

Bangladesh Water Development Board



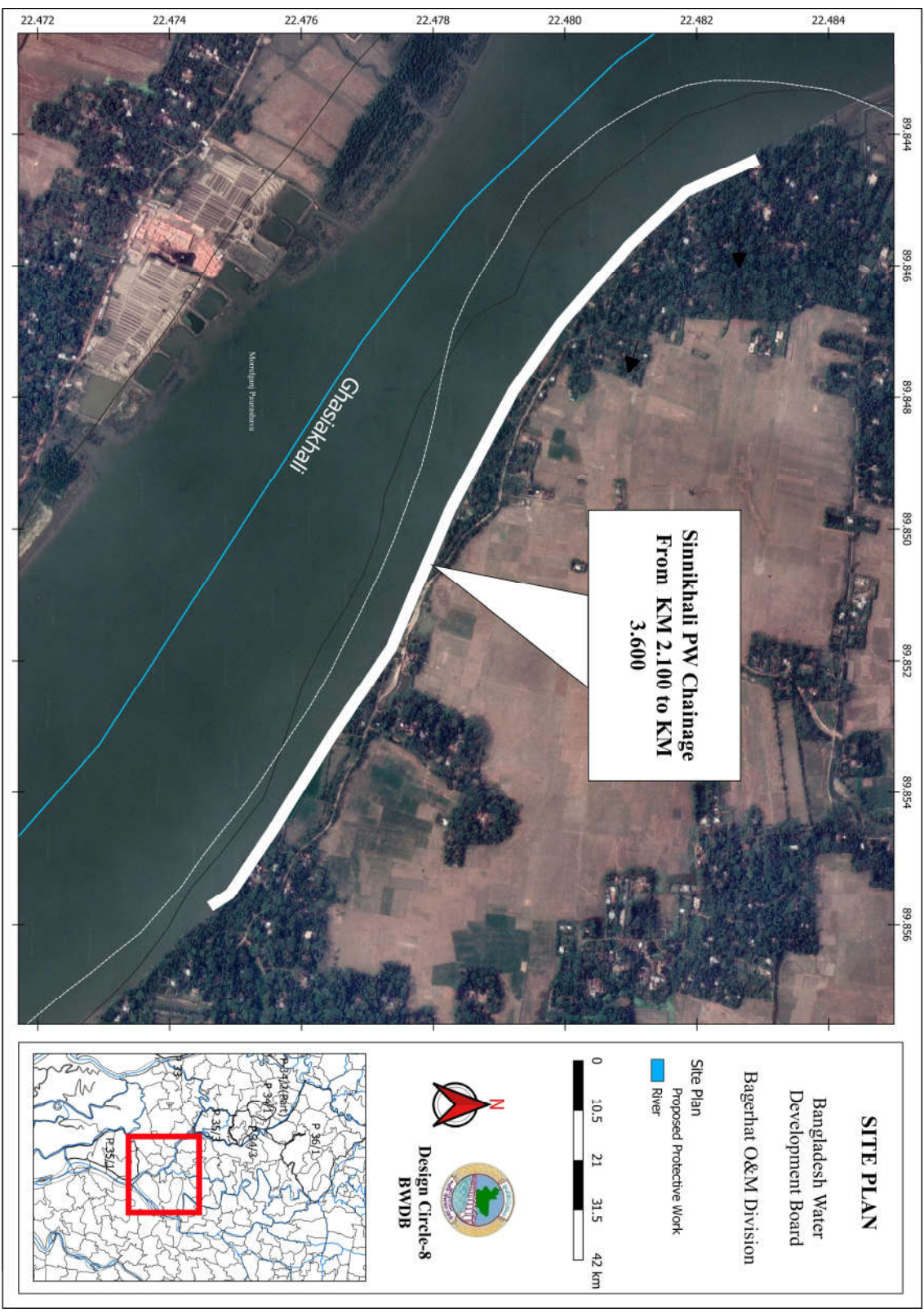
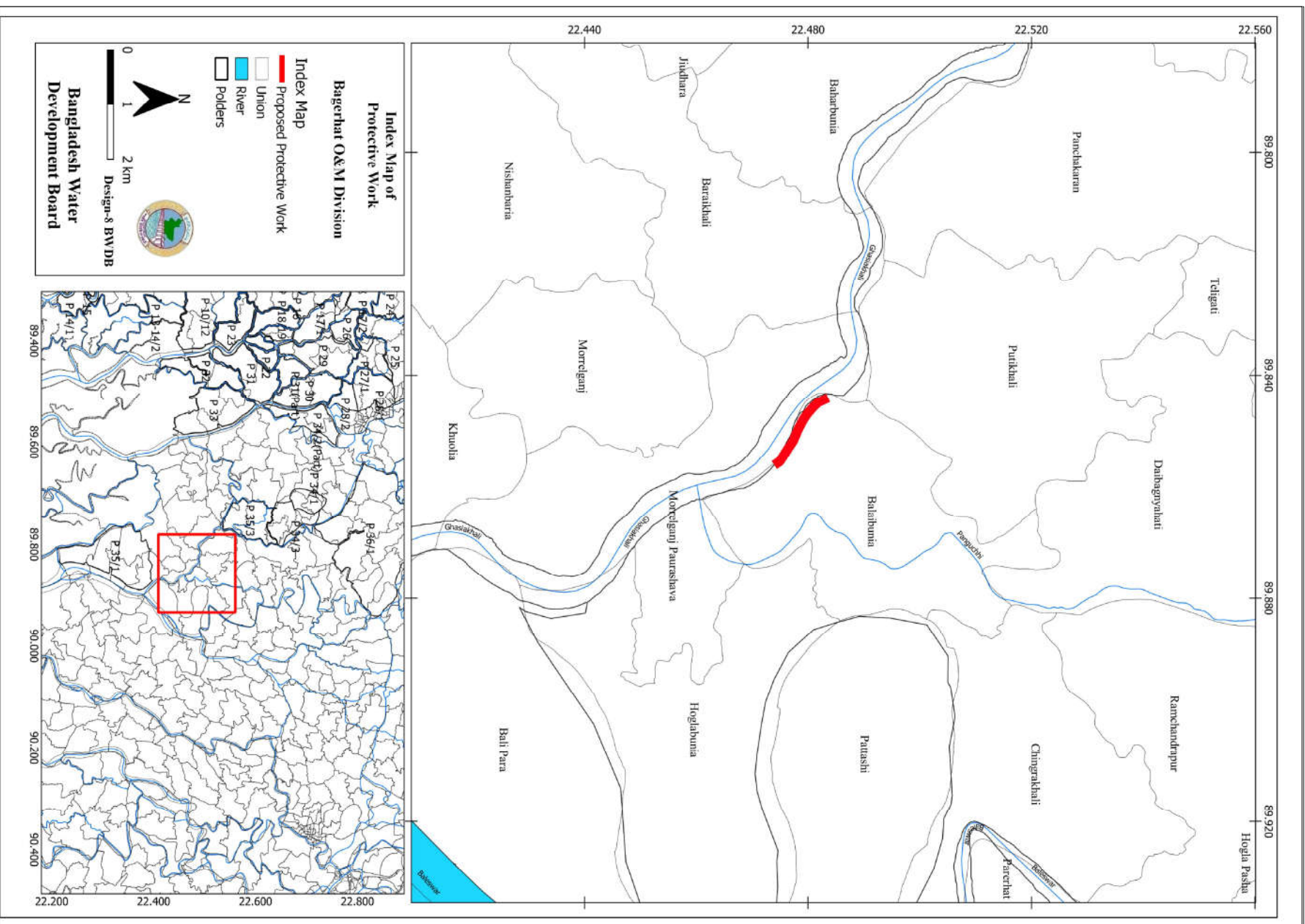
Protection of Morelganj Upazila Sadar and adjacent areas from erosion of Pangusi river in Bagerhat District and Re-excavation/Dredging of Bishkhali river

**Design of River Bank Protective Work At Sinnakhali From km
2.100 to km 3.600 = 1.500 km**

Bagerhat O&M Division

Designed by:Design Circle-8,BWDB,Dhaka

January,2023



SITE MAP

Bangladesh Water Development Board	
Office of The Superintending Engineer, Design Circle-8	
Protection of Morrelganj Upazila Sadar and adjacent areas from erosion of Pangusi river in Bagerhat District ar Re-excavation/Dredging of Bishakhali river	
Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km	
INDEX MAP & SITE MAP	
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: 10-01-2023	Drawing No: DC-8-0333-01/10

Notes :

- 1. THIS DRAWING HAS BEEN PREPARED BASED ON DATA SENT BY THE SUPERINTENDING ENGINEER, KHULNA O & M CIRCLE, BWDB, KHULNA VIDE MEMO NO: 293, DATED-24/08/2022.
- 2. FOR ANY ERROR, OMISSION OR CONFUSION PLEASE REFER TO THIS OFFICE AS QUICK AS POSSIBLE FOR NECESSARY ACTION.
- 3. THE WORK SHALL BE EXECUTED WITH PRIOR FINANCIAL & ADMINISTRATIVE APPROVAL AND TECHNICAL SANCTION FROM THE COMPETENT AUTHORITY.
- 4. ALL DIMENSIONS ARE IN MILLIMETRE (mm) AND ALL ELEVATIONS ARE IN METRE (PWD) UNLESS OTHERWISE MENTIONED IN THE DRAWING.
- 5. THE MATERIAL & WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS OF BWDB MANUAL.
- 6. NECESSARY LAND SHALL BE ARRANGED BEFORE EXECUTION OF WORK.
- 7. THE GEO-TEXTILE FILTER HAVE THICKNESS OF 3.00 mm.
- 8. GEO-TEXTILE FILTER SHALL BE EXTENDED UPTO 1000 mm BELOW THE W.W.L/TOE & SHALL HAVE TO BE ANCHORED CAREFULLY AT THE TOP OF THE SLOPE AS SHOWN IN THE DRAWING.
- 9. GEO-TEXTILE MATERIALS SHALL BE PRESERVED AGAINST UV RAY AND FROM ANY OTHER DAMAGES.
- 10. GEO-TEXTILE MATERIALS AFTER PLACING SHALL NEVER BE EXPOSED TO SUNLIGHT. GEO-TEXTILE FILTER SHALL BE COVERED IMMEDIATELY AFTER PLACEMENT.
- 12. FULL LENGTH OF PROPOSED PROTECTIVE WORK SHALL BE DONE AT A TIME IN ONE DRY SEASON FOR EFFECTIVENESS.
- 13. IF THERE ARE ANY POND OR DITCH EXISTS WITHIN 100 m DISTANCE FROM THE RIVER BANK, IT MUST BE PROPERLY FILLED UPTO G.L WITH LOCAL EARTH AND SHALL BE COMPACTED AS PER SCHEDULE BEFORE STARTING THE PROTECTIVE WORK.
- 14. SLOPE OF PITCHING WORK SHALL BE MAINTAINED AS PER EXISTING SLOPE OR AS PER Rehabilitation SECTION, BUT NOT STEEPER THAN 2H:1V. ALL BANK IRREGULARITIES ABOVE WORKING WATER LEVEL SHALL BE REMOVED. NECESSARY CUTTING & FILLING SHALL BE DONE IN THIS RESPECT AS PER FIELD REQUIREMENT.
- 15. A SMOOTH TRANSITION TO BE PROVIDED BETWEEN HIGHER & LOWER LEVEL AND FLATTER & STEEPER SLOPE OF THE PROTECTIVE WORK. TOP LEVEL OF PITCHING WORK SHOULD BE MATCH WITH EXISTING BANK LEVEL.
- 16. AT THE STARTING AND AT THE END OF THE PROTECTIVE WORK TRANSITION TO THE EXISTING UNPROTECTED BANK OR THE PREVIOUSLY COMPLETED WORK MUST BE GRADUAL AND TANGENTIAL.

NOTES FOR C.C BLOCKS:

- 1. CONCRETE FOR C.C BLOCK FOR DUMPING SHALL HAVE MINIMUM CYLINDER STRENGTH of 10.50N/mm2 AND FOR PLACING SHALL HAVE MINIMUM CYLINDER STRENGTH OF 12.00N/mm2 AT 28 DAYS.
- 2. CURING OF C.C BLOCKS SHALL BE CONTINUED FOR 21 DAYS
- 3. THE PITCHING WORK SHALL BE PLACED ON PROPERLY COMPACTED SLOPE.

NOTES FOR GEOBAGS:

- 1. EACH BAG DELIVERED AT SITE SHALL BE MARKED WITH LABELS THAT IDENTIFY BRAND NAME, CONTRACT PACKAGE NO, SIZE OF BAG, ATE OF PRODUCTION OF GEOTEXTILE, NAME OF CONTRACTOR ETC.
- 2. SEWING SHALL BE DONE BY MACHINE WITH LOCK STITCH (TYPE 301 UNDER ISO 4915/DIN61400) OR DOUBLE CHAIN STITCH (TYPE 401 UNDER ISO 4915/DIN61400) AS PER BWDB TECHNICAL SPECIFICATION AND TENDER DOCUMENT. THREAD FOR STITCHING SHOULD BE 100% POLYPROPYLENE OR NYLON.
- 3. FILLING MATERIAL OF GEOBAG SHOULD BE SAND AND 80% SHOULD RETAIN ON #100 SEIVE. SAND SHOULD BE FREE FROM CLAY & ORGANIC MATTER.
- 4. MATERIAL OF GEOBAG SHALL BE 100% POLYPROPYLENE.
- 5. SIEVE ANALYSIS FOR CHECKING 80% RETAINED ON #100 SIEVE AND TEST FOR CLAY & ORGANIC MATTER CONTENT SHOULD BE DONE (AS PER ACTUAL NEED). SPECIFICATIONS OF GEOTEXTILE SHALL BE AS PER ITEM CODE 40-500-40.

BANGLADESH WATER DEVELOPMENT BOARD			
OFFICE OF THE SUPERINTENDING ENGINEER			
DESIGN CIRCLE-8			
Protection of Morrelgonj Upazila Sadar & Adjacent Area from Erosion of Panguchi River & Re-excavation/Dredging of Biskhail River in Bagerhat District.			
Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km			
NOTES			
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: 10-01-2023	DWG NO.: DC-8-0333-02/10		

NOTES FOR DUMPING

1. WORK SHALL BE EXECUTED ONLY WHEN WL IS AT OR NEAR WORKING L.W.L AS SHOWN IN THE DRAWING.
2. SURVEY BOAT EQUIPPED WITH NECESSARY DUMPING EQUIPMENT, SURVEY EQUIPMENT & SURVEY TEAM SHOULD BE ENSURED AT SITE BEFORE START OF DUMPING.
3. DUMPING MATERIALS SHALL BE DUMPED FROM BARGE EQUIPPED WITH GUIDED FENCE SO THAT DUMPING MATERIALS CAN BE DUMPED INTO PROPER POSITION.
4. THE FOLLOWING EQUIPMENT SHOULD BE USED FOR DUMPING.

a. FLAT TOP BARGE /PONTOONS/BOAT SHALL BE USED FOR DUMPING .

b. ENGINE BOAT - FOR TRANSPORTING THE DUMPING MATERIAL TO THE BARGE.

c. TOPOGRAPHIC & BATHYMETRIC SURVEY TEAM EQUIPPED WITH TOTAL STATION.

d. NO DUMPING SHALL ALLOWED WITHOUT PROPERLY POSITIONED & ANCHORED FLAT TOP BARGE OR DUMPING PONTON OR BOAT.

6. SPECIAL CARE SHALL BE TAKEN FOR ANCHORING OF DUMPING PONTON/ BOAT.

7. WORK SHALL BE STARTED FROM U/S END AND FROM DUMPING END TO BANK.

8. FOLLOWING CONSTRUCTION SEQUENCE SHALL BE FOLLOWED DURING EXECUTION OF THIS PROTECTIVE WORK:

a. EXECUTION OF WORK SHALL BE DONE FROM THE EXTREME END OF DUMPING TO TOWARDS THE BANK.

b. DUMPING OF GEOBAG BELOW L.W.L.

c. DUMPING OF C.C BLOCKS BELOW LWL OVER GEOBAG.

d. SLOPE PREPARATION & PITCHING WORK ABOVE LWL.

1. AS BUILT DRAWING CONTAINING CROSS SECTIONS AT 50 m INTERVAL SHALL BE PREPARED IMMEDIATELY AFTER COMPLETION OF DUMPING.

2. THE RIVER BEHAVIOUR WITH RESPECT TO SCOUR AND EROSION AND PERFORMANCE OF REVETMENT WORK DURING AND AFTER EXECUTION SHALL BE MONITORED CAREFULLY ON REGULAR BASIS TO TAKE TIMELY MITTIGATIVE AND STRENGTHENING MEASURES .REGULAR MONITORING OF THIS PROTECTIVE WORK MUST BE DONE THROUGH BATHYMETRIC SURVEY .

3. FROM JUNE TO OCTOBER BATHYMETRIC SURVEY SHOULD BE DONE ON REGULAR INTERVAL & SHALL BE KEPT AS RECORD FOR FURTHER USE.

4. DREDGING ADJACENT TO PROTECTIVE WORK SHALL NOT BE ALLOWED.
- ITEM CODE:
1. DUMPING BLOCK 450X450X450 : 40-170-25

2. DUMPING BLOCK 350X350X350 : 40-170-45

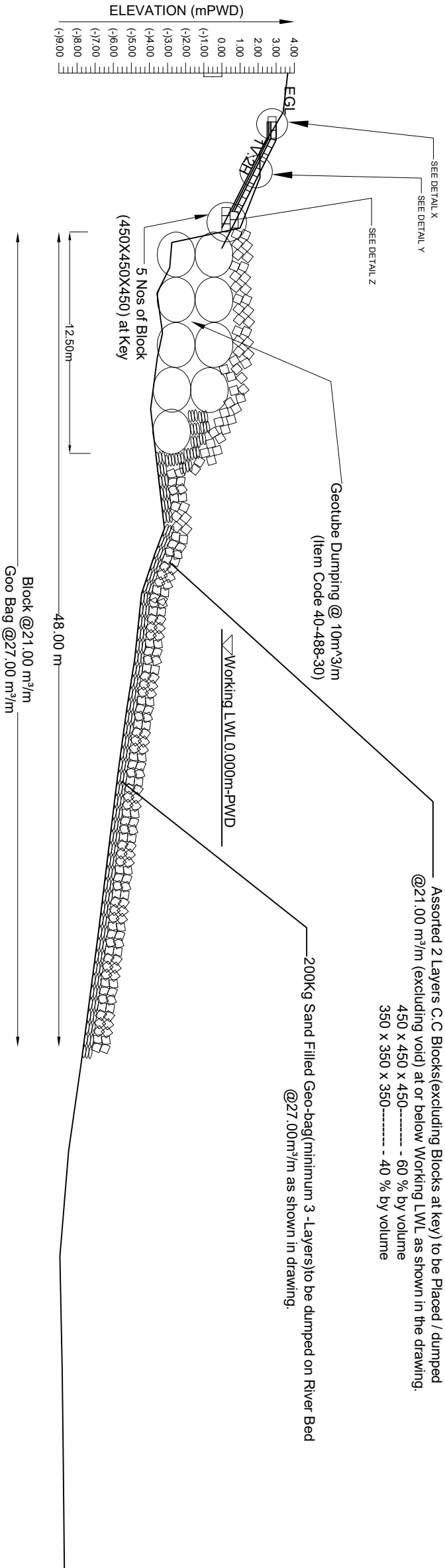
3. PLACING BLOCK 400X400X200 : 40-190-40

4. GEOTUBE 40-488-30
- | | | | |
|---|--------------------------------|--|--|
| BANGLADESH WATER DEVELOPMENT BOARD | | | |
| OFFICE OF THE SUPERINTENDING ENGINEER | | | |
| DESIGN CIRCLE-8 | | | |
| Protection of Morrelgonj Upazila Sadar & Adjacent Area from Erosion of Panguchi River &Re-excavation/Dredging of Bishnali River in Bagerhat District. | | | |
| Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km | | | |
| NOTES | | | |
| DESIGNED BY : | RECOMMENDED BY : | | |
| (ZAYED BINSALIF), AE | (MOHAMMAD SAIF UDDIN), SE | | |
| CHECKED BY : | APPROVED BY : | | |
| (JAKARIA PERVEZ), EE | (MD. ENAYET ULLAH), CE, Design | | |
| DATE: 10-01-2023 | DWG NO.: DC-8-0333-03/10 | | |

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 ALONG THE WHOLE REACH OF THE WORK AT 20 METER INTERVAL TO DETERMINE THE SCOUR HOLES AND GEOTUBE FILLING VOLUME BEFORE EXECUTION OF THE WORK.
- 4.FIELD OFFICE HAS TO SEND ABOVE SURVEY DATA FOR REVISION OF GEO-TUBE FILL VOLUME BEFORE INITIATION OF ANY DUMPING WORK TO THE DESIGN OFFICE.
- 5.DUMPING WORK CAN PROCEED ONLY AFTER GETTING REVISED DRAWING FOR GEO-TUBE FILLING.
6. THE COST OF SURVEYING SHOULD BE INCLUDED IN ESTIMATE AND BOQ.

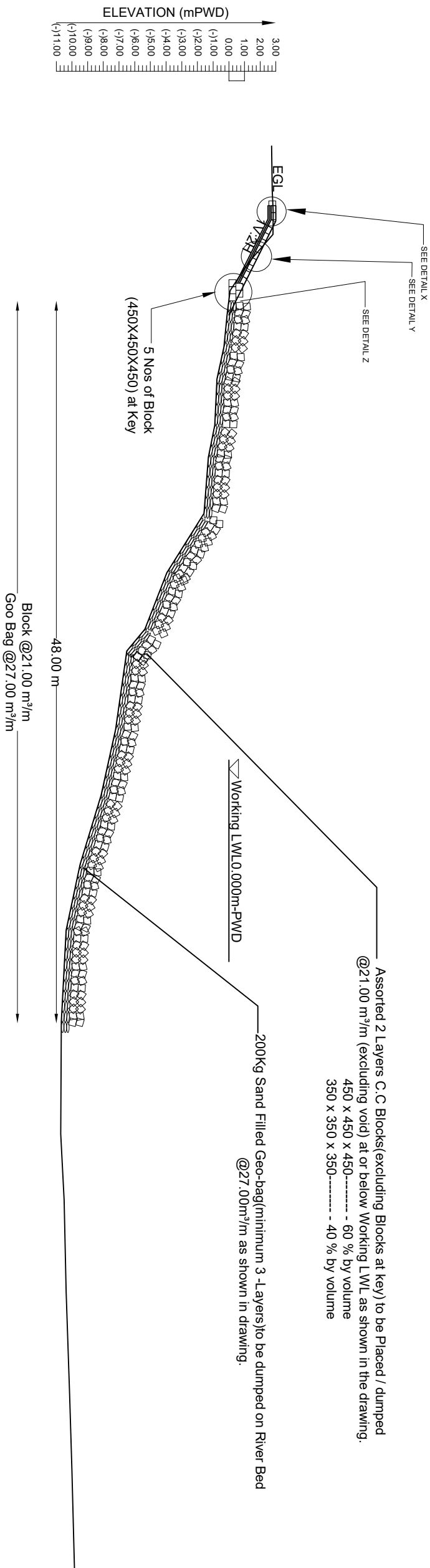
Bangladesh Water Development Board			
Office of The Superintending Engineer, Design Circle-8			
Protection of Morrelganj Upazila Sadar and adjacent areas from erosion of Pangusi river in Bagerhat District and Re-excavation/Dredging of Biskhail river			
Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km			
NOTES			
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:10-01-2023	Drawing No:DC-8-0333-04/10		



Existing Bed Level in (mPWD)	
4.243	3.633
6.403	3.376
8.602	2.088
10.000	2.105
12.806	1.010
13.601	(-)-2.762
15.000	(-)-2.882
16.401	(-)-3.584
18.601	(-)-3.279
20.000	(-)-3.573
22.804	(-)-3.940
29.411	(-)-3.170
30.806	(-)-3.700
33.015	(-)-4.440
36.620	(-)-4.810
39.408	(-)-5.260
43.012	(-)-5.750
48.826	(-)-6.460
51.614	(-)-6.800
58.822	(-)-7.750
63.820	(-)-8.460
69.635	(-)-8.940
76.026	(-)-8.820
81.025	(-)-8.760
86.839	(-)-8.700

TYPICAL CROSS SECTION AT KM 2.200
(APPLICABLE FROM KM 2.100 TO KM 2.250)

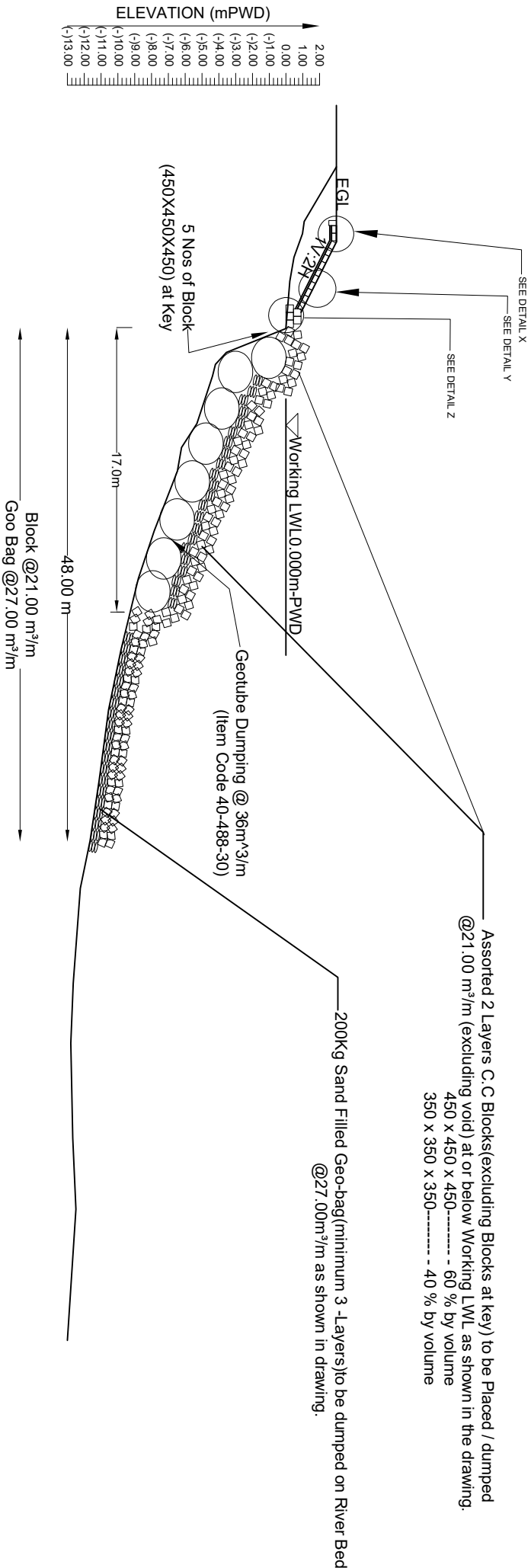
Bangladesh Water Development Board	
Office of The Superintending Engineer, Design Circle-8	
Protection of Morelganj Upazila Sadar and adjacent areas from erosion of Pangauli river in Bagerhat District at Re-excavation/Dredging of Bishkhali river	
Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km	
TYPICAL CROSS SECTION OF SINNAKHALI PROTECTIVE WORK	
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:10-01-2023	Drawing No:DC-8-0333-05/10



Existing Bed Level in (mPWD)	
11.402	2.727
14.213	2.766
15.620	2.827
17.029	2.818
18.439	1.588
19.209	0.998
20.616	0.088
22.023	(-)0.102
24.207	(-)0.315
26.249	(-)0.752
29.206	(-)0.902
31.241	(-)1.302
34.828	(-)1.582
38.601	(-)3.950
42.202	(-)5.350
43.600	(-)6.500
48.600	(-)7.220
52.802	(-)8.140
57.201	(-)9.480
61.400	(-)10.370
67.201	(-)10.680
74.404	(-)10.710
78.600	(-)10.500
84.404	
90.802	(-)10.150
95.802	(-)10.000
102.201	(-)9.840

TYPICAL CROSS SECTION AT KM 2.300
(APPLICABLE FROM KM 2.250 TO KM 2.350)

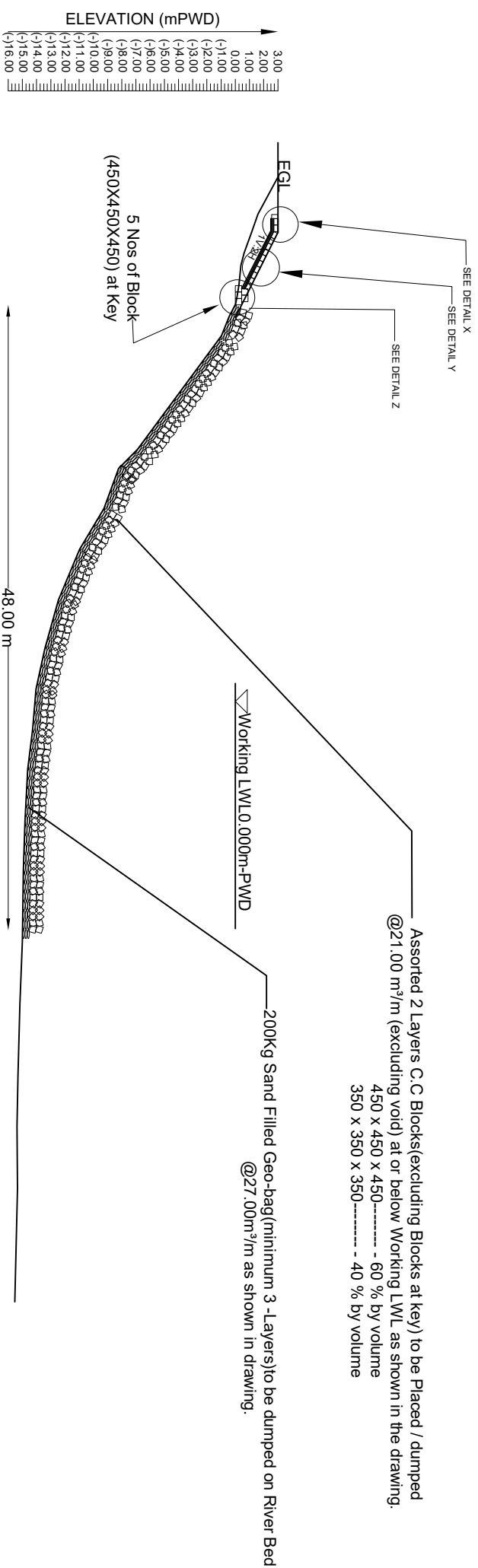
Bangladesh Water Development Board	
Office of The Superintending Engineer, Design Circle-8	
Protection of Morelganj Upazila Sadar and adjacent areas from erosion of Pangusi river in Bagerhat District at Re-excavation/Dredging of Bishkhali river	
Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km	
TYPICAL CROSS SECTION OF SINNAKHALI PROTECTIVE WORK	
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: 10-01-2023	Drawing No: DC-8-0333-06/10



Existing Bed Level in (mPWD)	
9.899	1.919
11.314	1.086
12.042	0.975
13.454	0.475
14.866	0.225
17.692	0.005
19.105	(-)3.550
20.518	(-)4.20
23.345	(-)5.300
24.759	(-)0.925
26.173	(-)6.460
29.732	(-)7.840
32.558	(-)8.790
36.797	(-)9.820
40.361	(-)10.560
44.598	(-)11.120
48.166	(-)11.650
50.990	(-)12.240
56.639	(-)12.650
60.208	(-)12.800
65.856	(-)12.690
70.093	(-)12.500
77.897	(-)13.000

TYPICAL CROSS SECTION AT KM 2.400
(APPLICABLE FROM KM 2.350 TO KM 2.450)

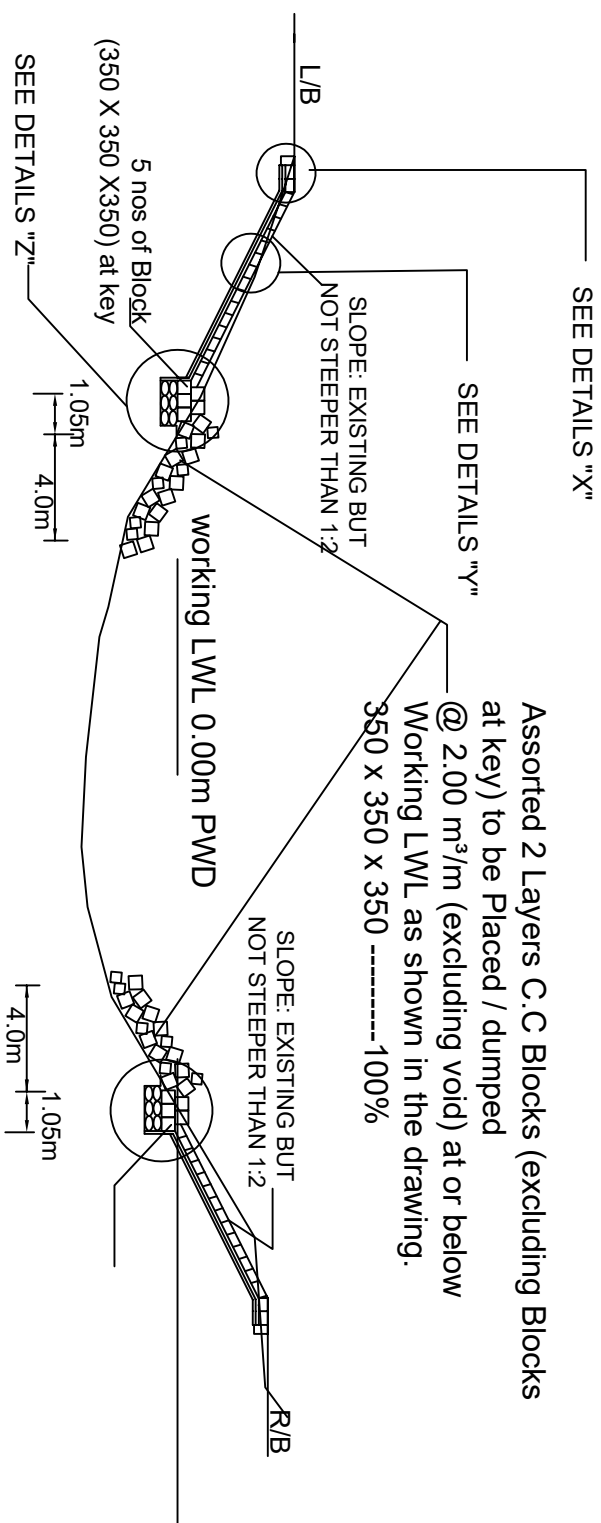
Bangladesh Water Development Board	
Office of The Superintending Engineer, Design Circle-8	
Protection of Morelganj Upazila Sadar and adjacent areas from erosion of Pangusi river in Bagerhat District at Re-excavation/Dredging of Bishkhali river	
Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km	
TYPICAL CROSS SECTION OF SINNAKHALI PROTECTIVE WORK	
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: 10-01-2023	Drawing No: DC-8-0333-07/10



Distance(m)	Existing Bed Level in (mPWD)
13.038	2.054
13.892	1.594
15.264	1.123
16.643	0.623
17.493	0.403
18.868	0.253
19.723	0.123
21.095	(-)0.427
22.472	(-)0.977
30.480	(-)6.880
31.828	(-)8.220
34.655	(-)9.250
37.537	(-)10.970
41.110	(-)12.470
44.553	(-)13.420
47.381	(-)14.040
50.249	(-)14.290
53.038	(-)14.630
56.586	(-)14.820
60.208	(-)14.940
65.192	(-)15.010
69.527	(-)15.170
74.653	(-)15.320
78.243	(-)15.380
82.620	(-)15.340
90.604	(-)15.530

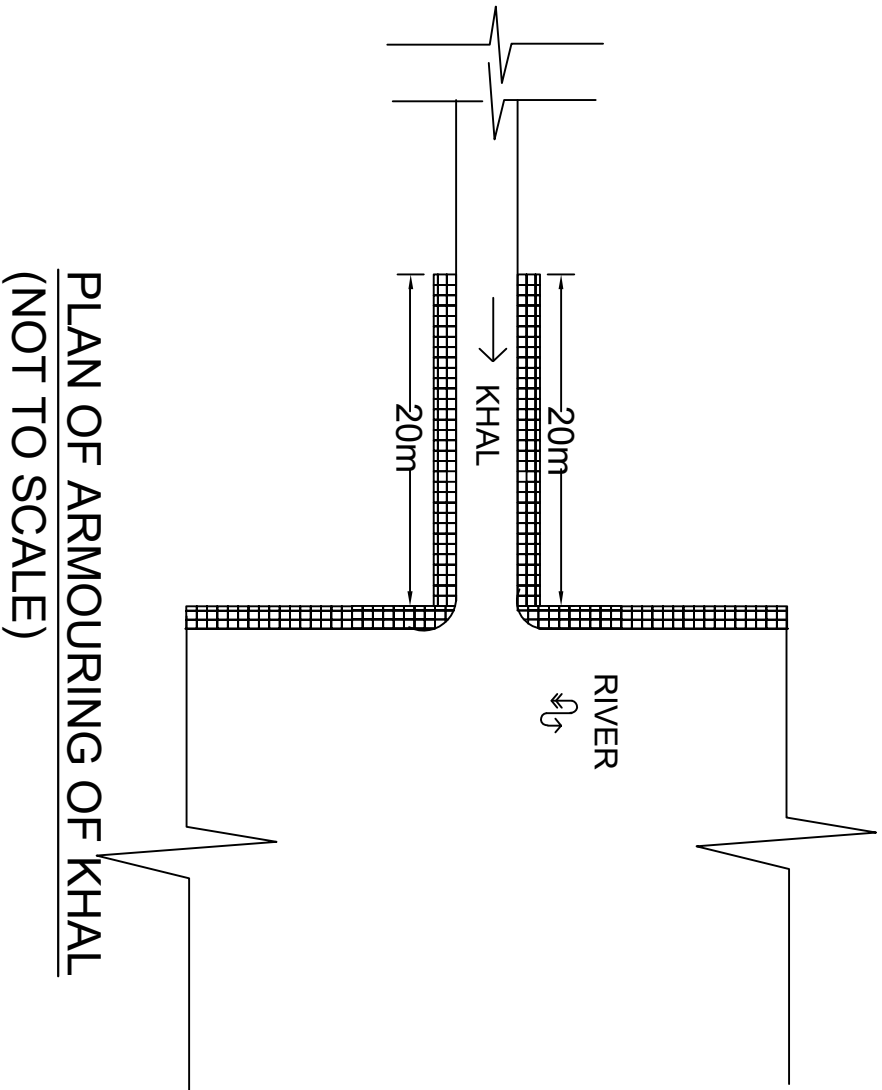
TYPICAL CROSS SECTION AT KM 3.100
(APPLICABLE FROM KM 2.450 TO KM 3.600)

Bangladesh Water Development Board	
Office of The Superintending Engineer, Design Circle-8	
Protection of Morreiganj Upazila Sadar and adjacent areas from erosion of Pangusi river in Bagerhat District at Re-excavation/Dredging of Bishkhali river	
Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km	
TYPICAL CROSS SECTION OF SINNAKHALI PROTECTIVE WORK	
DESIGNED BY: (ZAYED BIN SAIF), AE	RECOMMENDED BY: (MOHAMMAD SAIF UDDIN), SE
CHECKED BY:	APPROVED BY:
(JAKARIA PERVEZ), EE	(MD. ENAYET ULLAH), CE, DESIGN
DATE: 10-01-2023	Drawing No: DC-8-0333-08/10



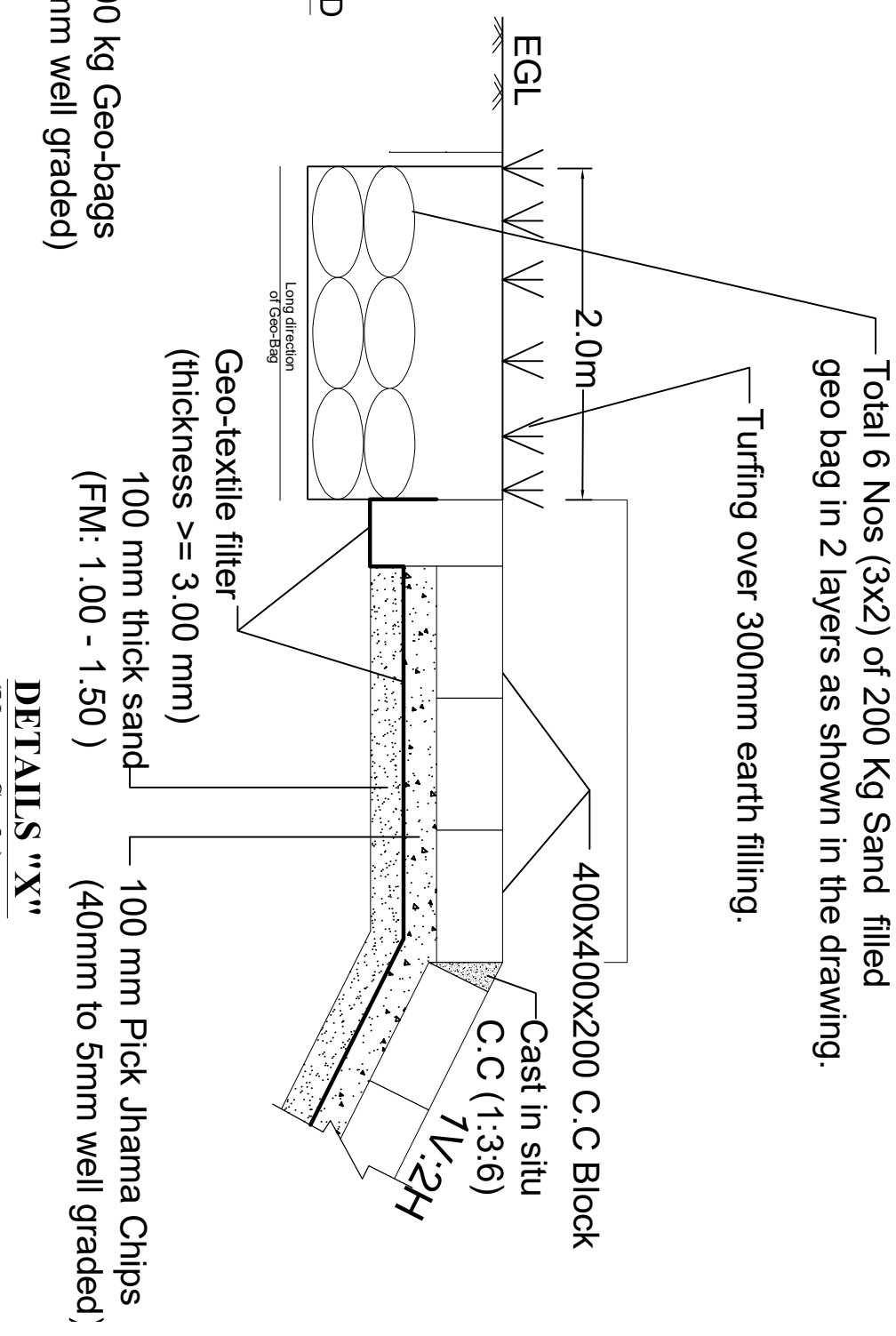
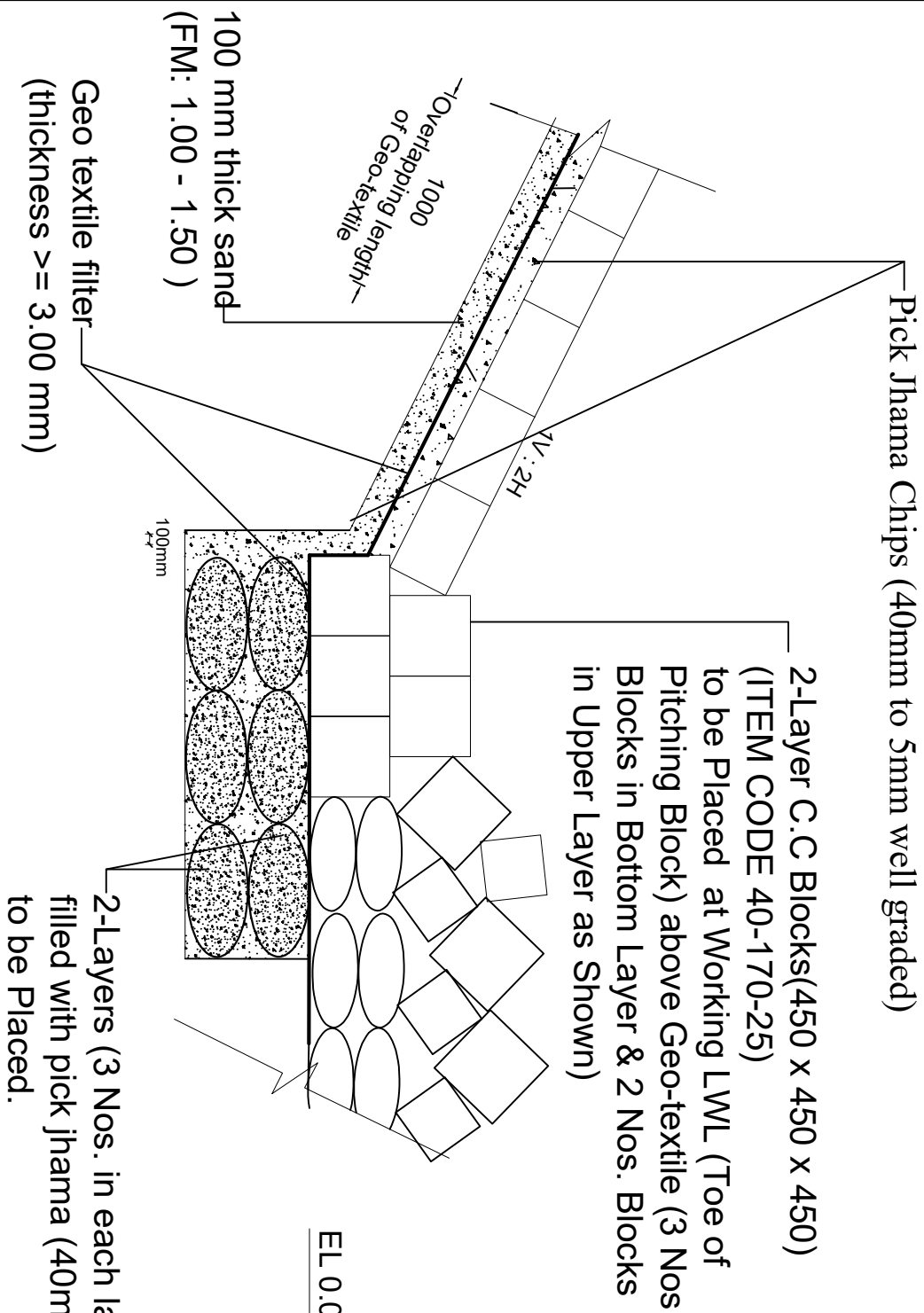
TYPICAL X-SECTION FOR ARMOURING OF PROTECTIVE WORK AT CONFLUENCE OF KHAL

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



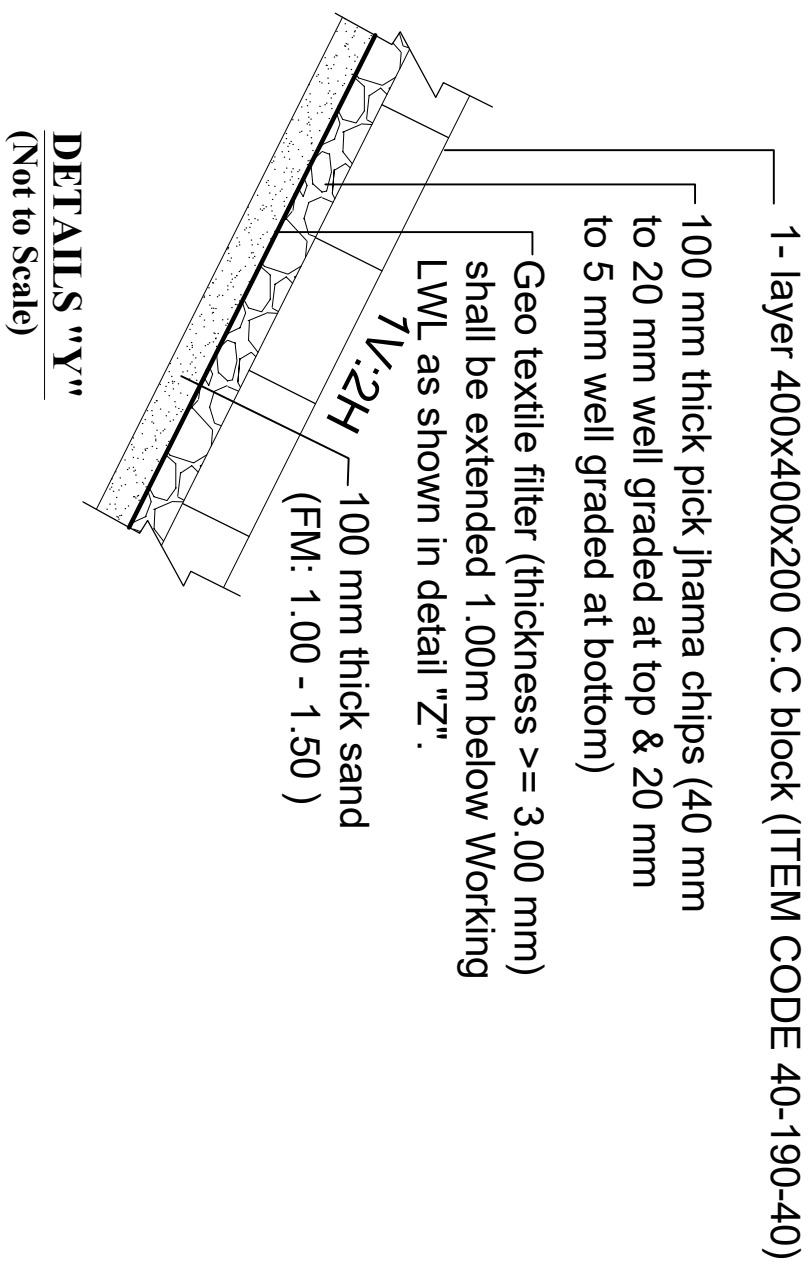
PLAN OF ARMOURING OF KHAL
(NOT TO SCALE)

BANGLADESH WATER DEVELOPMENT BOARD			
OFFICE OF THE SUPERINTENDING ENGINEER			
DESIGN CIRCLE-8			
Protection of Morrelgonj Upazila Sadar & Adjacent Area from Erosion of Panguchi River &Re-excavation/Dredging of Biskhali River in Bagerhat District.			
Design of River Bank Protective Work At Sinnakhal From km 2.100 to km 3.600 = 1.500 km			
TYPICAL SECTION FOR KHAL ARMOURING			
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: 10-01-2023	DWG NO.: DC-8-0333-09/10		



DETAILS "Z"
(Not to Scale)

(Not to Scale)



DETAILS "Y"

(Not to Scale)

BANGLADESH WATER DEVELOPMENT BOARD	
OFFICE OF THE SUPERINTENDING ENGINEER	
DESIGN CIRCLE-8	
Protection of Morrelgonj Upazila Sadar & Adjacent Area from Erosion of Panguchi River & Re-excavation/Dredging of Bishhail River in Bagemat District.	
Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km	
DETAILS	
DESIGNED BY:	RECOMMENDED BY:
(ZAID BIN SAID), AE	(MOHAMMAD SAIF UDDIN), SE
CHECKED BY :	APPROVED BY :
(JAKARIA PERVEZ), EE	(MD. ENAYET ULLAH), CE, Design
DATE: 10-01-2023	DWG NO.: DC-8-0333-10/10