guidance of Executive Engineer Bhakkar. The establishment will be deployed as per site requirements. The Executive Engineer Bhakkar will make the arrangement of hiring the machinery on emergent basis and also request will be made to the Agricultural Engineering Department for the provision of the Departmental machinery i.e. dozers etc. The flood water coming out of breach site will affect the Abadies of Mouze Dajal, Katchi Shahani, Jhok Tibba and other infrastructures like schools, basic health units and road network etc. The flood water will spread out in the adjoining area as mentioned above as well as shown in the index plan in a height of ranging from 05 ft to 06 ft height. The tentative area inundated by flood water will be 33200 Acres of Tehsil Bhakkar as shown on plan at Page No.35

The spilled out water from breach site after flowing parallel to Bhakkar Flood Protection Bund will again fall in the river Indus downstream flood bund. The Sub Divisional Officer, River Sub Division, Bhakkar will monitor the entire situation. He will arrange timely coordination with Civil Administration and Police Department.

The flood fighting activities will be performed in true letter and spirit to control the situation and to save the human beings and public property.



XEN BKR

13.3.1 ARRANGEMENTS

The effective arrangements will be made to mitigate the devastating effects of flood.

13.3.2 ESTABLISHMENT AND LOCATION OF FLOOD FIGHTING CAMPS

The Flood Fighting Camps will be established as given under.

RD 58+050 of Bhakkar Flood Protection Bund.

13.3.3 DUTIES OF OFFICERS / OFFICIALS ON THEIR CAMP SITES.

Sub Engineer Bhakkar Section will be In charge of the camp site. The following staff will be at the camp site.

Camp NO.	Officer (Name Designation & Cell No).	Official
01	Nadim Iqbal Sub Engineer 03338301002	5 No Establishment

13.3.4 DEPARTMENTAL MACHINERY AVAILABLE

02 No tractor along with front end loader + trolley + water tank.

13.3.5 MACHINERY AVAILABLE FROM PRIVATE SOURCE

The following machinery can be made available through private source i.e Government contractors.

S. No	Name of Items Required	Medium	High	Very High	Exceptionally
1	Excavator	2	3	4	6 No
2	Tractor Trolly / Dumper	2	4	6	8 No
3	Tractor with front blade / Water Tank	1	2	2	2 No
4	Tractor with water tank	1	1	1	1 No
5	Dozer / Showal	NIL	NIL	1	1 No


XEN BKR

13.3.7 FLOOD FIGHTING MATERIAL AVAILABLE AT SITE NO.1 RD 58+050

S.No	Description	Location	Quantity Available
1	Kassies	AT RD 58+050 OF BHAKKAR FLOOD BUND.	20 No
2	Shouldari		1 No
3	Steel Charpoy		02 No
4	Umbrella		03 No
5	Teak Wood Board		03 No
6	Brass bracket with holder		12 No
7	Switch Open Type		10 No
8	Twin core copper cable 0.036		300 Meter
9	Electric bulb 200.w		24 No
10	Toot baskets		200 No
11	Chairs.		6 No
12	Table.		1 No

13.4

DETAIL OF OTHER INFRASTRUCTURE LIKE ELECTRICITY.

Road network, Schools, Health centers and Electric transmission lines exist all along in the Katcha area. There is no any other important installation.


XEN BKR

PLAN NO. 2

Bhakkar Flood Protection Bund of RD 73+000 ~ 74+000

- 13.1 PLAN SHOWING ROUTE OF FLOOD WATER COMING OUT OF THE BREACH SUPPORTED WITH LEVELS.**

Plan Attached



XEN BKR

PART PLAN
MODEL STUDY NO. 108-1-199 DATED MAR. 2006
OF ABOVE HOUSE FROM 12-1-1948 JAWA HARAR
BRIDGE TO LAHA CITY
SCALE: 0 7000 14000



DETAILS OF VILLAGES ABADIES LIKELY TO BE AFFECTED

S. No	Name of Villages Abadies
1	Bait Bogha
2	Basti Bachri
3	Basti Jando
4	Bhawan pur Shumali
5	Bharmi Charagh
6	Bharmi Nawab
7	Chanda
8	Charar
9	Chuni Janubi
10	Ganji
11	Honday wali
12	Humayaoun wala
13	Hussain Abad
14	Hussain Bakhsh
15	Inayat Abad
16	Jhammat
17	Jhok Hafiz
18	Jhoke Tibba
19	Katchi Shahani
20	Khushka
21	Langer Kot
22	Mian
23	Mithu Bindo
24	Mulan wali
25	Notak Nasheb
26	Peer Ashab Nasheb
27	Rakh Dhandla
28	Rawana
29	Razai Shah Janobi
30	Sawar Nawan
31	Sultan Ahmad Shah
32	Yousaf Shah



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13.3 STRATEGY AND ACTION TO BE TAKEN.

The arrangements will be made to watch Flood Bund on round the clock basis. The Incharge Sub Engineer and Sub Divisional Officer will look after all the watching activities. They will keep liaison with the Civil Administration Public Representative, Police Department, Army authorities and Executive Engineer Bhakkar.

In case of any emergency, the proclamation on loudspeakers will be arranged with the coordination of Civil Administration for evacuation of abadies inside the flood plain. Flood fighting activities will be carried out with the permission and guidance of Executive Engineer Bhakkar. The establishment will be deployed as per site requirements. The Executive Engineer Bhakkar will make the arrangement of hiring the machinery on emergent basis and also request will be made to the Agricultural Engineering Department for the provision of the Department machinery i.e. dozers etc. The flood water coming out of breach site will affect the Abadies of Mouza Dajal, Katchi Shahani, Jhok Tibba and other infrastructures like schools, basic health units and road network etc. The flood water will spread out in the adjoining area as mentioned above as well as shown in the index plan in a height of ranging from 05 ft to 06 ft height. The tentative area inundated by flood water will be 27970 Acres of Tehsil Bhakkar as shown on plan at Page No. 42

The spilled out water from breach site after flowing parallel to Bhakkar Flood Protection Bund will again fall in the river Indus downstream flood bund. The Sub Divisional Officer, River Sub Division, Bhakkar will monitor the entire situation. He will arrange timely coordination with Civil Administration and Police Department.

The flood fighting activities will be performed in true letter and spirit to control the situation and to save the human beings and public property.



XEN BKR

13.3.1 ARRANGEMENTS

The effective arrangements will be made to mitigate the devastating effects of flood.

13.3.2 ESTABLISHMENT AND LOCATION OF FLOOD FIGHTING CAMPS

The Flood Fighting Camps will be established as given under.

RD 70+500 of Bhakkar Flood Protection Bund

13.3.3 DUTIES OF OFFICERS / OFFICIALS ON THEIR CAMP SITES

Sub Engineer Islampur Section will be in charge of the camp site. The following staff will be at the camp site.

Camp NO.	Officer (Name Designation & Cell No.)	Official
02	Muhammad Majid Sub Engineer 03012860289	15 No Establishment

13.3.4 DEPARTMENTAL MACHINERY AVAILABLE

01 No tractor along with front end loader + trolley.

13.3.5 MACHINERY AVAILABLE FROM PRIVATE SOURCE

The following machinery can be made available through private source i.e. Government contractors.

S. No	Name of Items Required	Medium	High	Very High	Exceptionally
1	Excavator	2	3	4	6 No
2	Tractor Trolley / Dumper	2	4	6	8 No
3	Tractor with front blade / Water Tank	1	2	2	2 No
4	Tractor with water tank	1	1	1	1 No
5	Dozer / Showal	NIL	NIL	1	1 No


XEN BKR

13.3.6 FLOOD FIGHTING MATERIAL REQUIRED SITE NO.2 RD.73+000-74+000

S.No	Items	Unit	Total Required Quantity	Available Quantity	Balance	Remarks
1	Axes	No	10	-	10	Flood fighting material will be purchased as per necessity
2	Cell for Torches	No	540	-	540	
3	Gunny Bags	No	800	-	800	
4	Hammer 2.5 lb	No	5	-	5	
5	Hammer 10 lb	No	10	-	10	
6	Kassi with handles	No	100	-	100	
7	Mallet wooden	No	5	-	5	
8	Needles for sewing bags	No	5	-	5	
9	Spare handle for kassies	No	40	-	40	
10	Torch 3 Cell	No	20	-	20	
11	Tranger Wire	No	1	-	1	
12	Shouldari double fly	No	1	-	1	
13	Generator 2.5 Km (Mistubishi) China	No	1	-	1	
14	Life Jacket	No	6	-	6	
15	PVC Insulated twin core copper conductor cable 7/0.0	No	100	-	100	
16	Electric Bulb 200 Watt	No	50	-	50	
17	Toot baskets	No	200	-	200	
18	Diesel	Liter	300	-	300	
19	Chairs	No	6	-	6	
20	Table	No	1	-	1	
21	Munj Patta Tranger	No	5000	-	5000	
22	Steel Charpoy	No	2	-	2	
23	Brass Bracket with Holder	No	12	-	12	
24	Switch Open type	No	10	-	10	
25	Teak wood board	No	3	-	3	
26	Umbrella Large	No	3	-	3	


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13.3.7 FLOOD FIGHTING MATERIAL AVAILABLE AT SITE NO.2 RD 73+000 – 74+000

S.No	Description	Location	Quantity Available
1	Kassies	At RD 70+500 of Bhakkar Flood Bund.	Nill
2	Shouldari		//
3	Steel Charpoy		//
4	Umbrella		//
5	Teak Wood Board		//
6	Brass bracket with holder		//
7	Switch Open Type		//
8	Twin core copper cable 0.036		//
9	Electric bulb 200.w		//
10	Toot baskets		//
11	Chairs.		//
12	Table.		//

13.4

DETAIL OF OTHER INFRASTRUCTURE LIKE ELECTRICITY.


Road network, Schools, Health centers and Electric transmission lines exist all along in the Katcha area. There is no any other important installation.


XEN BKR

CHAPTER-14

Action Plan

- 14.1 RESHUFFLING/RECOUPING PLAN OF RESERVE STOCK OF STONE DEPARTMENTALLY.**
Reserve stock of stone in case of emergency will be shifted to critical site through contractor as per requirement
- 14.2 DETAIL OF INLET/OUTLET CROSSING ALONG WITH CLOSING METHODOLOGY**
Nil
- 14.3 DEPLOYMENT OF MACHINERY (MEDIUM TO HIGH FLOOD)**
Attached at Page No.53
- 14.4 DEPLOYMENT OF MACHINERY (HIGH TO VERY HIGH FLOOD)**
Attached at Page No.54
- 14.5 DEPLOYMENT OF MACHINERY (HIGH TO EXCEPTIONALLY HIGH FLOOD)**
Attached at Page No.55
- 14.6 POLICE DEPLOYMENT PLAN**
Attached at Page No.56
- 14.7 DETAILS OF SYNTHETIC BAGS WITH CAPACITY OF 500 KG AND 1000 KG**
Details is attached on Chapter 13.3.6
- 14.8 DETAILS OF POLYTHENE SHEETS OF BLACK COLOR TO PROTECT UPSTREAM SLOPE WAVE ACTION AND TO CONTROL SEEPAGE THROUGH EMBANKMENTS**
Details is attached on Chapter 13.3.6



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14.3 DEPLOYMENT OF MACHINERY (MEDIUM TO HIGH FLOOD)

S.No	Name of Structures	Length in miles	Vulnarable Reach	Camp location	Site Incharge by Name & Cell No.	Machinery Deployed					Reserve Stock of Stone (Lac Cft)
						Excavator	Dozer / Showal	Tractor Trolleys / Dumpers	Tractor with front blade / Water tank	Labour Beldar	
1	Bhakkar Flood Protection Bund RD 0+000 - 105+000 Including 08 No. J-Head Spurs, 13 No. Solid Stone Studs, 06 No. Hockey Studs, 02 No. Mole Head Spurs & 05 No. Concavo Convex Guide wall	21.00	60-70	RD 58	Tanveer Akhtar Baig (SDO River) 0321-7743954 Nadeen Iqbal (SEN) BKR 0333-8301002	1	-	2	1	12 Per shift	8.10 (Lac Cft) at J- Head Spur RD 14+700, RD 27+175, RD 38+550, RD 47+000, RD 52+800, Rd 60+600, 71+750, 75+800 & Guide Wall at RD 105+000
			73-74	RD 70+500	Tanveer Akhtar Baig (SDO River) 0321-7743954 Muhammad Majidl (SEN) Islampur 0301-2860289	1	-	2	1	12 Per shift	
	Total					2	-	4	2	24 Per Shift	

Payment for Machinery & work charge Employer subject to verification by TPM


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14.4 DEPLOYMENT OF MACHINERY (HIGH TO VERY HIGH FLOOD)

Machinery Deployed						Reserve Stock of Stone (Lac Cft)					
S.No	Name of Structures	Length In miles	Vuinarable Reach	Camp location	Site Incharge by Name & Cell No.		Excavator	Dozer / Showal	Tractor Trolleys / Dumpers	Tractor with front blade / Water tank	Labour Beldar
1	Bhakkar Flood Protection Bund RD 0+000 - 105+000 Including 08 No. J-Head Spurs, 13 No. Solid Stone Studs, 06No Hockey Studs, 02 No. Mole Head Spurs & 05 No Concavo Convex Guide wall	21.00	60-70	RD 58	Tanveer Akhtar Balg (SDO River) 0321-7743954 Nadeen Iqbal (SEN) BKR 0333-8301002	2	-	4	1	18 Per shift	8.10 (Lac Cft) at J-Head Spur RD 14+700, RD 27+175, RD 38+550, RD 47+000, RD 52+800, Rd 60+600, 71+750, 75+800 & Guide Wall at RD 105+000
			73-74	RD 70+500	Tanveer Akhtar Balg (SDO River) 0321-7743954 Muhammad Majid (SEN) ISP 0301-2860289	2	-	4	1	18 Per shift	
Total						4	-	8	2	36 Per Shift	

Payment for Machinery & work charge Employer subject to verification by TPM.


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14.5 DEPLOYMENT OF MACHINERY (HIGH TO EXCEPTIONALLY HIGH FLOOD)

S.No	Name of Structures	Length in miles	Vulnarable Reach	Camp location	Site incharge by Name & Cell No.	Machinery Deployed					Reserve Stock of Stone (Lac Cft)
						Excavator	Dozer / Showal	Tractor Trolleys / Dumpers	Tractor with front blade / Water tank	Labour Beldar	
1	Bhakkar Flood Protection Bund RD 0+000 - 105+000 Including 08 No. J-Head Spurs, 13 No. Solid Stone Studs, 06 No. Hockey Studs, 02 No. Mole Head Spurs & 05 No Concavo Convex Guide wall	21.00	60-70	RD 58	Tanveer Akhtar Baig (SDO River) 0321-7743954 Nadeen Iqbal (SEN) BKR 0333-8301002	3	1	6	1	42 Per shift	8.10 (Lac Cft) at J-Head Spur RD 14+700, RD 27+175, RD 38+550, RD 47+000, RD 52+800, Rd 60+600, 71+750, 75+800 & Guide Wall at RD 105+000
			73-74	RD 70+500	Tanveer Akhtar Baig (SDO River) 0321-7743954 Muhammad Majid (SEN) ISP 0301-2860289	3	1	6	1	42 Per shift	
	Total					6	2	12	2	84 Per Shift	

Payment for Machinery & work charge Employer subject to verification by TPM

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14.6 Police Deployment plan

Sr. No.	Name of Sub Division	Name of Embankment	Length / Width		Killometer	Machinery deployment plan (High Flood)				Location of embankment of machinery	Location of Base Camp / Station	Police deployment plan
						Excavator	Dozers	Dump Trucks	Tractor Trolleys			
1	Bhakkar	0+000-58+000	58000	25'	17.68	0	-	-	1	RD.58+000	Base camp No.1 At Village Makha	On need basis
2	Bhakkar	58+000 -105+000	47000	25'	14.33	0	-	-	1	RD.70+000	Base cam No.2 At Village RD 70+000.	On need basis

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**REQUIREMENT OF ADDITIONAL FLOOD FITGHTING MATERIAL
IN BHAKKAR CANAL DIVISION BHAKKAR**

14.7 Detail of Synthetic bags with a capacity of (500 Kg & 100 Kg)

S.No	Item	Available Quantity	Required Quantity
1	2	3	4
1	Detail of Synthetic bags with a Capacity of (500 Kg & 100 Kg)	NIL	NIL

14.8 Detail of polythene of Black colour to protect U/S slop Wave action and to control Seepage through Embankment.

SR.No	Item	Available Quantity	Required Quantity
1	2	3	4
1	Black polythene Sheet	NIL	NIL

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CHAPTER-15

BACKUP DIVISIONS (IN CASE OF BREACH)

In case of Emergency Khansar Canal Division Kallurkot will be requested for help.



Executive Engineer
Bhakkar Canal Division,
Bhakkar

Superintending Engineer
Bhakkar Canal Circle
Bhakkar

Chief Engineer,
Sargodha Irrigation Zone,
Sargodha.