

# Bangladesh Water Development Board



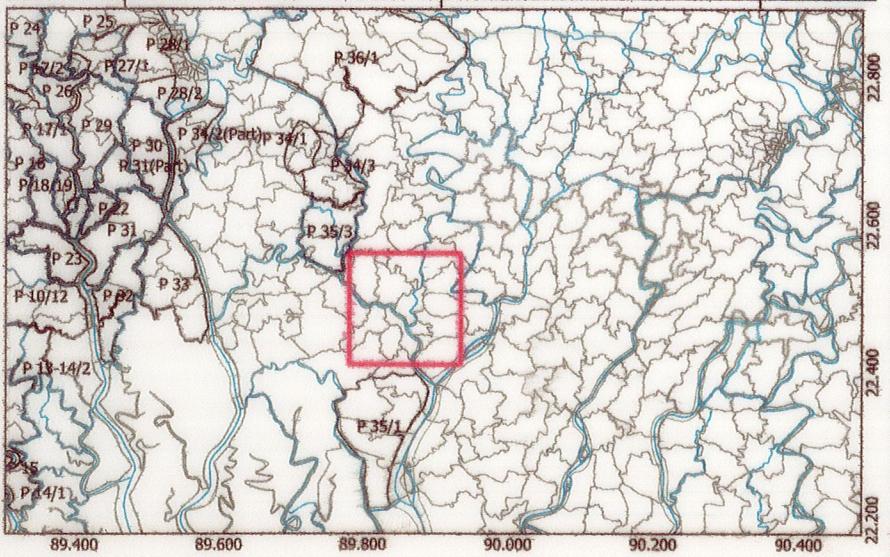
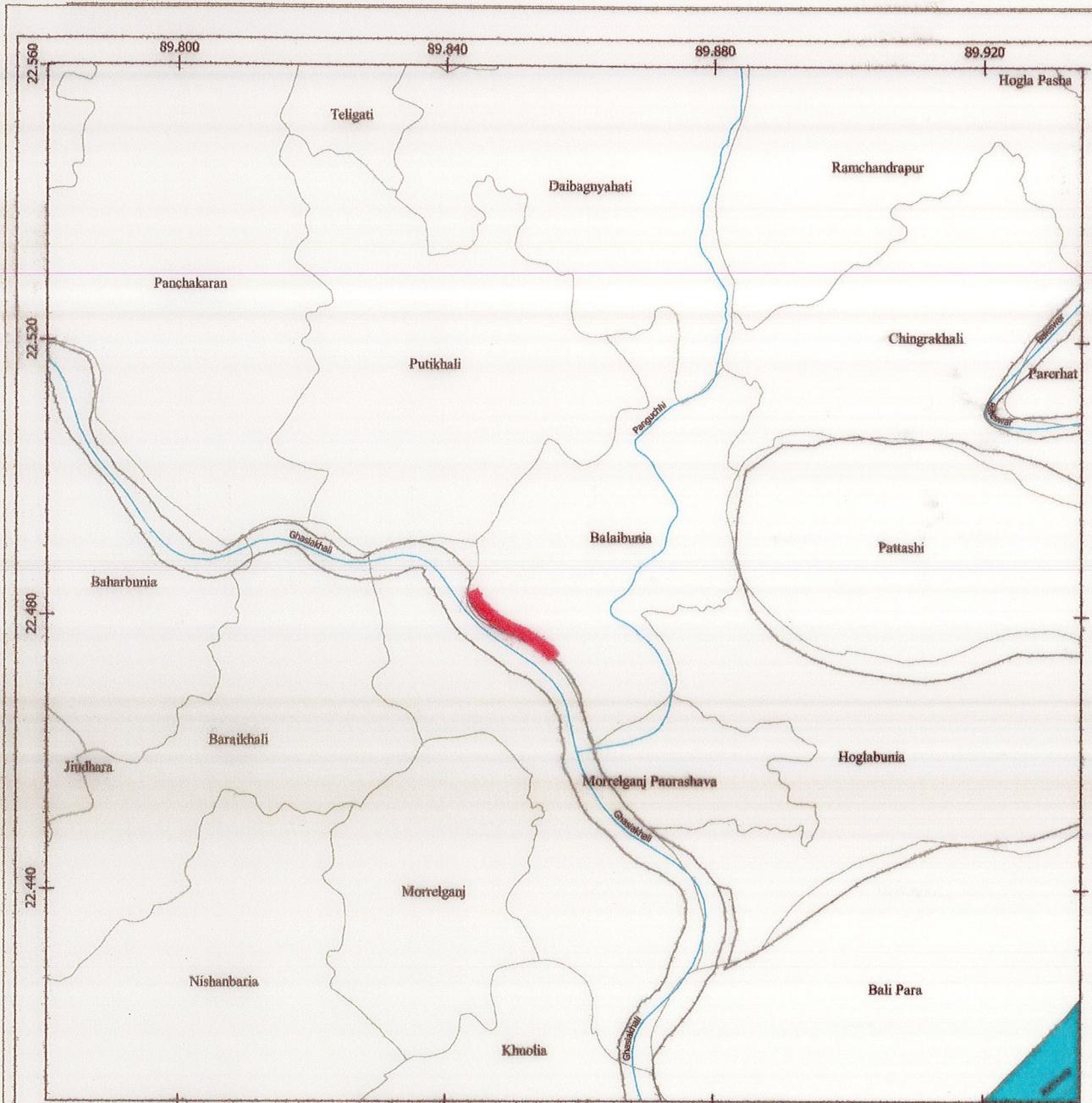
Protection of Morrelganj Upazila Sadar and adjacent areas from erosion of Pangusi river in  
Bagerhat District and Re-excavation/Dredging of Bishkhali river

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

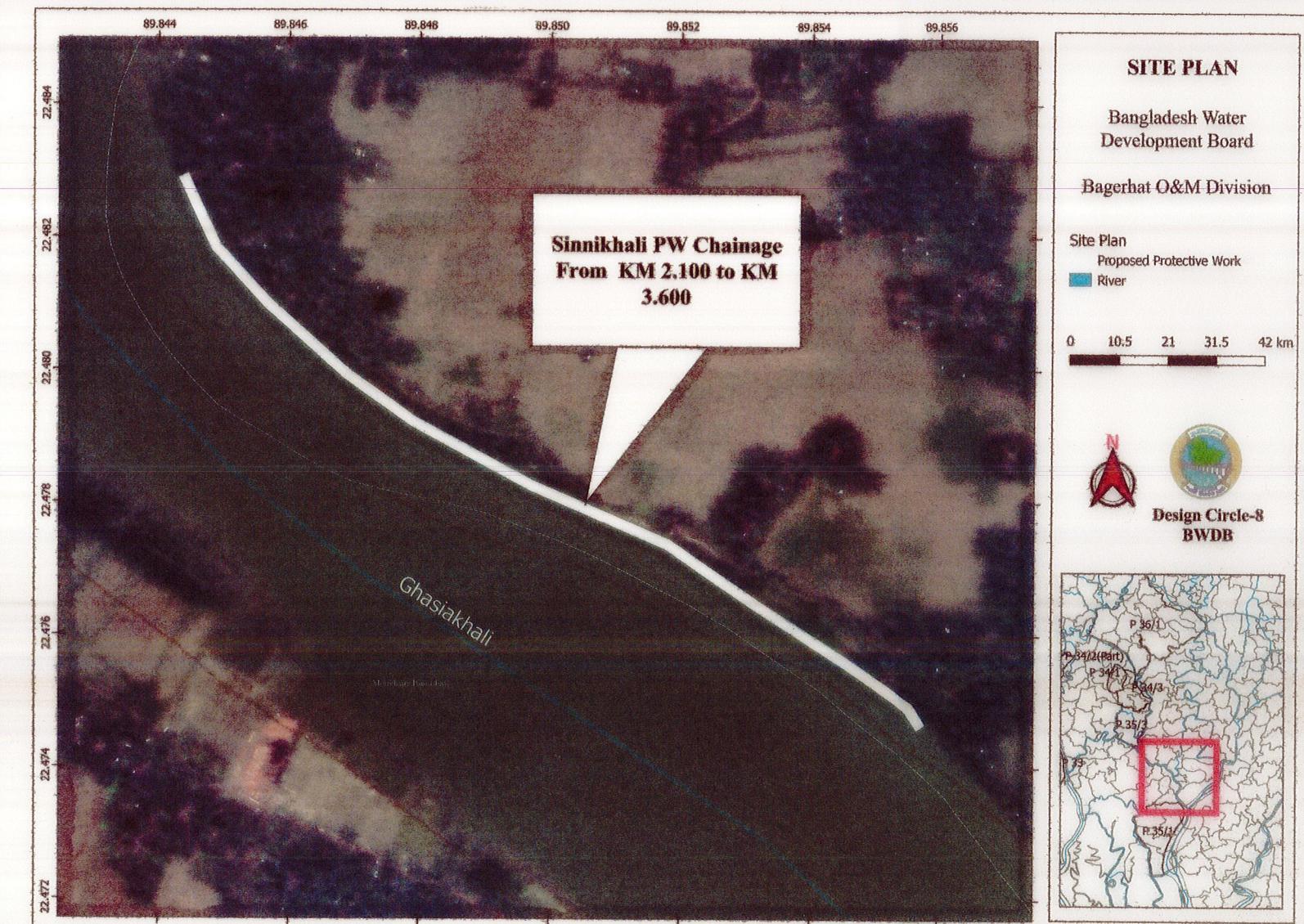
Bagerhat O&M Division

Designed by:Design Circle-8,BWDB,Dhaka

January,2023



INDEX MAP



<b>Bangladesh Water Development Board</b>	
<b>Office of The Superintending Engineer, Design Circle-8</b>	
Protection of Morrelganj Upazila Sadar and adjacent areas from erosion of Pangusia river in Bagerhat District and Re-excavation/Dredging of Bishkhali river	
<b>Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km</b>	
<b>INDEX MAP &amp; SITE MAP</b>	
DESIGNED BY:  <i>[Signature]</i> (ZAYED BIN SAIF), AE	RECOMMENDED BY:  <i>[Signature]</i> (MOHAMMAD SAIF UDDIN), SE
CHECKED BY:  <i>[Signature]</i> (JAKARIA PERVEZ), EE	APPROVED BY:  <i>[Signature]</i> (MD. ENAYET ULLAH), CE, DESIGN
DATE: 10-01-2023 Drawing No: DC-8-0333-01/10	

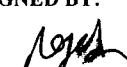
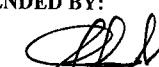
1. THIS DRAWING HAS BEEN PREPARED BASED ON DATA SENT BY THE SUPERINTENDING ENGINEER, KHULNA O & M CIRCLE, BWDB, KHULNA VIDE MEMO NO: 293, DATED-24/08/2022.
2. FOR ANY ERROR, OMISSION OR CONFUSION PLEASE REFER TO THIS OFFICE AS QUICK AS POSSIBLE FOR NECESSARY ACTION.
3. THE WORK SHALL BE EXECUTED WITH 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 COMPAKTED 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/mm<sup>2</sup> AND FOR PLACING SHALL HAVE MINIMUM CYLINDER STRENGTH OF 12.00N/mm<sup>2</sup> AT 28 DAYS.
2. CURING OF C.C BLOCKS SHALL BE CONTINUED FOR 21 DAYS
3. THE PITCHING WORK SHALL BE PLACED ON PROPERLY COMPAKTED 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.

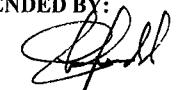
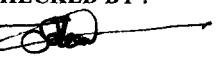
<b>BANGLADESH WATER DEVELOPMENT BOARD OFFICE OF THE SUPERINTENDING ENGINEER DESIGN CIRCLE-8</b>	
Protection of Morrelgonj Upazila Sadar & Adjacent Area from Erosion of Panguchi River & Re-excavation/Dredging of Biskhali River in Bagerhat District.	
Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 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: 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 PONTOON OR BOAT.
5. SPECIAL CARE SHALL BE TAKEN FOR ANCHORING OF DUMPING PONTOON/ BOAT.
6. WORK SHALL BE STARTED FROM U/S END AND FROM DUMPING END TO BANK.
7. 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.
8. AS BUILT DRAWING CONTAINING CROSS SECTIONS AT 50 m INTERVAL SHALL BE PREPARED IMMEDIATELY AFTER COMPLETION OF DUMPING.
9. 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 MITIGATIVE AND STRENGTHENING MEASURES .REGULAR MONITORING OF THIS PROTECTIVE WORK MUST BE DONE THROUGH BATHYMETRIC SURVEY .
10. FROM JUNE TO OCTOBER BATHYMETRIC SURVEY SHOULD BE DONE ON REGULAR INTERVAL & SHALL BE KEPT AS RECORD FOR FURTHER USE.
11. DREDGING ADJACENT TO PROTECTIVE WORK SHALL NOT BE ALLOWED.

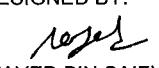
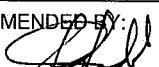
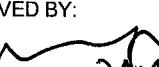
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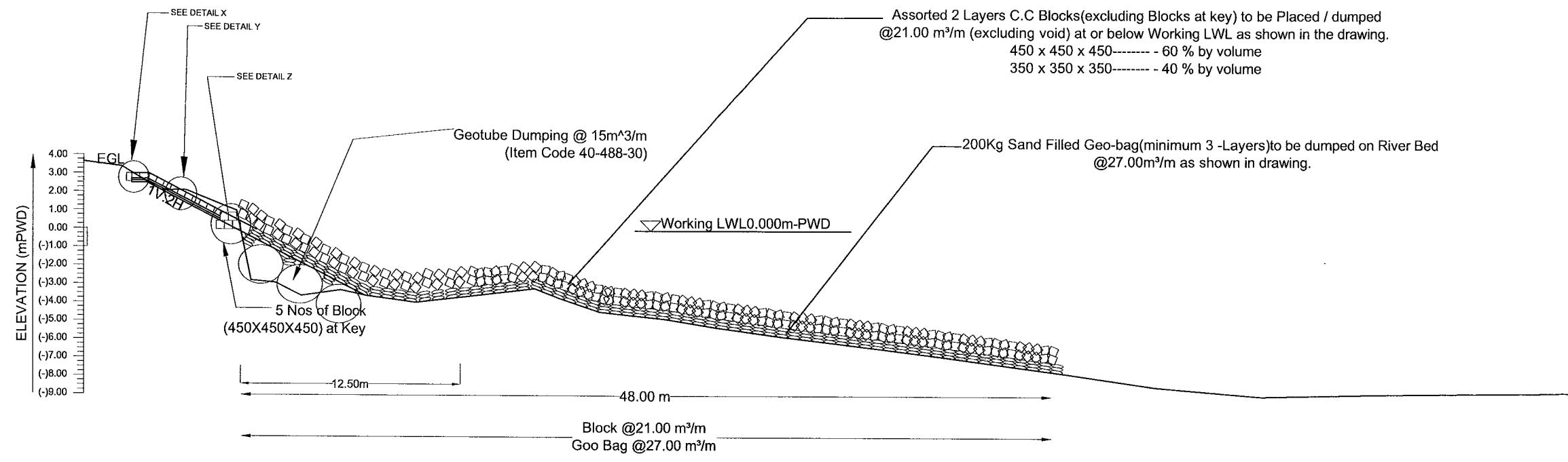
1. DUMPING BLOCK 450X450X450 : 40-170-25
2. DUMPING BLOCK 350X350X350 : 40-170-45
3. PLACING BLOCK 400X400X200 : 40-190-40
4. GEOTUBE 40-488-30

<b>BANGLADESH WATER DEVELOPMENT BOARD</b>	
OFFICE OF THE SUPERINTENDING ENGINEER	
DESIGN CIRCLE-8	
Protection of 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 Sinnakhali From km 2.100 to km 3.600 = 1.500 km	
<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
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 Enginner,Design Circle-8	
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<b>NOTES</b>	
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CHECKED BY:  (JAKARIA PERVEZ), EE	APPROVED BY:  (MD. ENAYET ULLAH), CE, DESIGN
DATE:10-01-2023	Drawing No:DC-8-0333-04/10



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

Bangladesh Water Development Board

Office of The Superintending Enginner,Design Circle-8

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

#### TYPICAL CROSS SECTION OF SINNAKHAI PROTECTIVE WORK

DESIGNED BY:  
*Zayed*  
(ZAYED BIN SAIF), AE

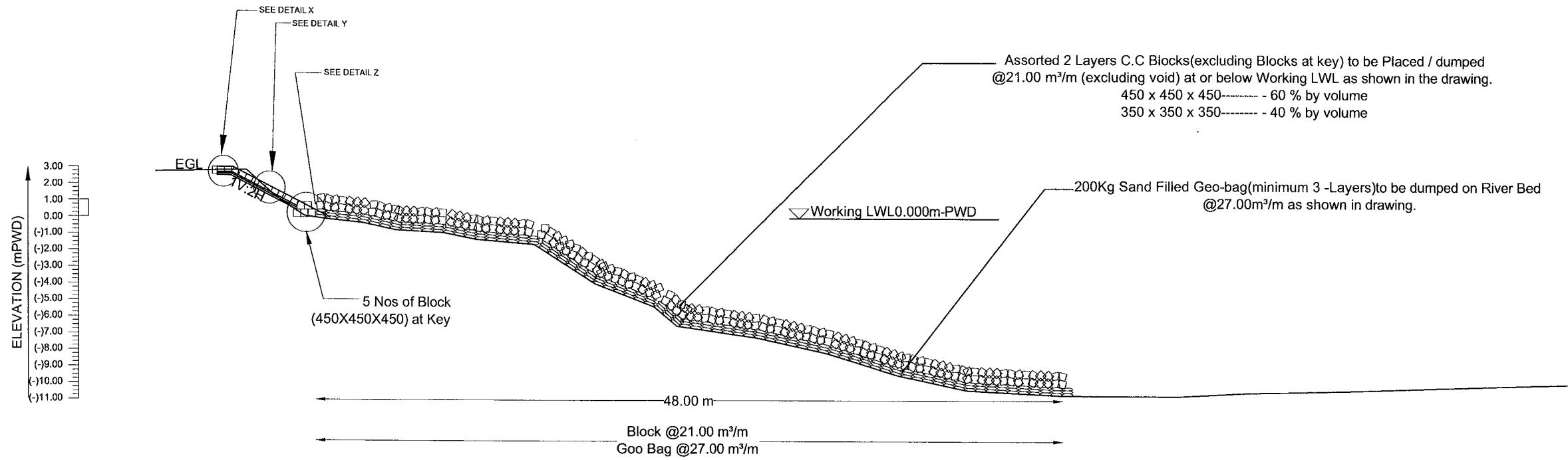
COMMENDED BY:  
  
MOHAMMAD SAIF UDDIN (SF)

CHECKED BY:  
*Soham*  
(JAKARIA PERVEZ),EE

PROVED BY:  
D. ENAYET ULLAH),CE,DESIGN  
18.03.2021

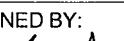
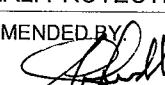
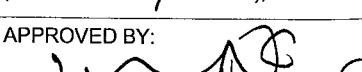
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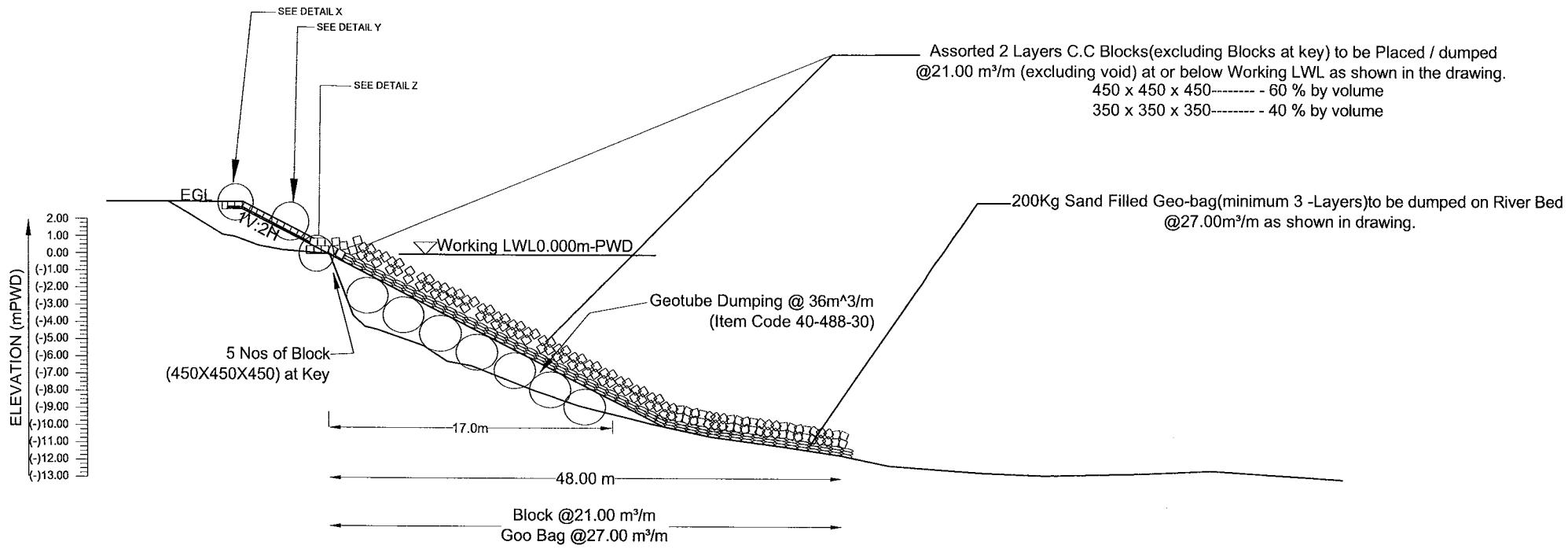
Drawing No:DC-8-0333-05/10



Existing Bed Level in (mPWD)	
	2.727
Distance(m)	
11.402	
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)**

<p><b>Bangladesh Water Development Board</b></p> <p><b>Office of The Superintending Enginner,Design Circle-8</b></p> <p><b>Protection of Morrelganj Upazila Sadar and adjacent areas from erosion of Pangusi river in Bagerhat District and Re-excavation/Dredging of Bishkhali river</b></p> <p><b>Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km</b></p> <p><b>TYPICAL CROSS SECTION OF SINNAKHALI PROTECTIVE WORK</b></p>	
<p><b>DESIGNED BY:</b>    (ZAYED BIN SAIF), AE</p>	<p><b>RECOMMENDED BY:</b>    (MOHAMMAD SAIF UDDIN), SE</p>
<p><b>CHECKED BY:</b>    (JAKARIA PERVEZ), EE</p>	<p><b>APPROVED BY:</b>    (MD. ENAYET ULLAH), CE, DESIGN</p>
<p><b>DATE:</b>10-01-2023</p>	<p><b>Drawing No:</b>DC-8-0333-06/10</p>



Existing Bed Level in (mPWD)	1.919	1.086	0.005	(-)3.550	(-)4.20	17.692	19.105	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
Distance(m)	9.899	11.344	12.342	13.454	14.866	17.692	20.518	23.345	24.759	26.173	29.732	32.558	36.797	40.361	44.598	48.166	50.990	56.639	60.208	65.856	70.093	77.897															

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

Bangladesh Water Development Board

Office of The Superintending Enginner,Design Circle-8

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

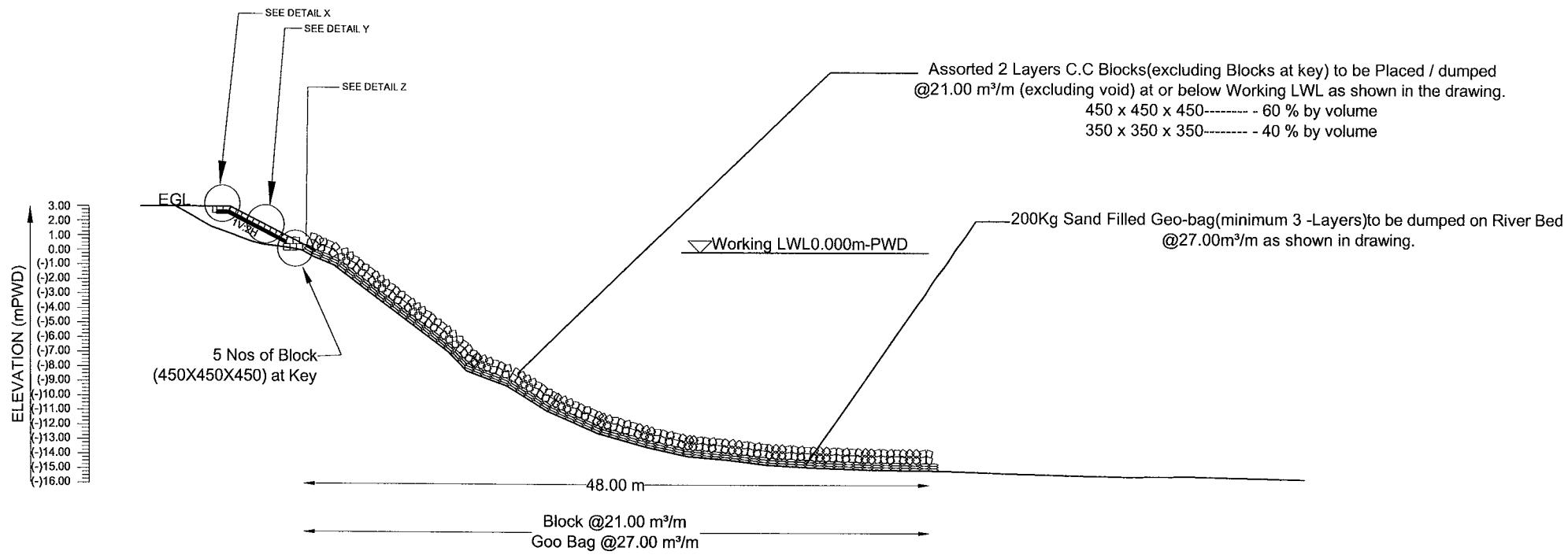
Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km

TYPICAL CROSS SECTION OF SINNAKHALI PROTECTIVE WORK

DESIGNED BY:  
*Zayed*  
(ZAYED BIN SAIF), AERECOMMENDED BY:  
*Sidd*  
(MOHAMMAD SAIF UDDIN), SECHECKED BY:  
*Jakaria*  
(JAKARIA PERVEZ), EEAPPROVED BY:  
*Enayetullah*  
(MD. ENAYET ULLAH), CE, DESIGN

DATE:10-01-2023

Drawing No:DC-8-0333-07/10



Existing Bed Level in (mPWD)	3.054	2.994	1.123	0.623	0.403	0.253	0.123	-0.427	-0.977
Distance(m)	30.480	31.828	34.655	37.537	41.110	44.553	47.381	50.249	53.038
	(-6.880 (-8.220	(-9.250 (-10.970	(-12.470 (-13.420	(-14.040 (-14.290	(-14.630 (-14.820	(-14.940 (-15.010	(-15.170 (-15.320	(-15.380 (-15.340	(-15.530 (-15.604

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

Bangladesh Water Development Board

Office of The Superintending Enginner,Design Circle-8

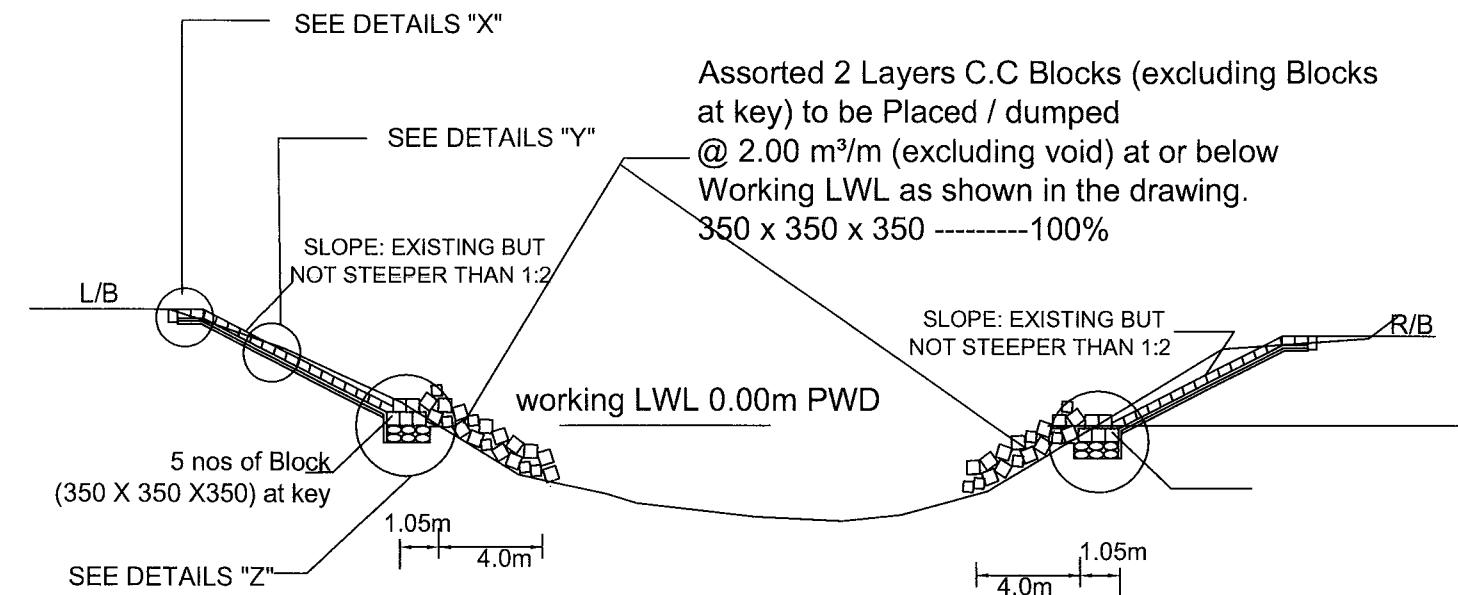
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TYPICAL CROSS SECTION OF SINNAKHALI PROTECTIVE WORK

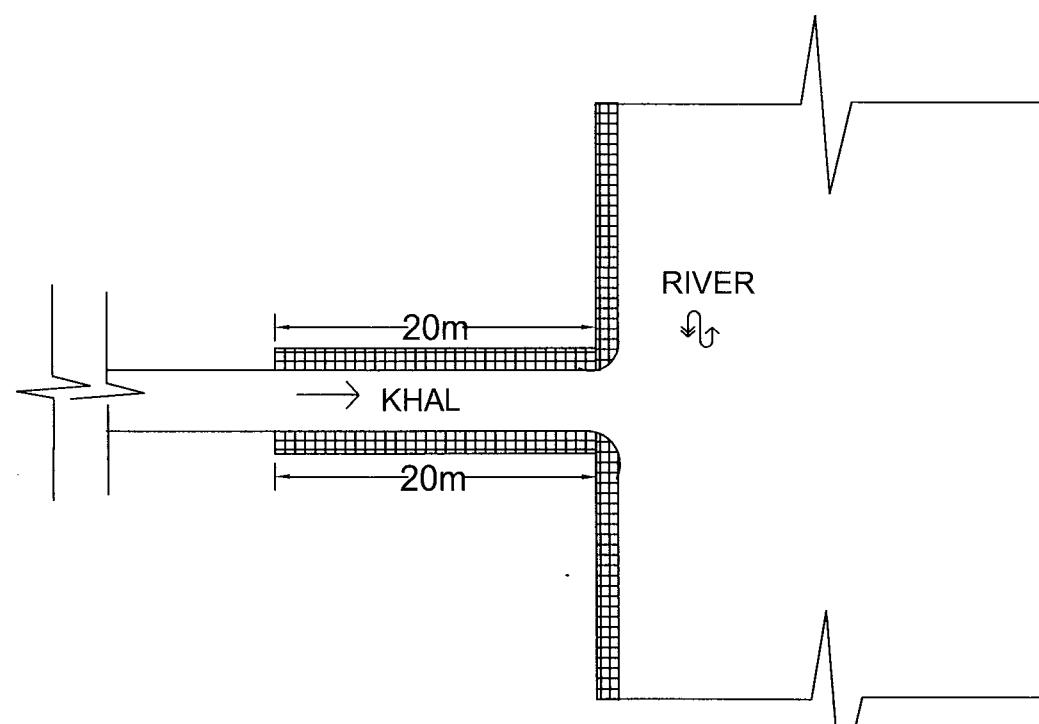
DESIGNED BY: 	RECOMMENDED BY: 
(ZAYED BIN SAIF), AE	(MOHAMMAD SAIF UDDIN), SE
CHECKED BY: 	APPROVED BY: 
(JAKARIA PERVEZ), EE	(MD. ENAYET ULLAH), CE, DESIGN

DATE:10-01-2023 Drawing No:DC-8-0333-08/10



### 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)



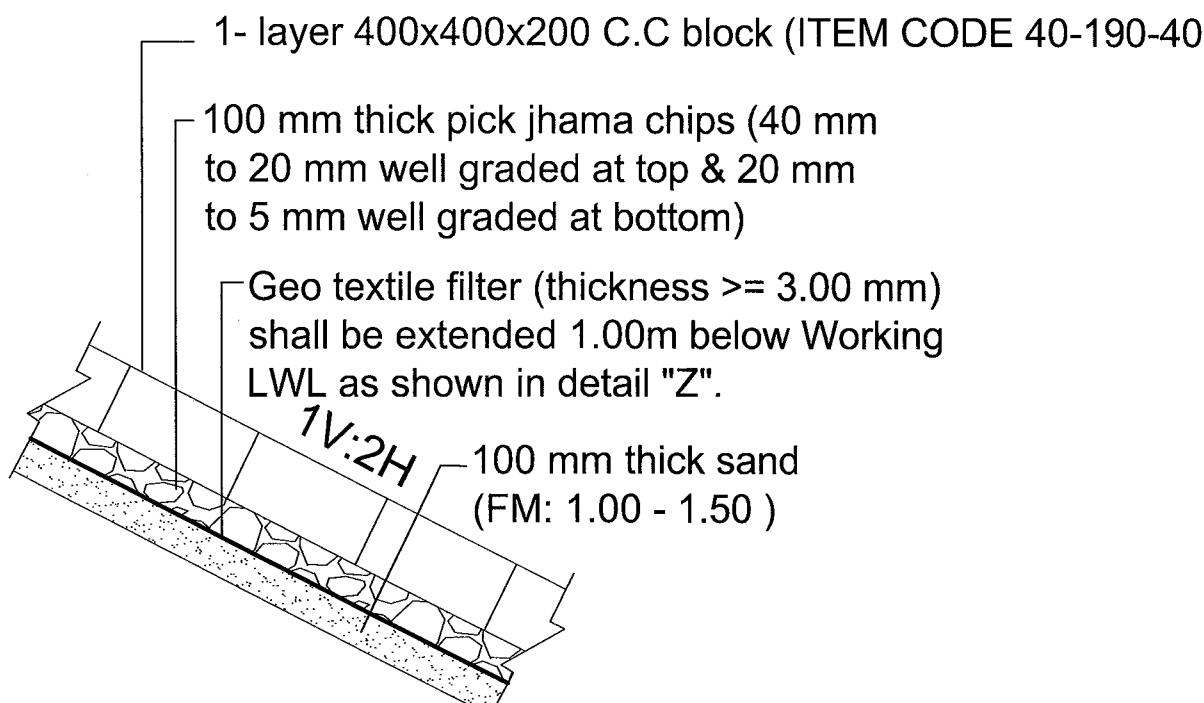
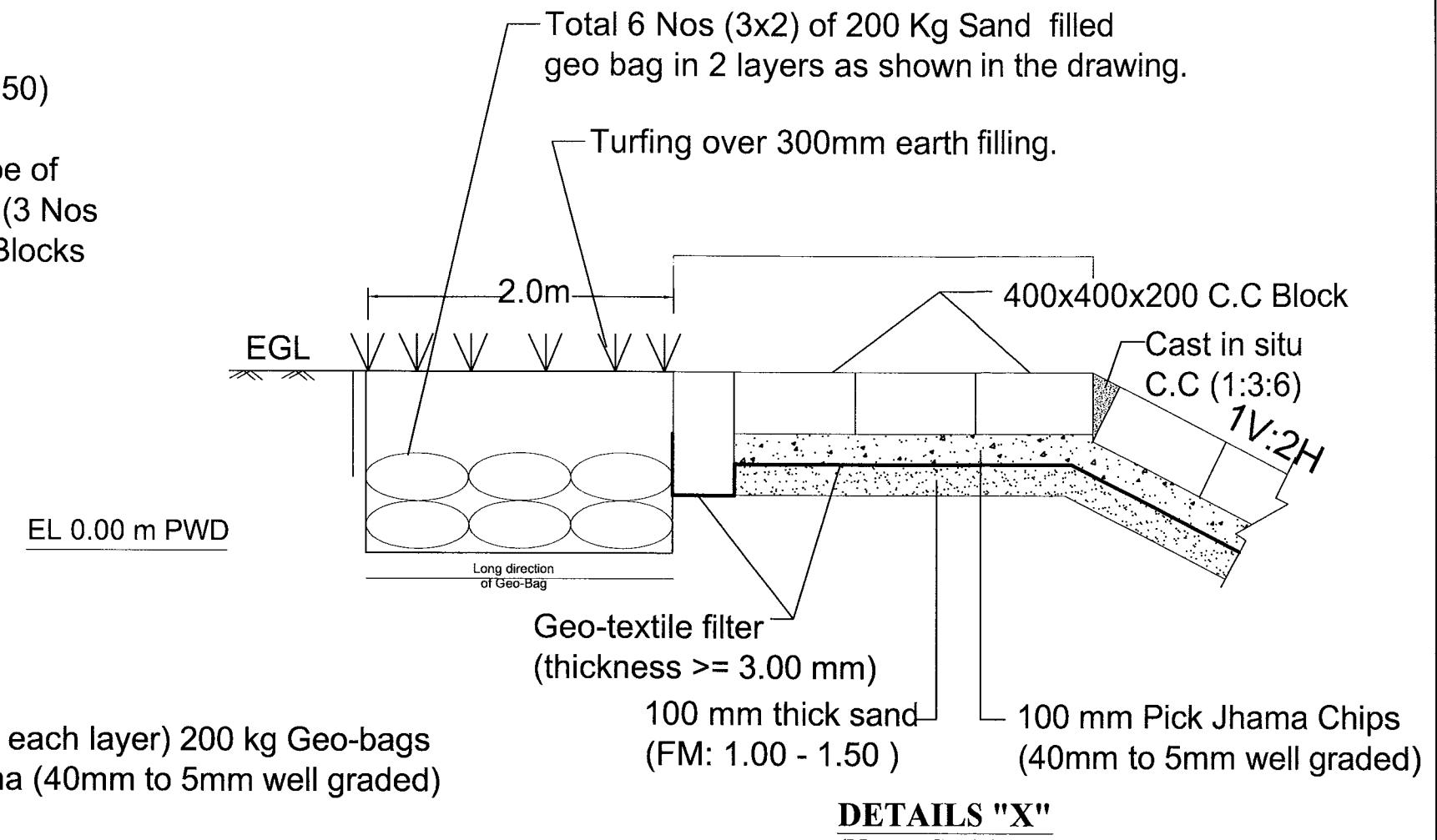
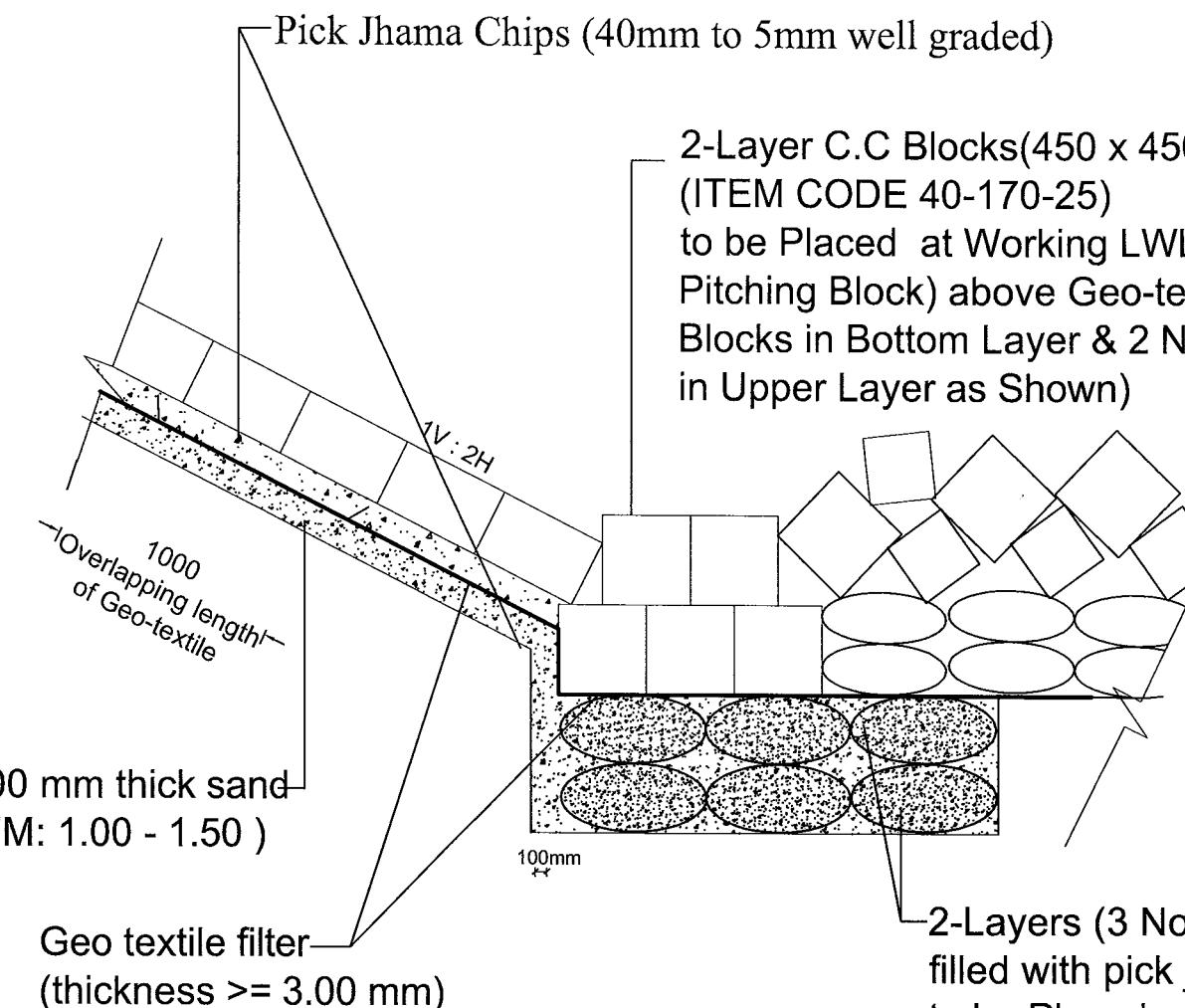
PLAN OF ARMOURING OF KHAL  
(NOT TO SCALE)

BANGLADESH WATER DEVELOPMENT BOARD  
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Design of River Bank Protective Work At Sinnakhali From km 2.100 to km 3.600 = 1.500 km

#### TYPICAL SECTION FOR KHAL ARMOURING

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	DWG NO.: DC-8-0333-09/10



Scale: 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 Sinnakhali  
From km 2.100 to km 3.600 = 1.500 km

**DETAILS**

DESIGNED BY: 	RECOMMENDED BY: 
(ZAID 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-8-0333-10/10