

# Bangladesh Water Development Board



**Protection of Morrelganj Upazila Sadar and adjacent areas from erosion of Pangusi river in  
Bagerhat District and Re-excavation/Dredging of Bishkhali river**

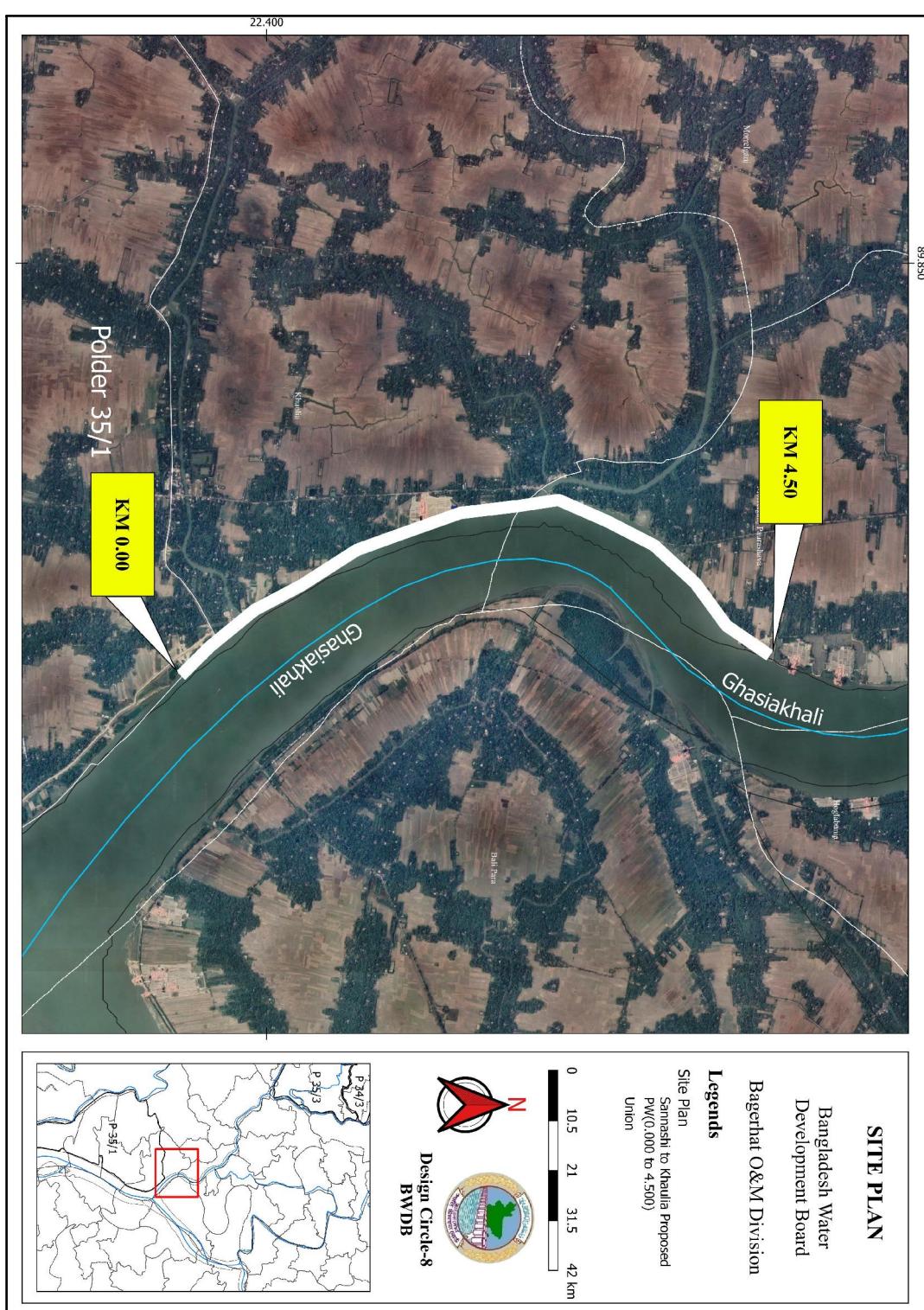
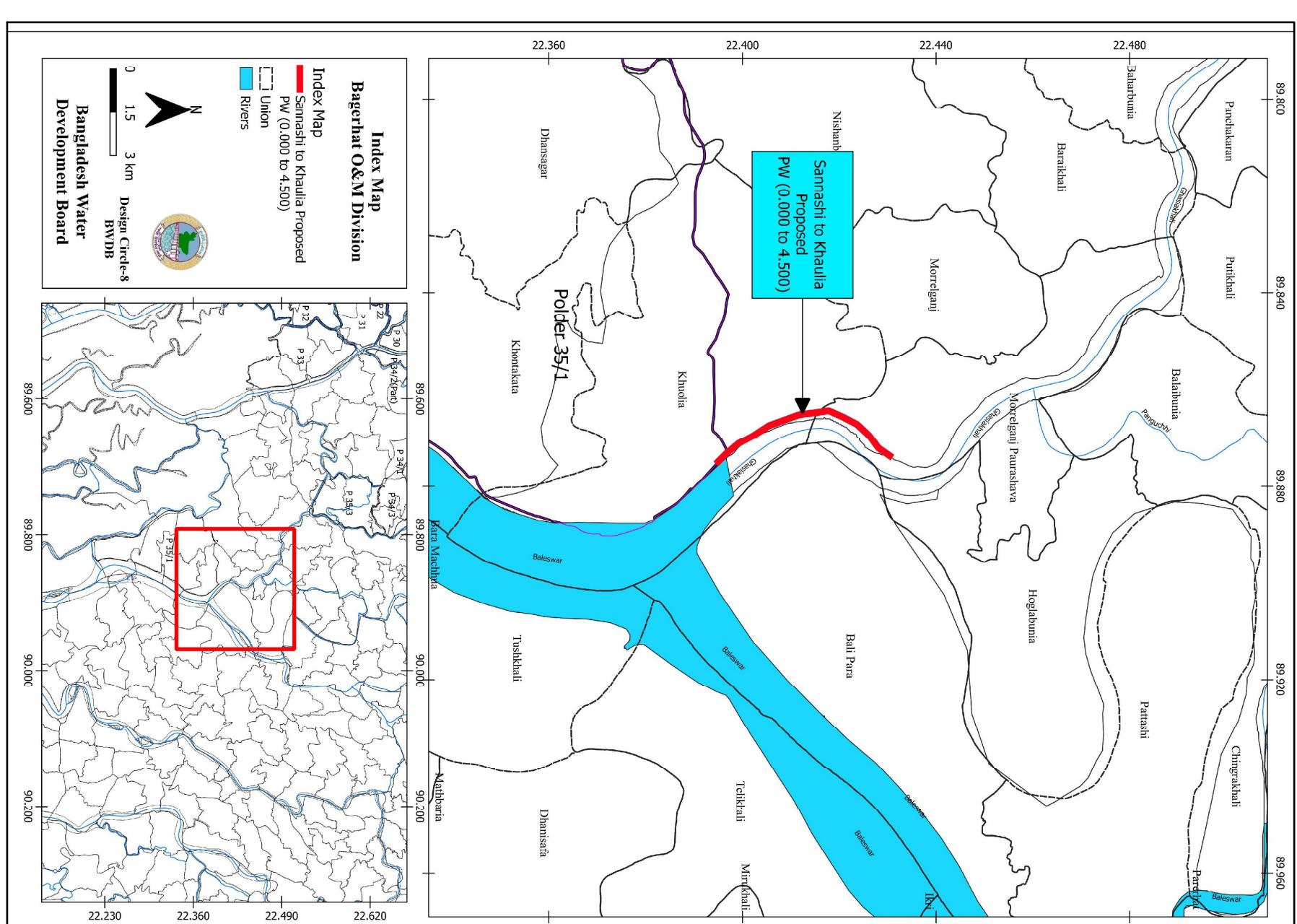
**River Bank Protective Work From Samnashi to Khawlia From km 0.000 to km 4.500 = 4.500 km**

**Satkhira O&M Division-1**

**Designed by:Design Circle-8,BWDB,Dhaka**

**November,2022**

**Sheet No:1 OF 50**



**Administrative Notes. :**

1. ALL MATERIALS AND WORK MUST CONFIRM WITH TECHNICAL SPECIFICATION OF BWDB.
2. WORK SHALL BE EXECUTED WITH PRIOR ADMINISTRATIVE AND FINANCIAL APPROVAL AND WITHIN DPP/ BUDGET PROVISION.
3. FOR ANY ERROR, OMISSION FIELD OFFICE IS HIGHLY RECOMMENDED TO INFORM IT TO CONCERN DESIGN CIRCLE OF BWDB.
4. NECESSARY LAND SHALL BE ARRANGED FOR EXCAVATION WORK.

**Technical Notes. :**

1. ALL DIMENSIONS ARE IN MILLIMETRE & ALL ELEVATIONS ARE IN METRE (PWD) UNLESS OTHERWISE MENTIONED IN THE DRAWING.
2. RE-EXCAVATION WORK SHALL BE STARTED FROM D/S OF CHANNEL.
3. TYPICAL DESIGN SECTIONS ARE PROVIDED IN THIS DESIGN FOR RE-EXCAVATION. X-SECTIONS AT AN INTERVAL NOT MORE THAN 150.00m TO BE TAKEN BY THE FIELD OFFICE FOR THE ESTIMATION OF ACTUAL VOLUME OF EARTH CUTTING.
4. EXCAVATED EARTH SHALL NOT BE DEPOSITED WITHIN THE EXISTING SECTION OF THE RIVER / KHAL. EXCAVATED EARTH SHALL BE DEPOSITED AT A DISTANCE OF AT LEAST 3.00 METER AWAY FROM THE BANK LINE OF THE RIVER / KHAL (IN A DISCONTINUOUS MANNER TO PROVIDE SPACE FOR OVERLAND FLOW TOWARDS KHAL) FROM WHERE NO FLOW BACK OF THE EXCAVATED EARTH IN THE RIVER IS POSSIBLE. UNDER NO CIRCUMSTANCES FLOW BACK OF THE EXCAVATED EARTH INTO THE RIVER SHALL BE ALLOWED. DEPOSITION OF EARTH NOT BE MORE THAN 30M OF CONTINUOUS LENGTH AND MINIMUM 5M INTERVAL TO BE PROVIDED.
5. EXCAVATED EARTH MAY BE USED FOR CONSTRUCTION / RE-SECTIONING OF DYKE / ROAD/EMBANKMENT (WHERE APPLICABLE). EXCAVATED EARTH MAY BE ALSO USED FOR FILLING OF DITCH, POND, LOW LAND ETC.
6. EXCAVATED EARTH SHALL NOT BE DEPOSITED ON ANY OPEN CHANNEL AND AT THE FLOOD PLANE OF RIVER.
7. DEPOSITED EARTH TO BE DRESSED IN A REGULAR SHAPE & CLOSED TURFING WITH PLANTATION TO BE PROVIDED OVER DEPOSITED EARTH. PLANTATION OF VETIVER (BINNA GRASS) MAY BE PROVIDED ON SLOPE OF DEPOSITED EARTH.
8. NO FILLING SHALL BE DONE WHERE THE EXISTING BED LEVEL OF KHAL IS LOWER THAN THE DESIGN BED LEVEL (IF EXIST).
9. A SMOOTH TRANSITION (1:100) SHOULD BE PROVIDED BETWEEN TWO DIFFERENT BED WIDTH AND BED LEVEL AND ALSO AT THE OUTTER END OF EXISTING CULVERT/BRIDGE (IF REQUIRED).
10. THE PROPOSED WORK SHALL BE EXECUTED PREFERABLY IN DRY SEASON.
11. EXCAVATION MUST BE DONE VERY CAREFULLY SO THAT BASE SLAB/ FOUNDATION OF THE EXISTING REGULATOR/CULVERT/BRIDGE ETC (IF ANY) DO NOT BE DISTURBED .
12. IF THERE EXISTS ANY STRUCTURE OTHER THAN BRIDGE WITHIN THE PROPOSED LENGTH OF THE RIVER, RE-EXCAVATION WORK IS PROHIBITED THROUGHOUT THE LENGTH OF THAT STRUCTURE.
13. DESIGN BED LEVEL SHALL NOT BE BELOW THE FOUNDATION TOP LEVEL OF THE EXISTING STRUCTURES (IF ANY) IN THE RIVER. IF THE DESIGN BED LEVEL IS BELOW THE FOUNDATION TOP LEVEL THEN THE DIFFERENCE BETWEEN THESE LEVELS SHALL BE MATCHED IN A SLOPE 1:100, OR AT A DISTANCE OF 100 M, WHICHEVER IS HEIGHER (U/S AND D/S OF THE STRUCTURE) AS SHOWN IN THE DRAWING.
14. RE-EXCAVATION OF KHAL/RIVER WILL FACILITATE QUICK DRAINAGE, FLUSHING & STORAGE OF WATER. BUT COMPLETE DRAIN OUT OF BEEL AREA SHALL NOT BE ALLOWED FOR MAINTAINING ECOLOGICAL BALANCE.
15. IF THE BED LEVEL OF OUTFALL KHAL/RIVER IS HIGHER THAN THE DESIGN BED LEVEL OF PROPOSED KHAL, THEN RE-EXCAVATION OF PROPOSED KHAL TO BE IMPLEMENTED AFTER IMPLEMENTATION OF RE-EXCAVATION OF OUTFALL KHAL/RIVER.
16. RE-EXCAVATION OF KHAL SHALL BE STARTED FROM D/S.
17. THIS KHAL IS DESIGNED FOR DRAINAGE AS WELL AS FOR IRRIGATION PURPOSE.

**Special Notes. :**

1. THIS DRAWING HAS BEEN PREPARED AS PER PROPOSAL SUBMITTED BY SE, KHULNA O & MCIRCLE, BWDB, KHULNA VIDE HIS OFFICE MEMO NO-151, DATE: 16/08/2021 AND ADDITIONAL DATA RECEIVED FROM EE, SATKHIRA-2 OVER E-MAIL ON 19-08-2021 AND 05-10-2021.
2. OUTFALL OF THIS KHAL IS BETNA RIVER WHICH IS SILTED UP. SO RE-EXCAVATION WORK OF THIS KHAL SHALL NOT BE STARTED BEFORE THE RE-EXCAVATION WORK OF BETNA RIVER (FROM D/S OF BETNA RIVER TO THE POINT OF OUTFALL OF SHALUKA KHAL).
3. THE BENEFIT OF RE-EXCAVATION OF KHAL IS DIRECTLY RELATED TO PROPER FUNCTIONING OF OUTFALL/OFTAKE STRUCTURES (REGULATORS). SO, REPAIR/REPLACEMENT (IF REQUIRED) OF THOSE REGULATORS TO BE IMPLEMENTED BEFORE OR SIMULTANEOUSLY WITH THE RE-EXCAVATION OF KHAL.

<b>Office of The Superintending Engineer,Design Circle-8 Protection of Moniriganj Upazila Sadar and adjacent areas from erosion of Pangusli river in Bagerhat District and Re-excavation/Dredging of Bishkhali River</b>	<b>Bangladesh Water Development Board</b>
River Bank Protective Work From Samnashi to Khowla From km 0.000 to km 4.500 = 4.500 km	
<b>NOTES</b>	
DESIGNED BY: (ZAYED BIN SAIF),AE	RECOMMENDED BY: (MOHAMMAD SAIF UDDIN),SE

CHECKED BY:  
(JAKARIA PERvez),EE

APPROVED BY:  
(MD. ENAYET ULLAH),CE,DESIGN

DATE:08-11-2022 Drawing No:DC-8-XXXX-0250

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19. RE-EXCAVATION OF KHAL SHALL BE STARTED FROM D/S.
20. THIS KHAL IS DESIGNED FOR DRAINAGE AS WELL AS FOR IRRIGATION PURPOSE.

**ITEM CODE:**

1. DUMPING BLOCK 450X450X450 : 40-170-25
2. DUMPING BLOCK 350X350X350 : 40-170-45
3. PLACING BLOCK 400X400X200 : 40-190-40
4. GEOTUBE 40-488-30

<b>Bangladesh Water Development Board</b>
Office of The Superintending Engineer,Design Circle-8 Protection of Moniriganj Upazila Sadar and adjacent areas from erosion of Pangusli river in Bagerhat District and Re-excavation/Dredging of Bishkhali river
River Bank Protective Work From Samnashi to Khowla From km 0.000 to km 4.500 = 4.500 km
<b>NOTES</b>

DESIGNED BY:	RECOMMENDED BY:
(ZAYED BIN SAIF),AE	(MOHAMMAD SAIF UDDIN),SE
CHECKED BY:	APPROVED BY:
(JAKARIA PERvez),EE	(MD. ENAYET ULLAH),CE,DESIGN

DATE:08-11-2022

Drawing No:DC-8-XXXX-03/50

## **Special Notes For Revised Bathymetric Survey :**

**1. IN PROVIDED BATHYMETRIC SURVEY DATA SOME X-SECTIONS HAVE UNUSAL SHAPES WHICH RESULT IN EXCESSIVE FILLING.**

**2. FOR PROPER INVESTIGATION, SAFE AND ECONOMICAL DESIGN FILED OFFICE IS REQUESTED TO CONDUCT BATHYMETRIC SURVEY ON FOLLOWING CHAINAGE AND PROVIDE X-SECTIONS DATA TO DESIGN OFFICE BEFORE FINALIZATION OF THE DRAWING.**

STARTING CHAINAGE	STARTING CHAINAGE	SECTION INTERVAL FOR BATHYMETRIC SURVEY	NO. OF SECTIONS
KM 0.000	KM 0.290	20.0m	15
KM 1.010	KM 1.190	20.0m	10
KM 1.810	KM 1.990	20.0m	10
KM 2.510	KM 2.790	20.0m	15
KM 3.510	KM 3.690	20.0m	10

<b>Bangladesh Water Development Board</b>	
<b>Office of The Superintending Engineer,Design Circle-8</b>	
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<b>NOTES</b>	
<b>DESIGNED BY:</b> (ZAYED BIN SAIF),AE	<b>RECOMMENDED BY:</b> (MOHAMMAD SAIF UDDIN),SE
<b>CHECKED BY:</b> (JAKARIA PERvez),EE	<b>APPROVED BY:</b> (MD. ENAYET ULLAH),CE,DESIGN
<b>DATE:08-11-2022</b>	<b>Drawing No:DC-8-XXXX-03/50</b>

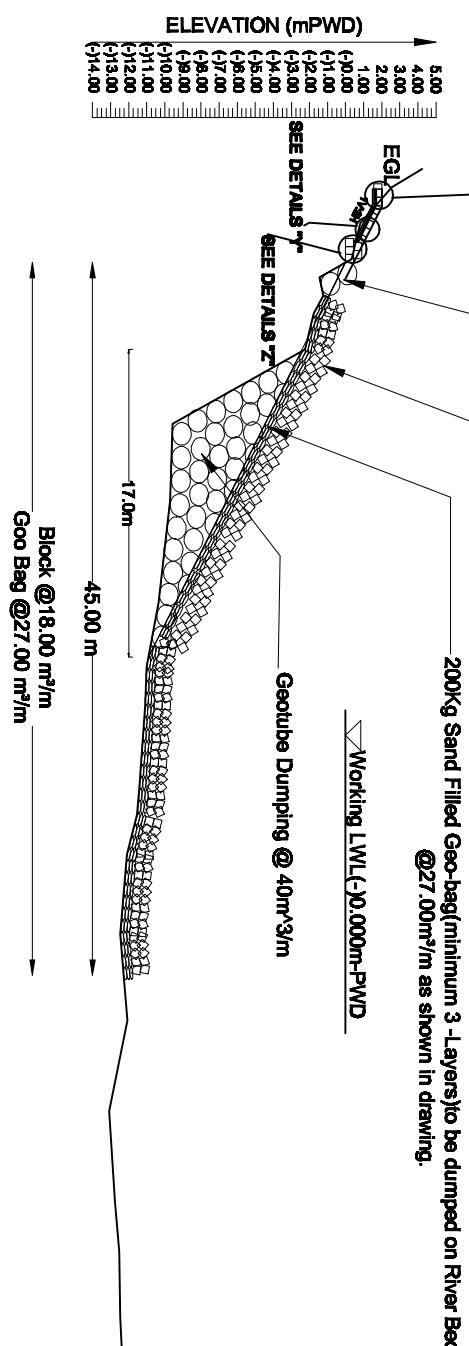
## SEE DETAILS "X"

Geotube Dumping @ 2m<sup>3</sup>/m

Assorted 2 Layers C.C Blocks(excluding Blocks at key) to be Placed / dumped  
 @ 18.00 m<sup>3</sup>/m (excluding void) at or below Working LWL as shown in the drawing.  
 450 x 450 x 450 ————— - 60 % by volume  
 350 x 350 x 350 ————— - 40 % by volume

200Kg Sand Filled Geo-bag(minimum 3 -Layers)to be dumped on River Bed  
 @27.00m<sup>3</sup>/m as shown in drawing.

Working LWL(-0.000m-PWD)



**TYPICAL CROSS SECTION AT KM 0.000  
(APPLICABLE FROM KM 0.000 TO KM 0.090)**

Distance(m)	Existing Bed Level in (mPWD)
11.004	4.234
12.004	2.555
14.005	0.804
16.006	0.344
17.006	(-)1.456
18.007	(-)1.236
19.007	(-)1.756
21.008	(-)2.256
25.108	(-)9.580
29.350	(-)9.700
35.004	(-)10.350
38.558	(-)11.010
40.708	(-)11.100
45.167	(-)11.400
46.743	(-)11.530
48.943	(-)12.090
53.351	(-)12.460
58.145	(-)12.070
63.144	(-)13.080
68.144	(-)12.760
70.948	(-)12.520
74.546	(-)12.480
76.743	(-)12.370

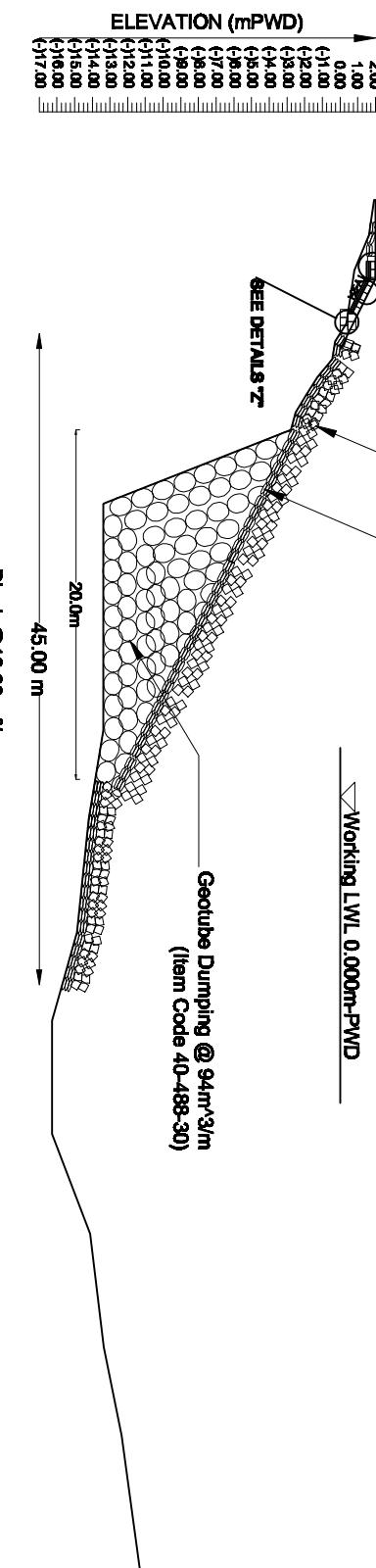
Bangladesh Water Development Board	Office of The Superintending Engineer,Design Circle-8 Protection of Moniriganj Upazila-Sadar and adjacent areas from erosion of Pangusia river in Bagerhat District and Re-excavation/Dredging of Bishkhali river
River Bank Protective Work From Sannashi to Khowlia From km 0.000 to km 4.500 = 4.500 km	<b>TYPICAL CROSS SECTION OF FROM SANNASHI TO KHAWLIA PROTECTIVE WORK</b>
DESIGNED BY:  (ZAYED BIN SAIF),AE	RECOMMENDED BY:  (MOHAMMAD SAIF UDDIN),SE
CHECKED BY:  (JAKARIA PERvez),EE	APPROVED BY:  (MD. ENAYET ULLAH),CE,DESIGN
DATE:08-11-2022	Drawing No:DC-8-XXXX-04/50

SEE DETAILS "X"

Assorted 2 Layers C.C Blocks(excluding Blocks at key) to be Placed / dumped  
 @18.00 m<sup>3</sup>/m (excluding void) at or below Working LWL as shown in the drawing.  
 450 x 450 x 450 - 60 % by volume  
 350 x 350 x 350 - 40 % by volume

200Kg Sand Filled Geo-bag(minimum 3 -Layers)to be dumped on River Bed  
 @27.00m<sup>3</sup>/m as shown in drawing.

Working LWL 0.000m-PWD



Distance(m)	Existing Bed Level in (mPWD)
13.000	1.915
15.000	1.636
17.000	0.799
20.000	0.349
21.000	(-)0.281
22.000	(-)0.451
23.000	(-)1.251
24.000	(-)1.911
25.000	(-)2.501
26.000	(-)2.781
30.156	(-)13.380
37.331	
42.960	
47.954	(-)14.190
54.357	(-)14.860
59.353	(-)16.270
65.756	
71.385	(-)14.110
77.787	(-)13.350
82.782	(-)12.330
90.592	(-)11.290

TYPICAL CROSS SECTION AT KM 0.100  
 (APPLICABLE FROM KM 0.090 TO KM 0.190)

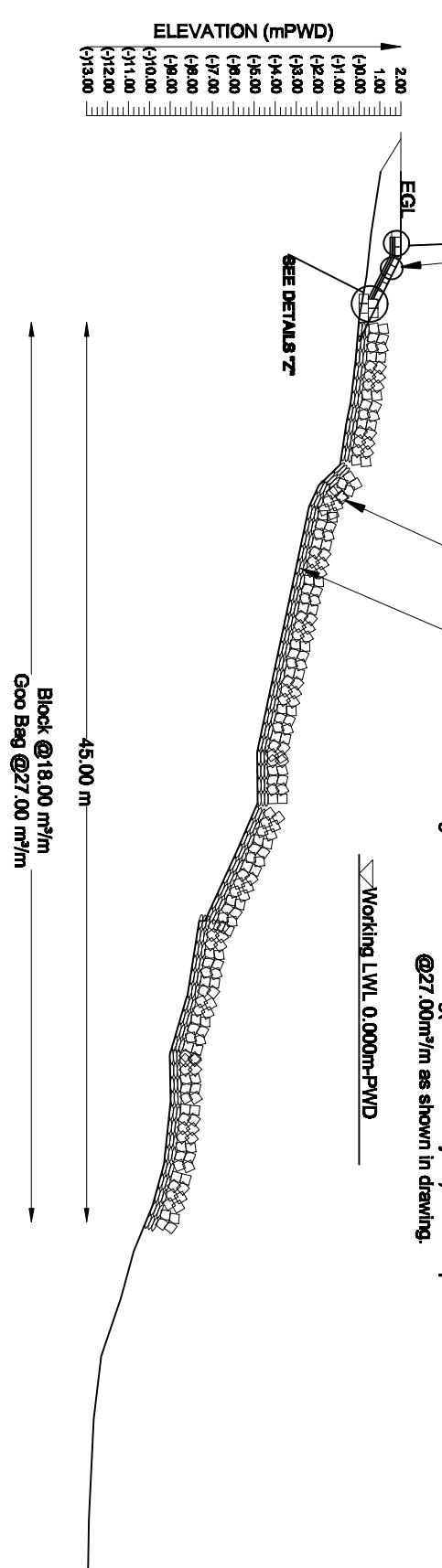
Bangladesh Water Development Board	Office of The Superintending Engineer,Design Circle-8 Protection of Moniriganj Upazila Sadar and adjacent areas from erosion of Pangusli river in Bagerhat District and Re-excavation/Dredging of Bishkhali river
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CHECKED BY:  (JAKARIA PERvez),EE	APPROVED BY:  (MD. ENAYET ULLAH),CE,DESIGN
DATE:08-11-2022	Drawing No:DC-8-XXXX-05/50

SEE DETAILS "X"

Assorted 2 Layers C.C Blocks(excluding void) to be Placed / dumped  
@18.00 m<sup>3</sup>/m (excluding void) at or below Working LWL as shown in the drawing.  
450 x 450 x 450 ————— - 60 % by volume  
350 x 350 x 350 ————— - 40 % by volume

200kg Sand Filled Geo-bag(minimum 3-Layers) to be dumped on River Bed  
@27.00m<sup>3</sup>/m as shown in drawing.

Working LWL 0.000m-PWD



Distance(m)	Existing Bed Level in (mPWD)
29.000	1.027
32.000	0.582
34.000	0.357
36.000	0.017
38.000	(-)0.153
40.000	(-)0.393
41.000	(-)0.593
43.000	(-)0.903
44.000	(-)1.923
45.000	(-)2.383
56.732	(-)4.860
59.159	(-)4.840
61.412	(-)5.800
64.801	(-)7.360
68.401	(-)8.190
71.202	(-)9.030
73.401	(-)8.980
76.409	(-)9.310
78.401	(-)9.840
80.603	(-)10.750
82.806	(-)11.370
85.603	(-)12.310
88.614	(-)12.660
93.401	(-)12.900
96.016	(-)12.930

**TYPICAL CROSS SECTION AT KM 0.200  
(APPLICABLE FROM KM 0.190 TO KM 1.050)**

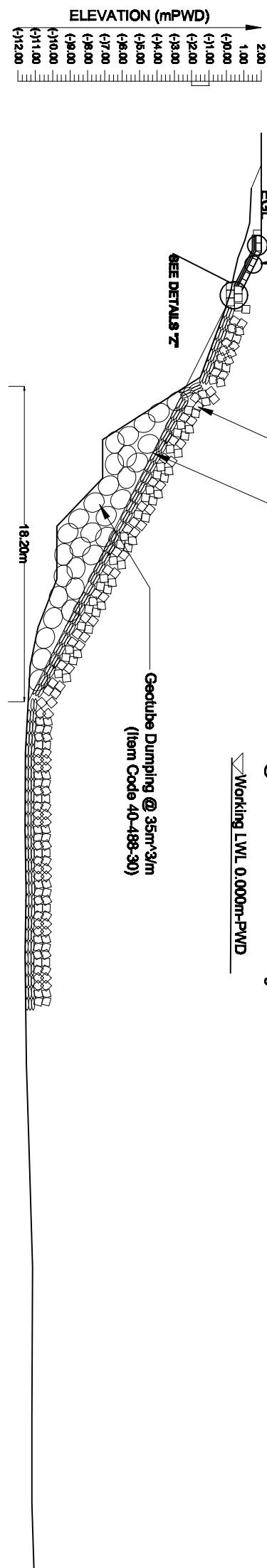
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CHECKED BY:  (JAKARIA PERvez),EE	APPROVED BY:  (MD. ENAYET ULLAH),CE,DESIGN
DATE:08-11-2022	Drawing No:DC-8-XXXX-06/50

SEE DETAILS "X"

Assorted 2 Layers C.C Blocks(excluding Blocks at Key) to be Placed / dumped  
@18.00 m<sup>3</sup>/m (excluding void) at or below Working LWL as shown in the drawing.  
450 x 450 x 450 — - 60 % by volume  
350 x 350 x 350 — - 40 % by volume

200Kg Sand Filled Geo-bag(minimum 3 -Layers)to be dumped on River Bed  
@27.00m<sup>3</sup>/m as shown in drawing.

Working LWL 0.000m-PWD



Distance(m)	Existing Bed Level in (mPWD)
22.003	1.429
24.003	1.329
25.003	1.069
26.003	0.659
27.003	0.429
28.004	0.229
29.003	(-)0.071
32.882	(-)1.490
36.487	(-)7.130
38.707	
41.481	(-)9.760
44.533	
47.304	(-)10.850
49.523	(-)11.300
54.515	(-)11.570
58.955	(-)11.590
62.560	(-)11.540
66.166	
72.543	(-)11.510
77.536	(-)11.350
84.193	(-)11.150
92.790	(-)11.200
97.782	
102.221	(-)11.060

TYPICAL CROSS SECTION AT KM 1.100  
(APPLICABLE FROM KM 1.050 TO KM 1.140)

### Bangladesh Water Development Board

#### Office of The Superintending Engineer,Design Circle-8

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TYPICAL CROSS SECTION OF FROM SANNASHI TO KHOWLIA PROTECTIVE WORK

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CHECKED BY:

(JAKARIA PERvez),EE

APPROVED BY:

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DATE:08-11-2022 Drawing No:DC-8-XXXX-15/50

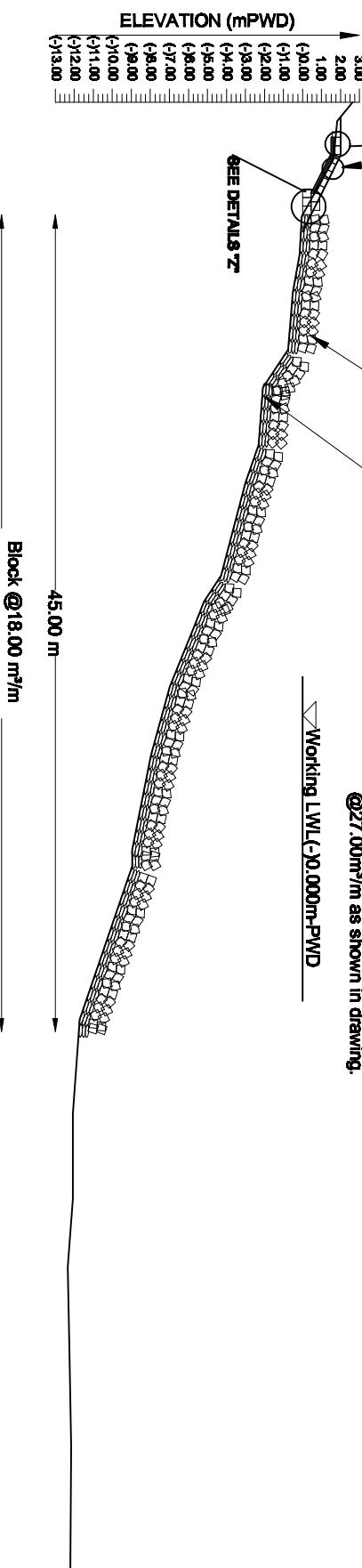
SEE DETAILS "X"

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 450 x 450 x 450 - 60 % by volume  
 350 x 350 x 350 - 40 % by volume  
 200kg Sand Filled Geo-bag(minimum 3 -Layers)to be dumped on River Bed  
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SEE DETAILS "Y"

SEE DETAILS "Z"

Working LWL(=0.000m-PWD)



**TYPICAL CROSS SECTION AT KM 1.400  
(APPLICABLE FROM KM 1.140 TO KM 1.850)**

Existing Bed Level in (mPWD)	Distance(m)
22.000	2.632
23.000	1.815
25.000	1.632
28.000	(-)0.048
30.000	(-)0.158
32.000	(-)0.508
35.000	(-)0.748
37.000	(-)2.088
40.000	(-)2.318
41.999	(-)2.998
46.872	(-)4.280
48.241	(-)5.180
49.612	(-)5.720
52.703	(-)6.980
56.302	(-)7.960
61.274	(-)8.950
62.133	
70.195	(-)11.710
75.165	(-)12.070
79.626	
83.226	(-)12.340
87.687	(-)12.250
92.658	(-)12.170
99.349	(-)12.200

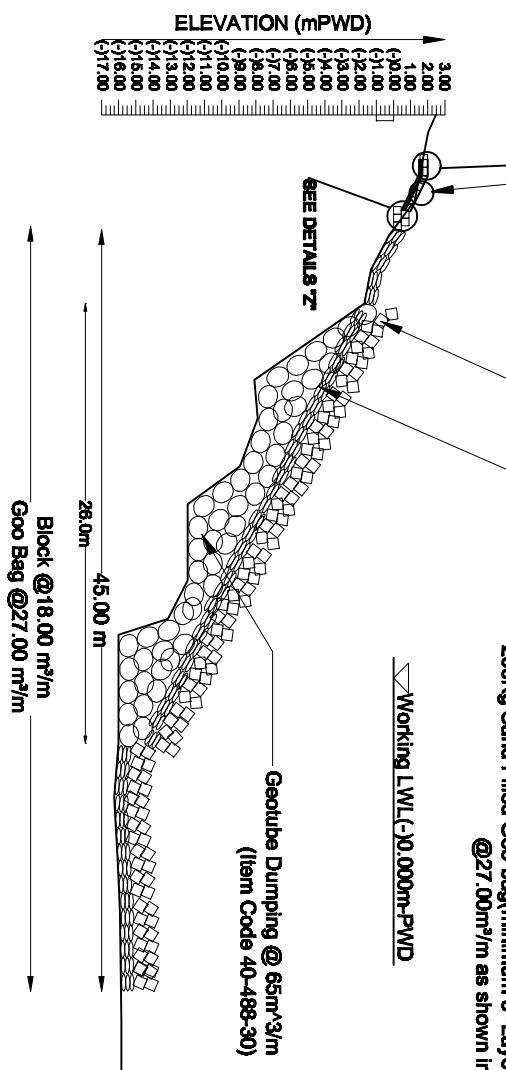
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DATE:08-11-2022	Drawing No:DC-8-XXXX-18/50

SEE DETAILS "X"

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Working LWL @0.000m-PWD

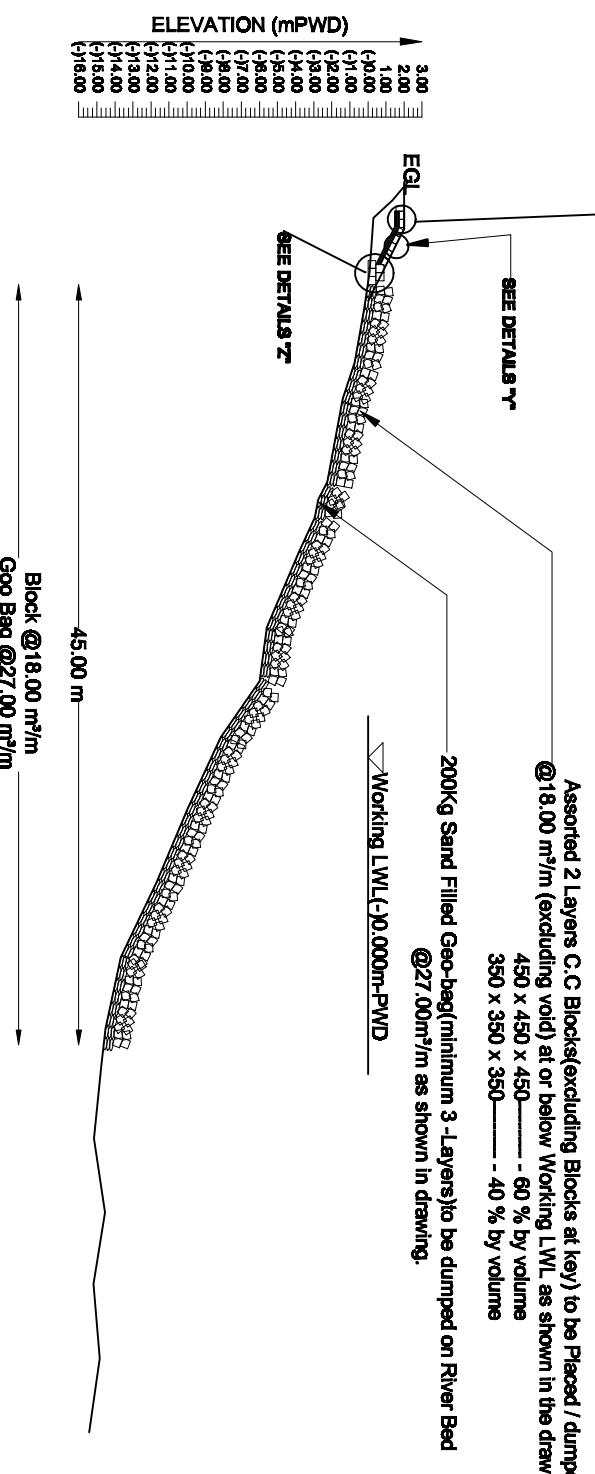


**TYPICAL CROSS SECTION AT KM 1.900  
(APPLICABLE FROM KM 1.850 TO KM 1.940)**

Existing Bed Level in (mPWD)	Distance(m)
18.999	2.463
19.998	2.020
23.998	1.230
25.998	(-)0.230
27.998	(-)1.310
29.998	(-)1.680
34.438	(-)8.110
36.668	(-)7.890
39.458	(-)8.950
41.683	(-)11.980
43.910	
46.137	
48.365	(-)13.120
49.295	(-)18.020
52.453	
55.612	
58.771	(-)16.260
62.292	(-)16.060
65.450	(-)15.930
71.766	(-)15.850
75.859	

Bangladesh Water Development Board	Office of The Superintending Engineer,Design Circle-8 Protection of Moniriganj Upazila Sadar and adjacent areas from erosion of Pangusli river in Bagerhat District and Re-excavation/Dredging of Bishkhali river
River Bank Protective Work From Sannashi to Khowlia From km 0.000 to km 4.500 = 4.500 km	<b>TYPICAL CROSS SECTION OF FROM SANNASHI TO KHOWLIA PROTECTIVE WORK</b>
DESIGNED BY:  (ZAYED BIN SAIF),AE	RECOMMENDED BY:  (MOHAMMAD SAIF UDDIN),SE
CHECKED BY:  (JAKARIA PERvez),EE	APPROVED BY:  (MD. ENAYET ULLAH),CE,DESIGN
DATE:08-11-2022	Drawing No:DC-8-XXXX-23/50

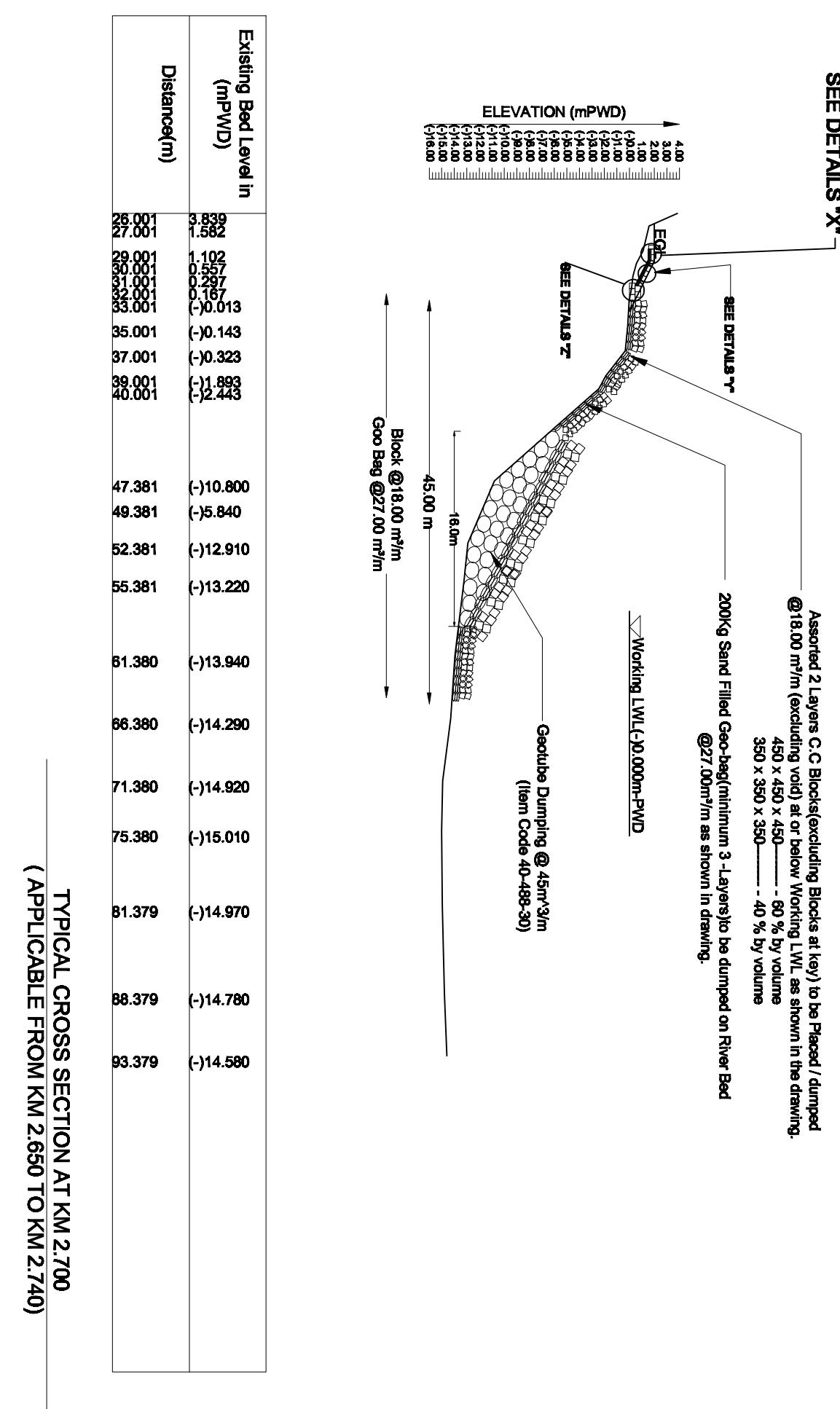
SEE DETAILS "X"



**TYPICAL CROSS SECTION AT KM 2.500  
(APPLICABLE FROM KM 1.940 TO KM 2.650)**

Existing Bed Level in (mPWD)	Distance(m)
24.007	2.204
25.008	1.354
26.008	0.304
29.009	0.104
31.010	(-)0.195
34.011	(-)0.736
36.011	(-)1.396
40.601	(-)2.250
41.589	(-)2.740
42.578	(-)2.940
44.557	(-)3.840
48.660	(-)5.590
51.628	(-)6.000
54.742	(-)8.140
58.699	(-)9.970
62.802	(-)11.710
66.907	(-)13.680
70.862	(-)14.520
72.990	(-)14.760
76.944	(-)15.150
81.048	(-)14.550
85.004	(-)15.180
89.108	(-)14.850
93.213	(-)15.420

<b>Bangladesh Water Development Board</b>	
<b>Office of The Superintending Engineer,Design Circle-8</b>	
Protection of Moniriganj Upazila Sadar and adjacent areas from erosion of Pangusli river in Bagerhat District and Re-excavation/Dredging of Bishkhali river.	
River Bank Protective Work From Sannashi to Khowlia From km 0.000 to km 4.500 = 4.500 km	
<b>TYPICAL CROSS SECTION OF FROM SANNASHI TO KHOWLIA PROTECTIVE WORK</b>	
<b>DESIGNED BY:</b>	<b>RECOMMENDED BY:</b>
(ZAYED BIN SAIF),AE	(MOHAMMAD SAIF UDDIN),SE
<b>CHECKED BY:</b>	<b>APPROVED BY:</b>
(JAKARIA PERvez),EE	(MD. ENAYET ULLAH),CE,DESIGN
<b>DATE:08-11-2022</b>	<b>Drawing No:DC-8-XXXX-29/50</b>



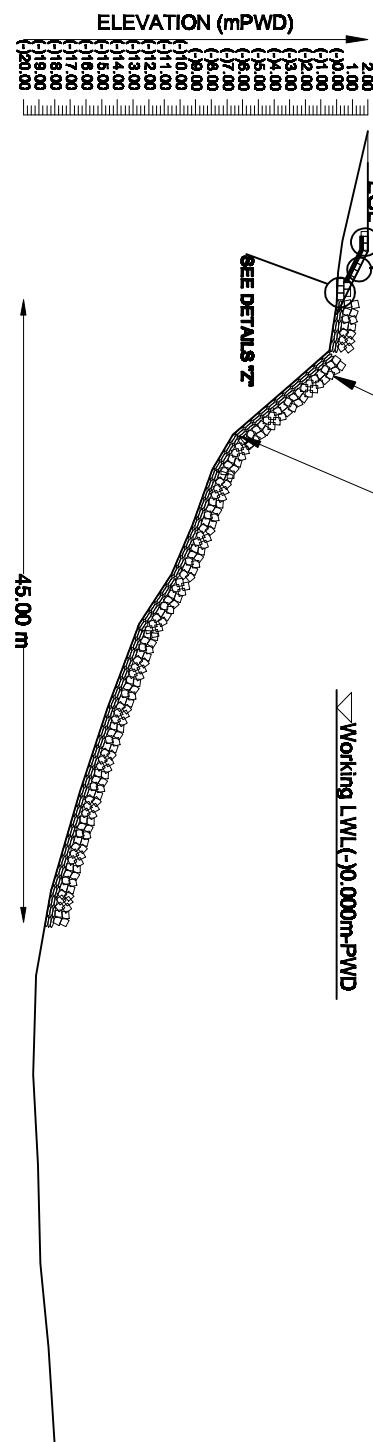
<b>Bangladesh Water Development Board</b>	
<b>Office of The Superintending Engineer,Design Circle-8</b>	
Protection of Moniriganj Upazila Sadar and adjacent areas from erosion of Pangusli river in Bagerhat District and Re-excavation/Dredging of Bishkhali river	
River Bank Protective Work From Sannashi to Khowlia From km 0.000 to km 4.500 = 4.500 km	
<b>TYPICAL CROSS SECTION OF FROM SANNASHI TO KHOWLIA PROTECTIVE WORK</b>	
<b>DESIGNED BY:</b> (ZAYED BIN SAIF),AE	<b>RECOMMENDED BY:</b> (MOHAMMAD SAIF UDDIN),SE
<b>CHECKED BY:</b> (JAKARIA PERvez),EE	<b>APPROVED BY:</b> (MD. ENAYET ULLAH),CE,DESIGN
<b>DATE:08-11-2022</b>	<b>Drawing No:DC-8-XXXX-31/50</b>

SEE DETAILS "X"

Assorted 2 Layers C.C Blocks(excluding Blocks at key) to be Placed / dumped  
 @18.00 m<sup>3</sup>/m (excluding void) at or below Working LWL as shown in the drawing.  
 450 x 450 x 450 - 60 % by volume  
 350 x 350 x 350 - 40 % by volume

200kg Sand Filled Gec-bag(minimum 3 -Layers)to be dumped on River Bed  
 @27.00m<sup>3</sup>/m as shown in drawing.

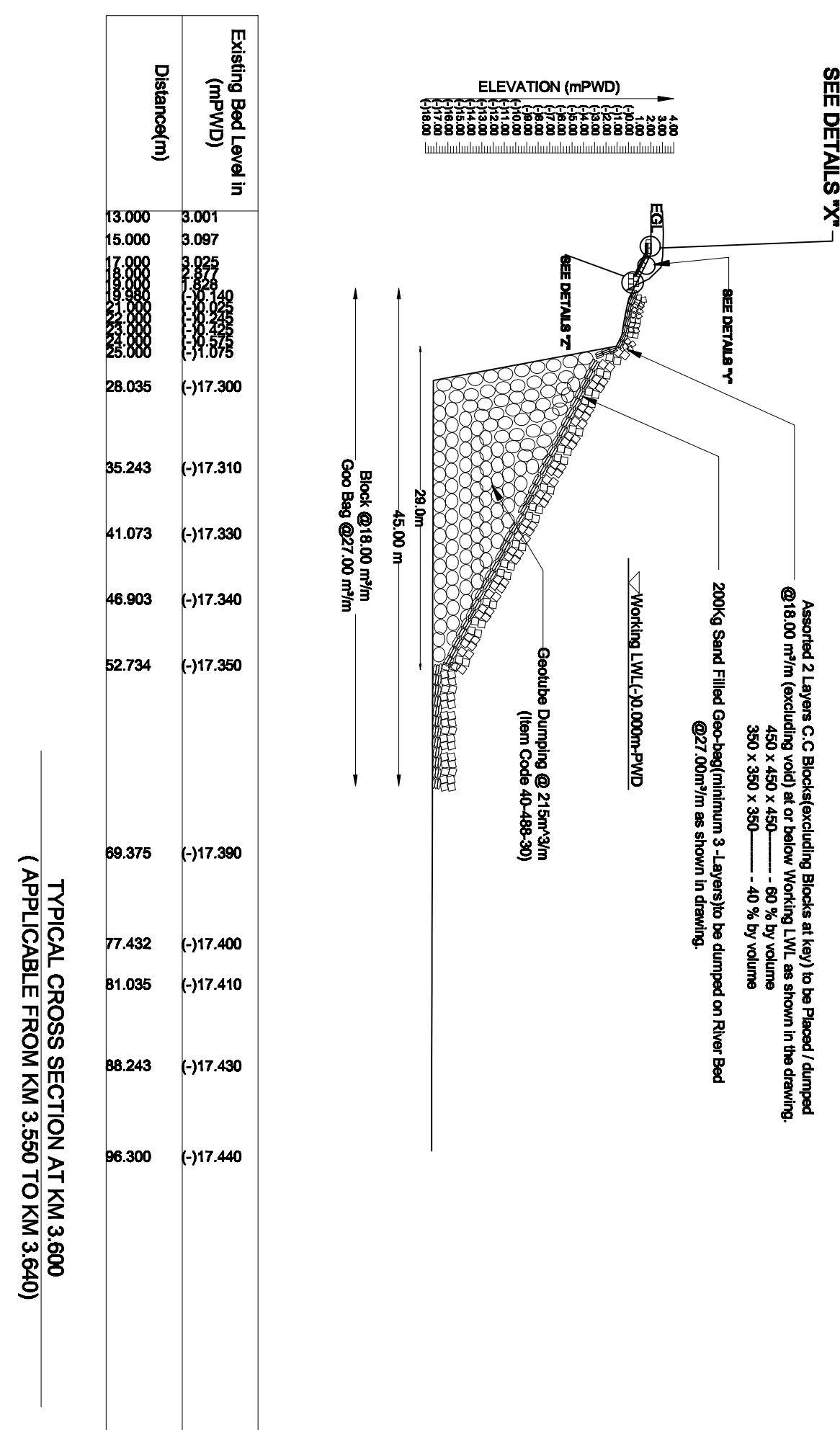
Working LWL(-90.000mPWD)



Distance(m)	Existing Bed Level in (mPWD)
16.000	1.532
18.999	0.832
20.999	0.355
22.999	0.105
24.999	(-)0.015
27.999	(-)0.445
29.999	(-)2.745
33.354	(-)6.810
35.580	(-)7.950
39.108	(-)9.210
42.264	(-)10.550
45.420	(-)12.600
50.805	(-)14.630
56.190	(-)16.400
62.505	(-)18.240
67.890	(-)19.200
74.206	(-)19.370
79.960	(-)19.060
86.273	(-)18.920
91.658	(-)18.390
97.973	(-)17.990

TYPICAL CROSS SECTION AT KM 3.300  
 (APPLICABLE FROM KM 2.740 TO KM 3.550)

Bangladesh Water Development Board	Office of The Superintending Engineer,Design Circle-8 Protection of Moniriganj Upazila-Sadar and adjacent areas from erosion of Pangusli river in Bagerhat District and Re-excavation/Dredging of Bishkhali river
River Bank Protective Work From Sannashi to Khowlia From km 0.000 to km 4.500 = 4.500 km	TYPICAL CROSS SECTION OF FROM SANNASHI TO KHAWLIA PROTECTIVE WORK
DESIGNED BY: (ZAYED BIN SAIF),AE	RECOMMENDED BY: (MOHAMMAD SAIF UDDIN),SE
CHECKED BY: (JAKARIA PERvez),EE	APPROVED BY: (MD. ENAYET ULLAH),CE,DESIGN
DATE:08-11-2022	Drawing No:DC-8-XXXX-37/50



<b>Bangladesh Water Development Board</b>	
<b>Office of The Superintending Engineer,Design Circle-8</b>	
<b>Protection of Moniriganj Upazila Sadar and adjacent areas from erosion of Pangusli river in Bagerhat District and Re-excavation/Dredging of Bishkhali river</b>	
<b>River Bank Protective Work From Sannashi to Khowlia From km 0.000 to km 4.500 = 4.500 km</b>	
<b>TYPICAL CROSS SECTION OF FROM SANNASHI TO KHOWLIA PROTECTIVE WORK</b>	
<b>DESIGNED BY:</b>	<b>RECOMMENDED BY:</b>
<b>(ZAYED BIN SAIF),AE</b>	<b>(MOHAMMAD SAIF UDDIN),SE</b>
<b>CHECKED BY:</b>	<b>APPROVED BY:</b>
<b>(JAKARIA PERvez),EE</b>	<b>(MD. ENAYET ULLAH),CE,DESIGN</b>
<b>DATE:08-11-2022</b>	<b>Drawing No:DC-8-XXXX-40/50</b>

SEE DETAILS "X"

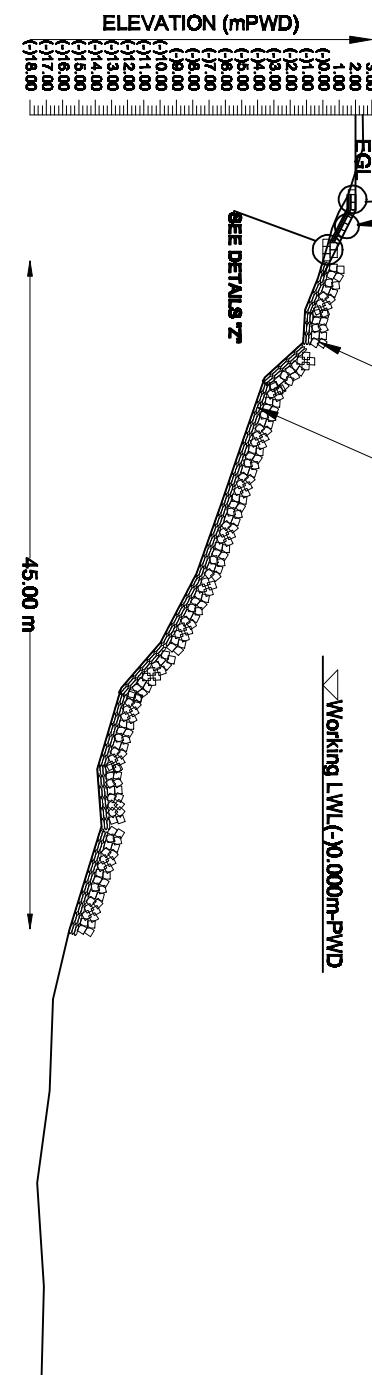
Assorted 2 Layers C.C Blocks(excluding Blocks at key) to be Placed / dumped  
 @18.00 m<sup>3</sup>/m (excluding void) at or below Working LWL as shown in the drawing.

450 x 450 x 450 - 60 % by volume

350 x 350 x 350 - 40 % by volume

200kg Sand Filled Geo-bag(minimum 3 -Layers)to be dumped on River Bed  
 @27.00m<sup>3</sup>/m as shown in drawing.

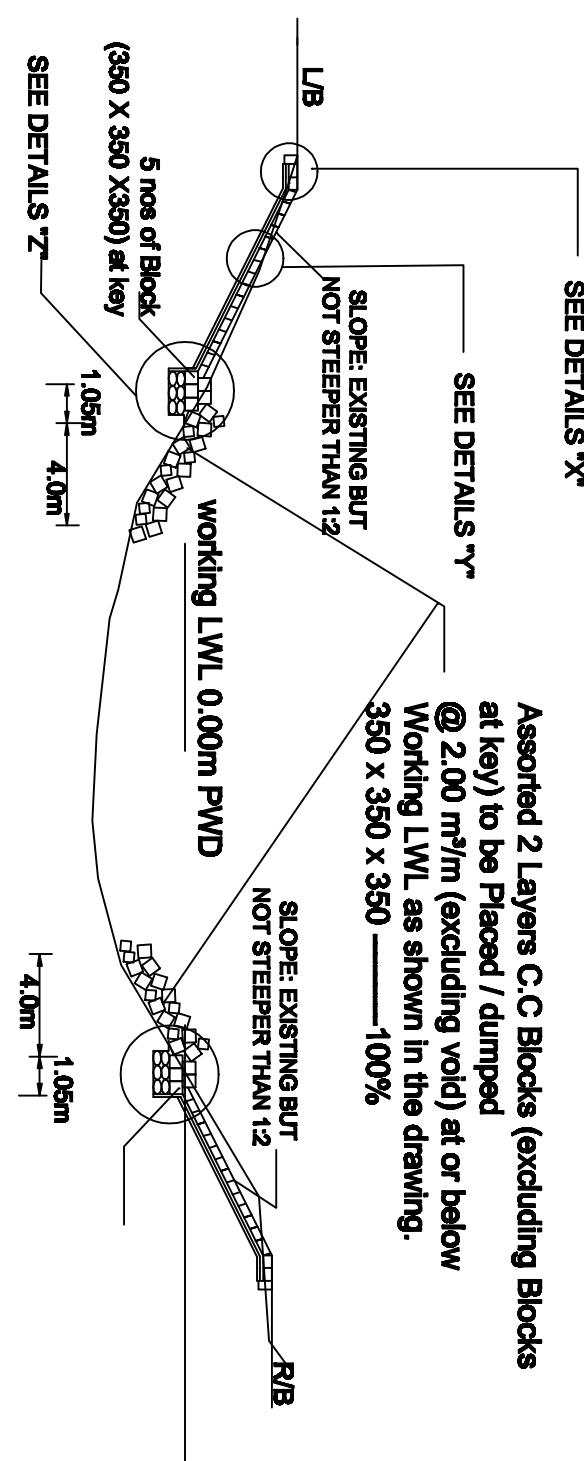
Working LWL(-0.000m-PWD)



Distance(m)	Existing Bed Level in (mPWD)
13.000	2.459
15.000	2.478
18.000	1.544
18.999	0.975
20.000	0.295
21.000	-0.005
23.000	-1.280
25.000	(-)1.095
27.000	(-)1.225
29.151	(-)3.580
33.390	(-)5.040
36.954	(-)6.260
41.191	(-)7.770
45.430	(-)9.970
48.256	(-)12.410
53.232	(-)13.860
56.735	(-)13.600
63.121	(-)15.580
67.360	(-)16.600
73.013	(-)16.790
78.667	(-)17.560
85.052	(-)17.150
90.705	(-)17.310

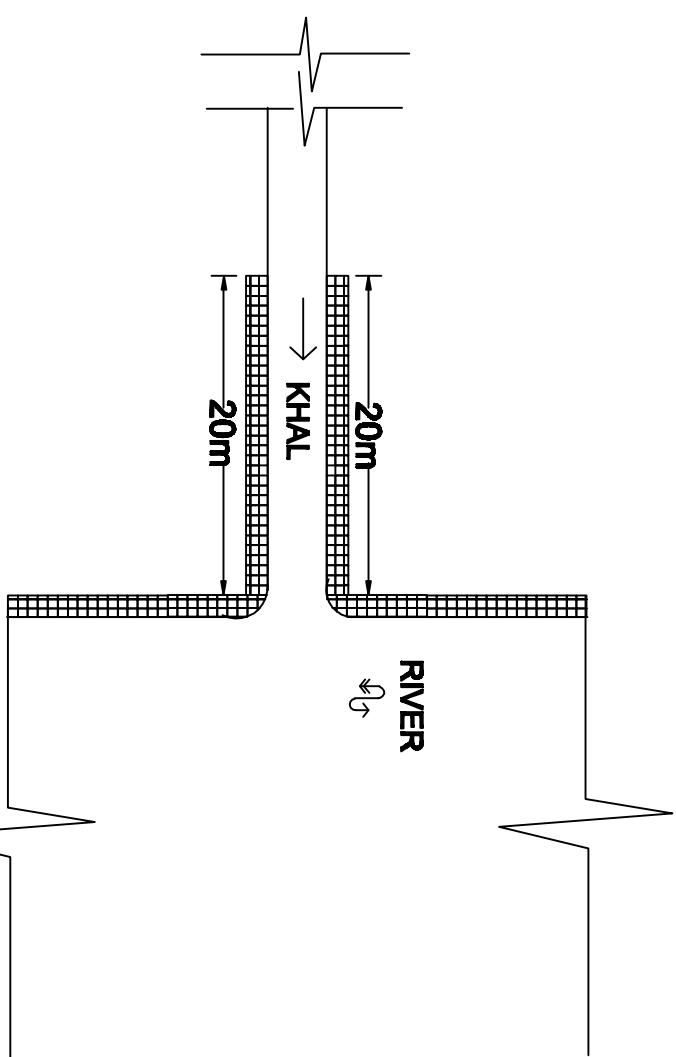
TYPICAL CROSS SECTION AT KM 4.200  
 (APPLICABLE FROM KM 3.640 TO KM 4.500)

Bangladesh Water Development Board	Office of The Superintending Engineer,Design Circle-8 Protection of Moniriganj Upazila Sadar and adjacent areas from erosion of Pangusia river in Bagerhat District and Re-excavation/Dredging of Bishkhali river
River Bank Protective Work From Sannashi to Khowlia From km 0.000 to km 4.500 = 4.500 km	TYPICAL CROSS SECTION OF FROM SANNASHI TO KHOWLIA PROTECTIVE WORK
DESIGNED BY: (ZAYED BIN SAIF),AE	RECOMMENDED BY: (MOHAMMAD SAIF UDDIN),SE
CHECKED BY: (JAKARIA PERvez),EE	APPROVED BY: (MD. ENAYET ULLAH),CE,DESIGN
DATE:08-11-2022	Drawing No:DC-8-XXXX-46/50



### TYPICAL X-SECTION FOR ARMOURING OF PROTECTIVE WORK AT CONFLUENCE OF KHAL

(Limit of Wprk: To be Extended 20m towards Khal from Confluence of Khal and River)



### PLAN OF ARMOURING OF KHAL (NOT TO SCALE)

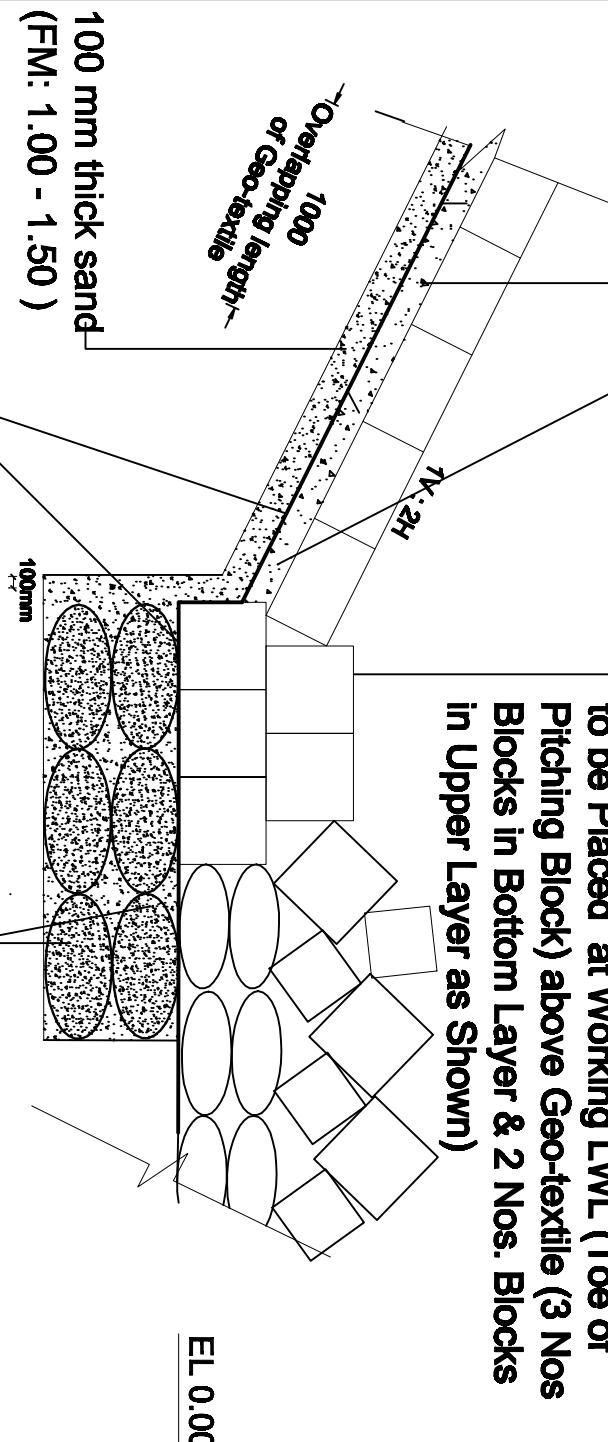
DESIGNED BY:	RECOMMENDED BY:
(ZAYED BIN SAIF, AE CHECKED BY:	(MOHAMMAD SAIF UDDIN, SE APPROVED BY:
(JAKARIA PERVEZ, EE DATE: 23-11-2022	(MD. ENAYET ULLAH, CE, Design DWG NO.: DC-8-0314-10/18

**100mm thick Pick Jhama Chips (40mm to 5mm well graded)**

Total 6 Nos (3x2) of 200 Kg Sand filled geo bag in 2 layers as shown in the drawing.

**2-Layer C.C Blocks(450 x 450 x 450)  
(ITEM CODE 40-170-25)**

to be Placed at Working LWL (Toe of Pitching Block) above Geo-textile (3 Nos Blocks in Bottom Layer & 2 Nos. Blocks in Upper Layer as Shown)



100 mm thick sand  
(FM: 1.00 - 1.50 )

**Geo textile filter  
(thickness >= 3.00 mm)**

2-Layers (3 Nos. in each layer) 200 kg Geo-bags filled with pick jhama (40mm to 5mm well graded) to be Placed.

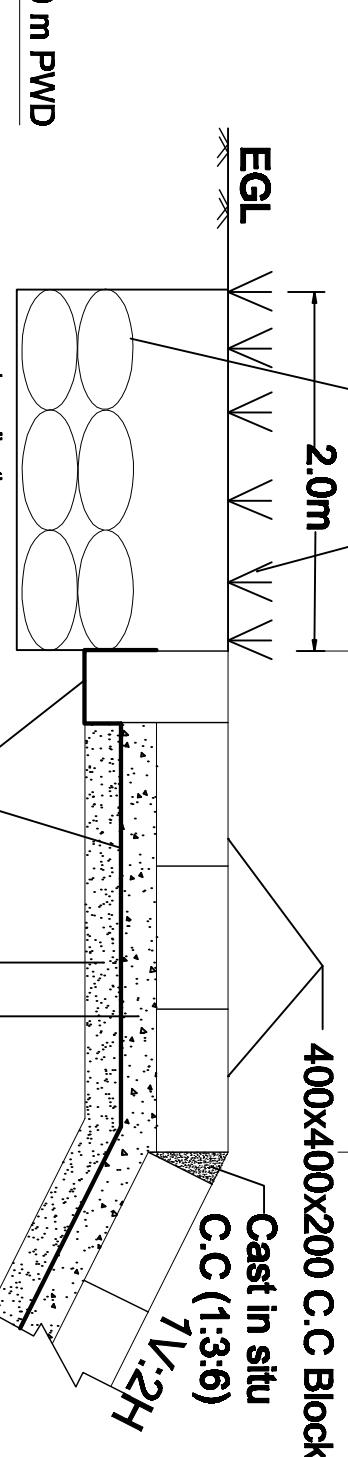
**DETAILS "Z"**  
(Not to Scale)

**1-layer 400x400x200 C.C block (ITEM CODE 40-190-40)**

100 mm thick pick jhama chips (40 mm to 20 mm well graded at top & 20 mm to 5 mm well graded at bottom)

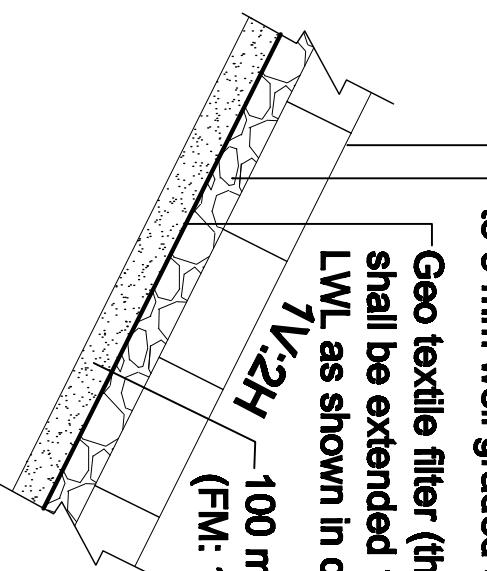
**Geo textile filter (thickness >= 3.00 mm)**  
shall be extended 1.00m below Working LWL as shown in detail "Z".

$\frac{1}{4} \cdot 2H$  100 mm thick sand  
(FM: 1.00 - 1.50 )



100 mm thick sand  
(FM: 1.00 - 1.50 )

**100 mm Pick Jhama Chips  
(40mm to 5mm well graded)**  
**DETAILS "X"**  
(Not to Scale)



**DETAILS "Y"**  
(Not to Scale)

Scale: Not to Scale

DESIGNED BY:	RECOMMENDED BY:
(SAVED IN SADP, AE)	(MR. MAMNUKUR RABMAN, SE)
CHECKED BY:	APPROVED BY:
(MR. KARIM ULLAH, CE, Design)	

GAKARA RIVER, BE  
DATE: 23-11-2022 DWG NO.: DC-8-0314-11/18