

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

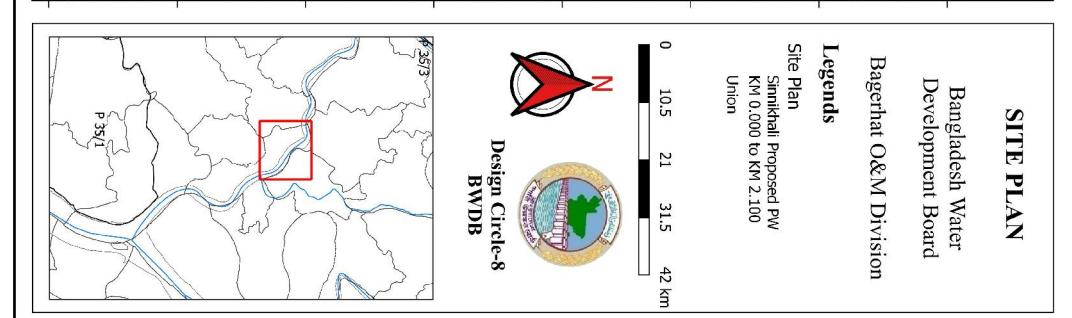
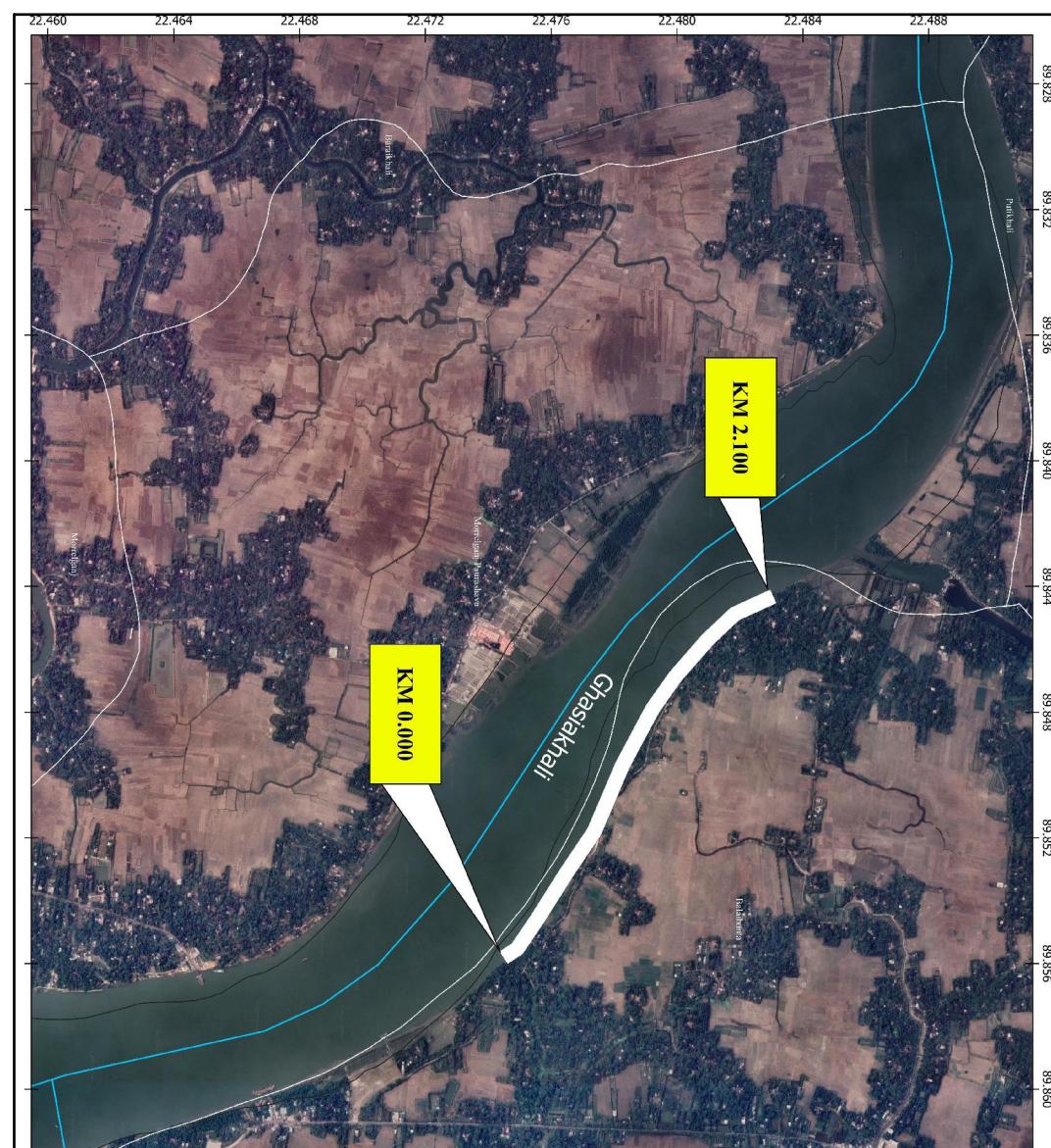
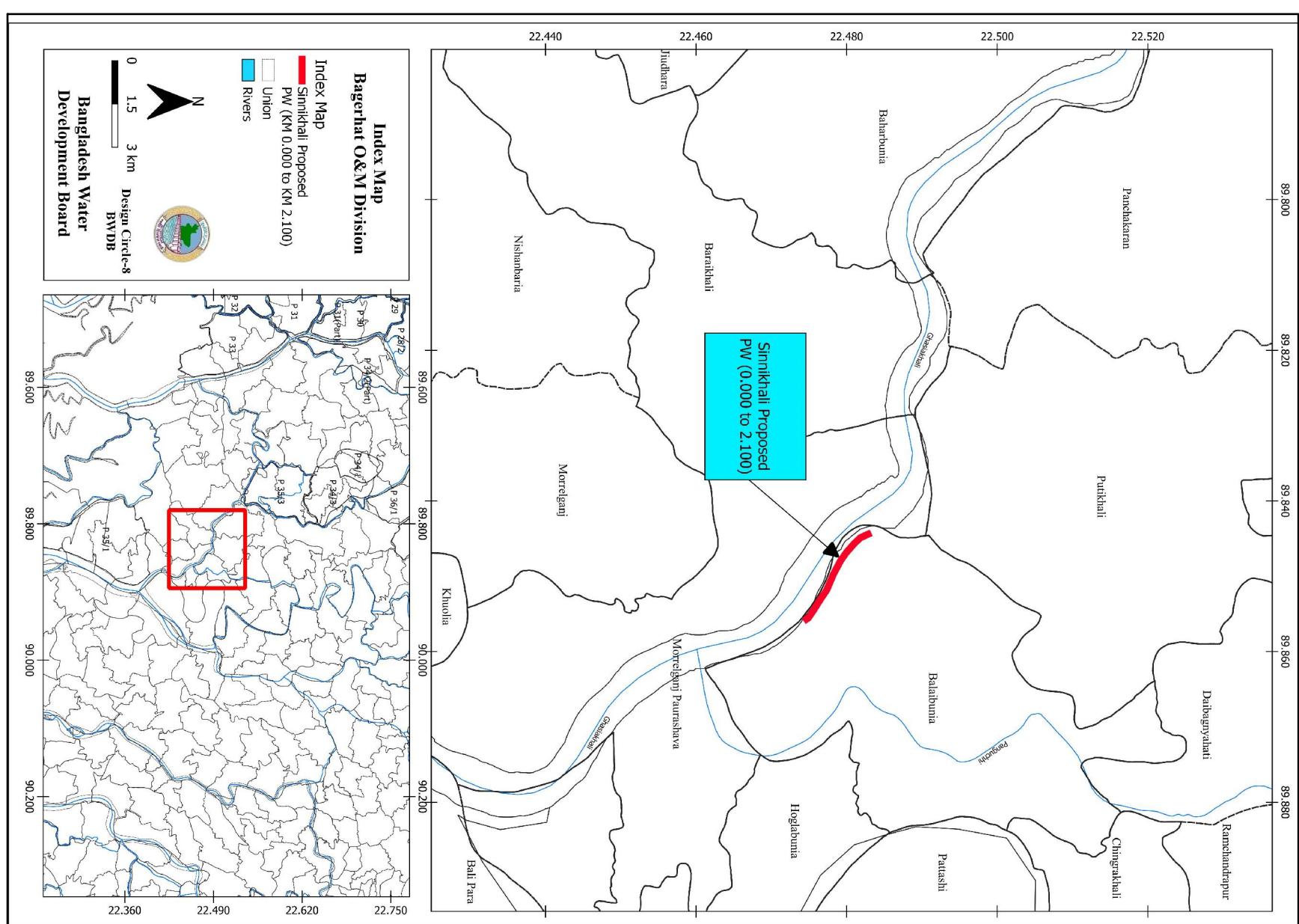
Design of River Bank Protective Work At Sinnakhalı From km 2.100 to km 3.600 = 1.500 km

Satkhira O&M Division-1

Designed by:Design Circle-8,BWDB,Dhaka

November, 2022

Sheet No:1 OF 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 SIEVE. 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 Parnguchi River & Re-excavation/Dredging of Biskhali
River in Bagerhat District.

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

NOTES	RECOMMENDED BY:
(ZAYED BIN SAIF, AE)	(MOHAMMAD SAIF UDDIN, SE)

CHECKED BY:
(JAKARIA PERVEZ, EE)

APPROVED BY:
(MD. ENAVET ULLAH, CE, Design)

DATE: 00-00-2022 DWG NO.: DC-8-0000-02/10

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 ON FOLLOWING CHAINAGE AND PROVIDE X-SECTIONS DATA TO DESIGN OFFICE BEFORE FINALIZATION OF THE DRAWING.

STARTING CHAINAGE	STARTING CHAINAGE FOR BATHYMETRIC SURVEY	SECTION INTERVAL FOR BATHYMETRIC SURVEY	NO. OF SECTIONS
KM 2.100	KM 2.250	20.0m	9
KM 2.350	KM 2.450	20.0m	6

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	
Design of River Bank Protective Work At Simnakhali From km 2.100 to km 3.600 = 1.500 km	
NOTES	
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-03/50

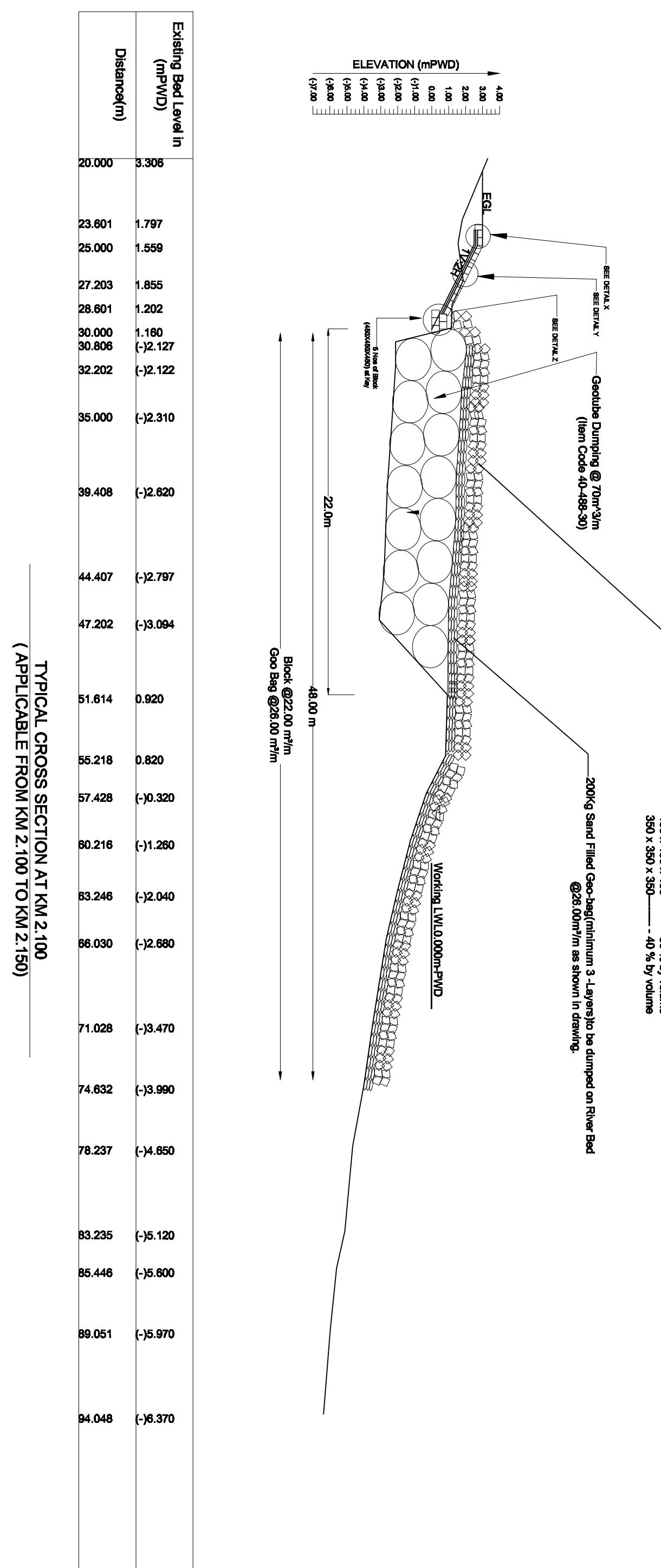
NOTES FOR DUMPING

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. 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 LWL.
 - 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 MITIGATIVE 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.

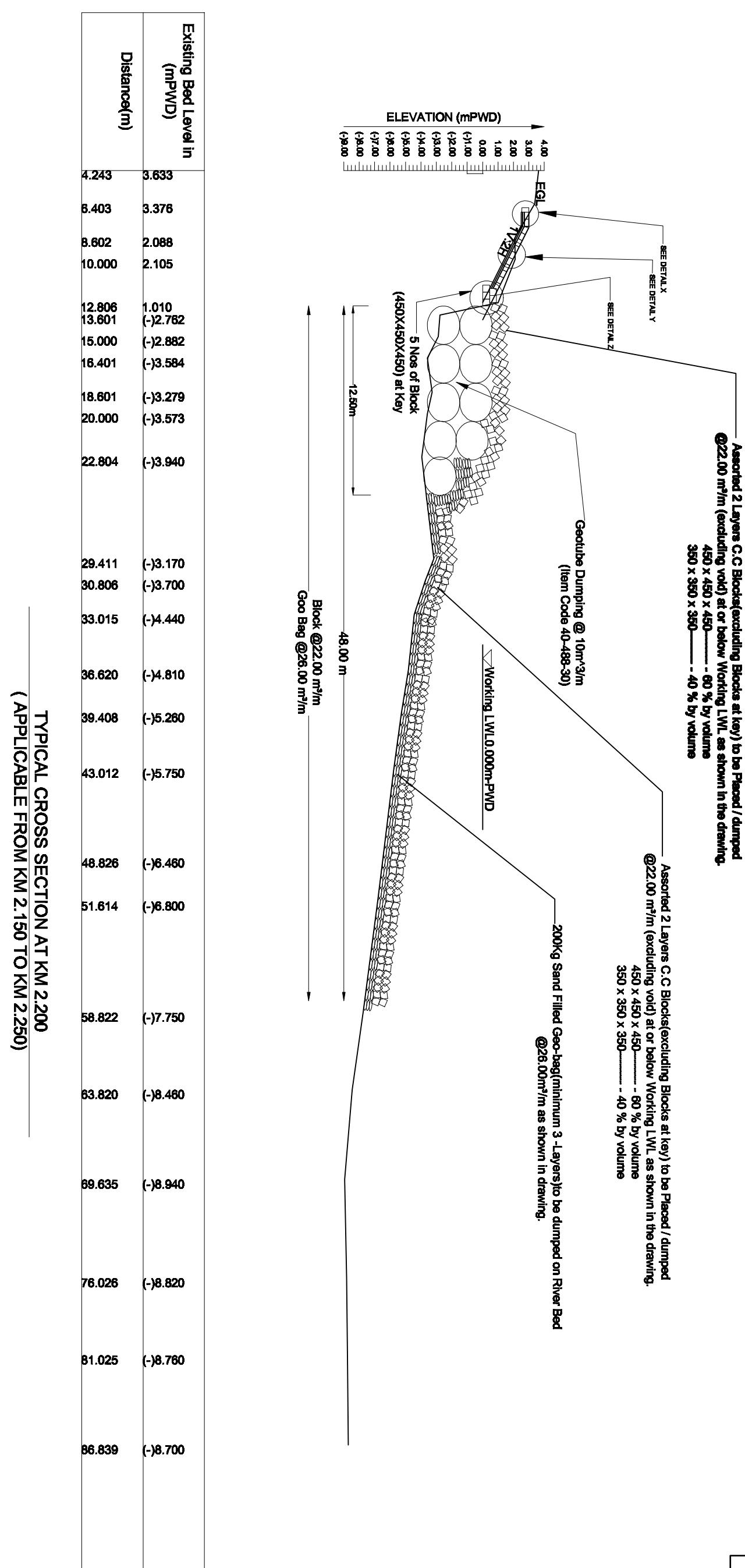
ITEM CODE:

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**

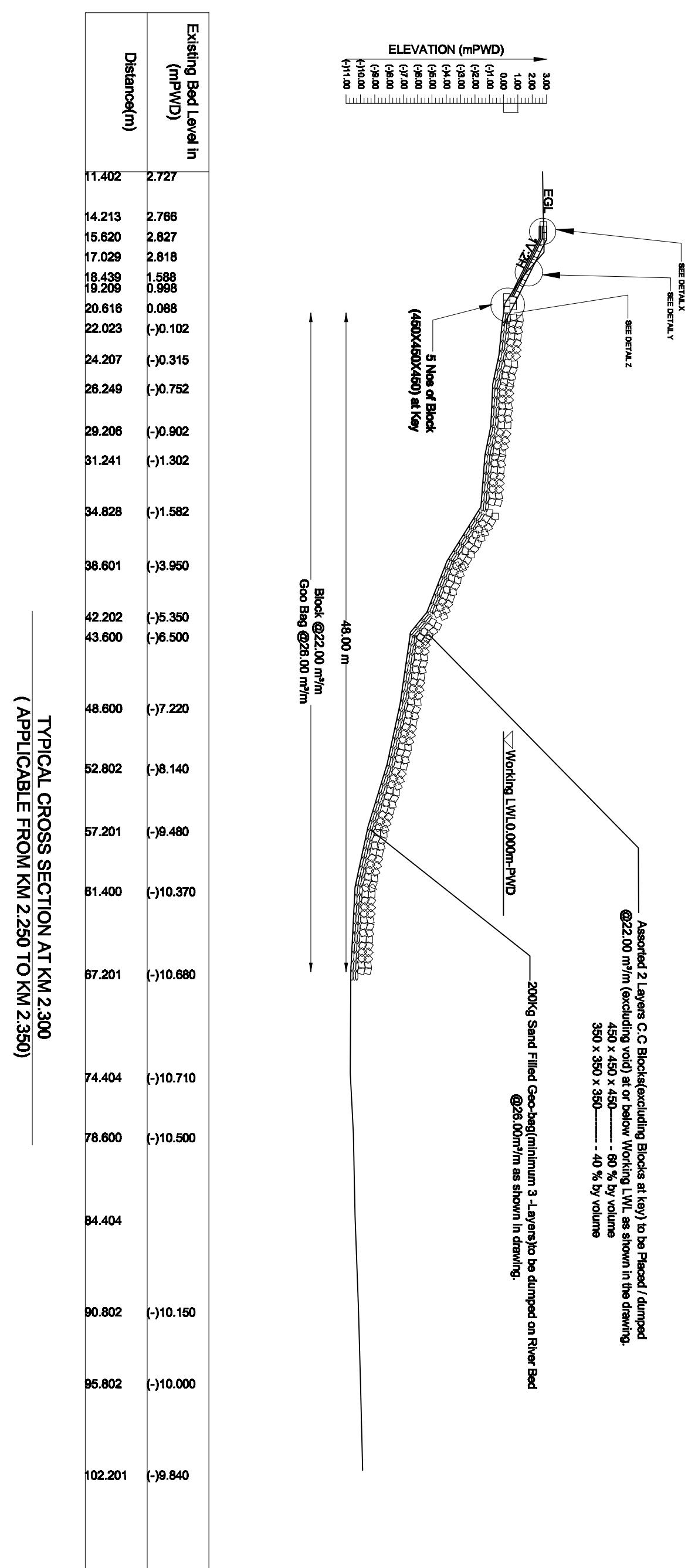
BANGLADESH WATER DEVELOPMENT BOARD	
OFFICE OF THE SUPERINTENDING ENGINEER	
DESIGN CIRCLE-8	
Protection of Monerajuri Upazila Sadar & Adjacent Area from Erosion of Panguchhi River & Re-excavation/Dredging of Biskhali River in Bagerhat District.	
Design of River Bank Protective Work At Sinnakhalii From km 2.100 to km 3.600 = 1.500 km	
NOTES	
RECOMMENDED BY:	
DESIGNED BY: (ZAYED BIN SAIF, AE)	(MOHAMMAD SAIF UDDIN, SE)
CHECKED BY:	
APPROVED BY: (MD. ENAYET ULLAH, CE, Design)	
JAKARIA PERVEZ, EE	DATE: 00-00-2022
DWG NO.: DC-8-0316-03/10	



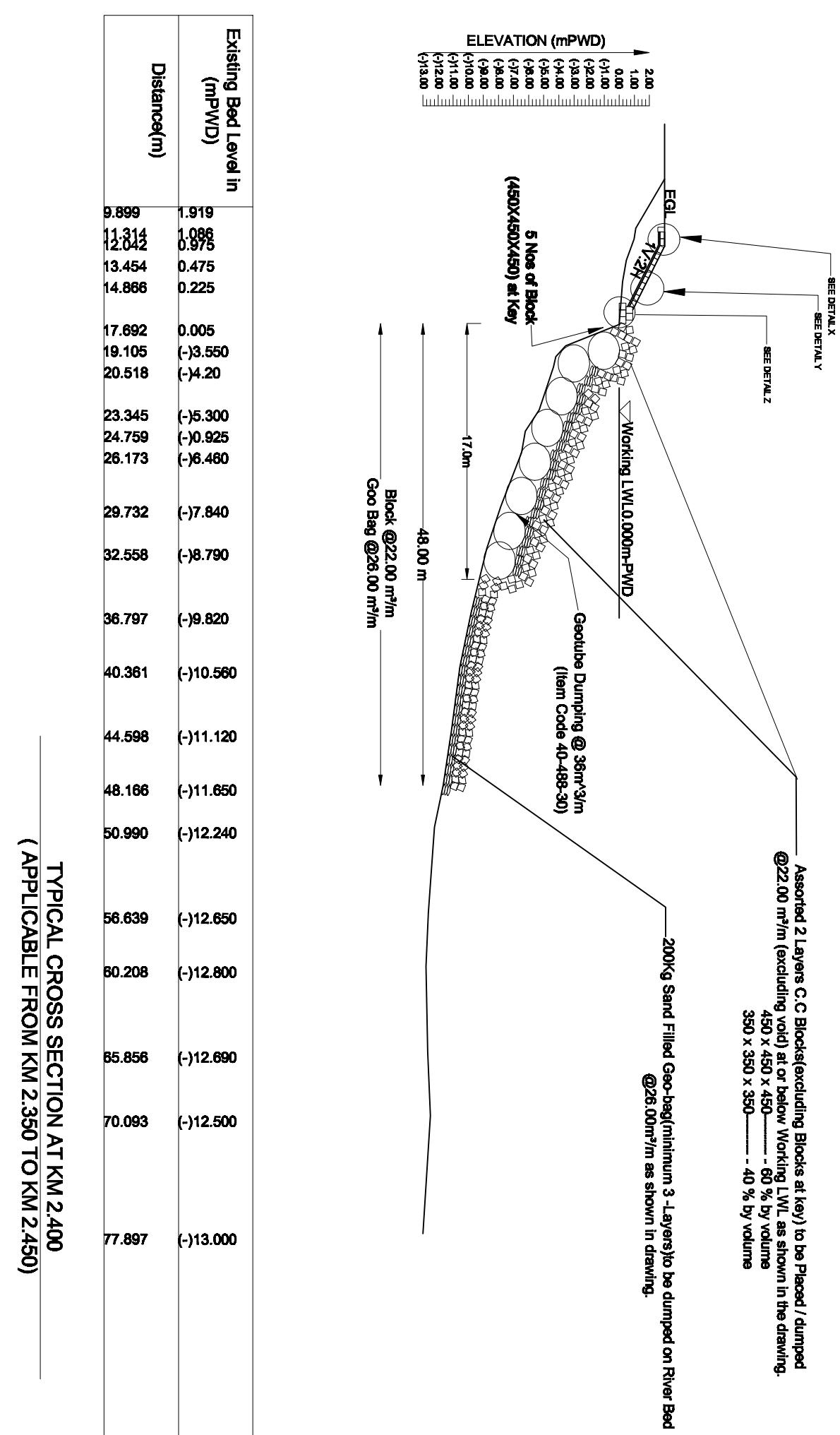
Bangladesh Water Development Board	
Office of The Superintending Engineer,Design Circle-8	
Protection of Matniganj Upazila Sadar and adjacent areas from erosion of Pangus river in Bagerhat District and Re-excavation/Dredging of Brahmapur River	
Design of River Bank Protective Work At Sinnakhalii From km 2.100 to km 3.00 = 1.500 km	
TYPICAL CROSS SECTION OF SINNAKHALII PROTECTIVE WORK	
DESIGNED BY:	RECOMMENDED BY:
(ZAYED BIN SAIF,AE)	(MOHAMMAD SAIF UDDIN,SE)
CHECKED BY:	APPROVED BY:
(MAKARIA PEREZ,EE)	(MD. EMAYET ULLAH,CE,DESIGN)
DATE:00-00-2022	Drawing No:DC-8-XXXX-04/10



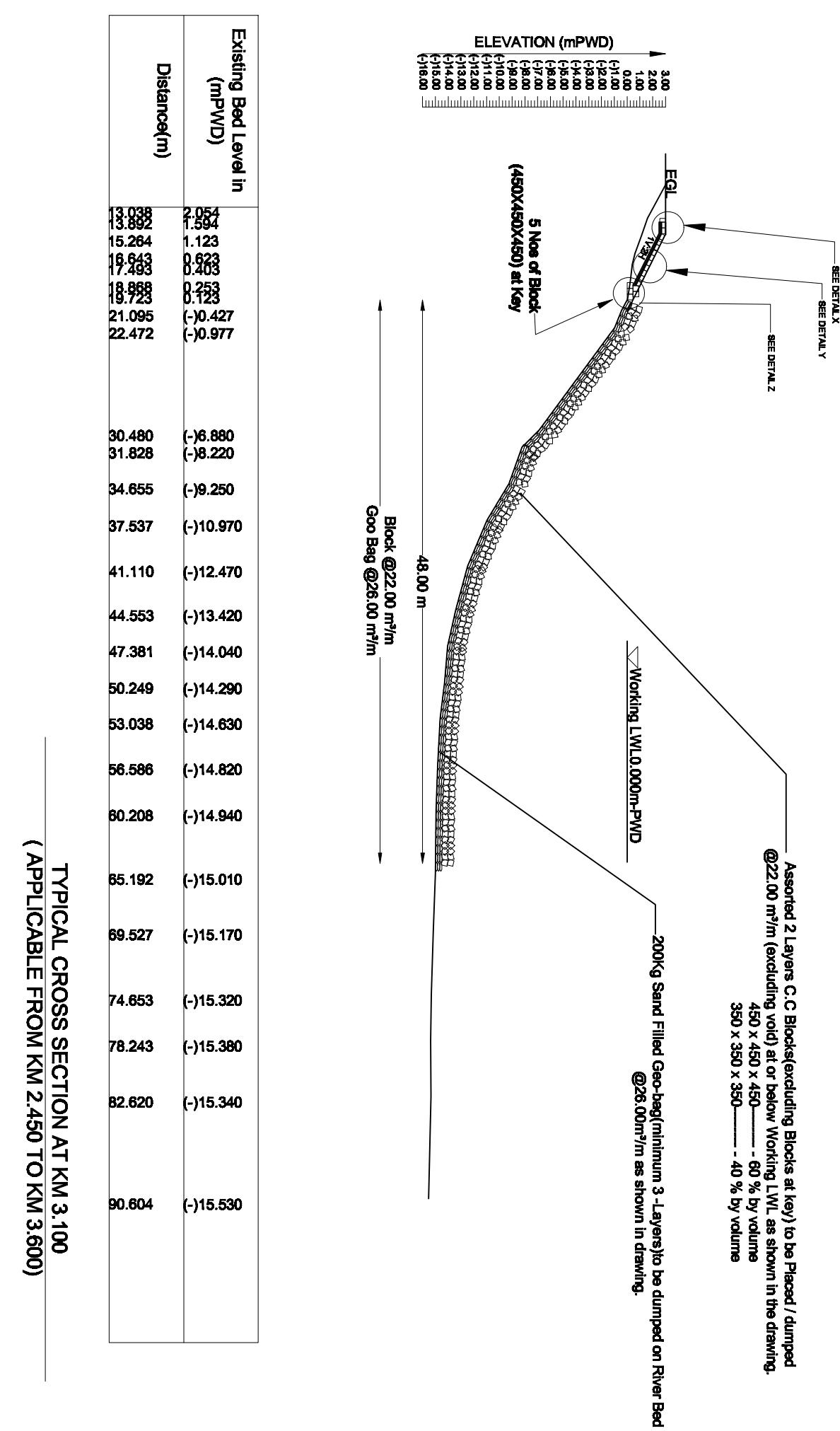
Bangladesh Water Development Board	
Office of The Superintending Engineer,Design Circle-8	
Protection of Matniganj Upazila Sadar and adjacent areas from erosion of Pangus river in Bagerhat District and Re-excavation/Dredging of Brahmaputra river	
Design of River Bank Protective Work At Simnathali From km 2.100 to km 3.800 = 1.500 km	
TYPICAL CROSS SECTION OF SINNAKHALI PROTECTIVE WORK	
DESIGNED BY: (ZAYED BIN SAIF),AE	RECOMMENDED BY: (MOHAMMAD SAIF UDDIN),SE
CHECKED BY: (MAKARIA PEREZ),EE	APPROVED BY: (MD. EMAYET ULLAH),CE,DESIGN
DATE:00-00-2022	Drawing No:DC-8-XXXX-0510



Bangladesh Water Development Board	
Office of The Superintending Engineer,Design Circle-8	
Protection of Matniganj Upazila Sadar and adjacent areas from erosion of Pangus river in Bogra District and Re-excavation/Dredging of Brahmaputra River	
Design of River Bank Protective Work At Simnathali From km 2.100 to km 3.000 = 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:
(MAKARIA PERvez,EE)	(MD. EMAYET ULLAH,CE,DESIGN)
DATE:	Drawing No:DC-8-XXXX-0610



Bangladesh Water Development Board	
Office of The Superintending Engineer,Design Circle-8	
Protection of Matniganj Upazila Sadar and adjacent areas from erosion Pangus river In Bagerhat District and Re-excavation/Dredging of Brahmaputra River	
Design of River Bank Protective Work At Simnathali From km 2.100 to km 3.800 = 1.500 km	
TYPICAL CROSS SECTION OF SINNAKHALI PROTECTIVE WORK	
DESIGNED BY: (ZAYED BIN SAIF,AE)	RECOMMENDED BY: (MOHAMMAD SAIF UDDIN,SE)
CHECKED BY: (MAKARIA PEREZ,EE)	APPROVED BY: (MD. EMAYET ULLAH,CE,DESIGN)
DATE:00-00-2022	Drawing No:DC-8-XXXX-0719



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

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

Bangladesh Water Development Board

Office of The Superintending Engineer, Design Circle-8

**Protection of Matirajpur Upazila Sardar and adjacent areas from erosion of
Panquai river in Bograhat District and Re-excavation/Dredging of
Bishkhali river**

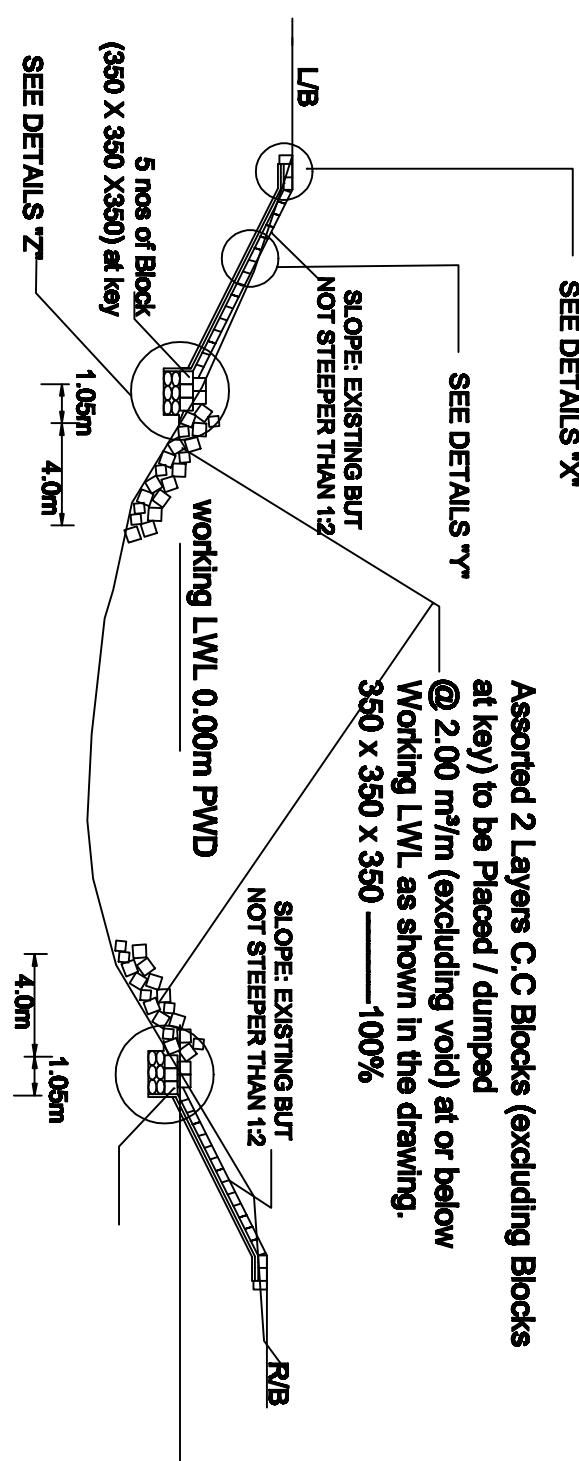
**Design of River Bank Protective Work At Simnakhali From km 2.100 to
km 3.600 = 1,500 km**

TYPICAL CROSS SECTION OF SINNAKHALI PROTECTIVE WORK

DESIGNED BY:

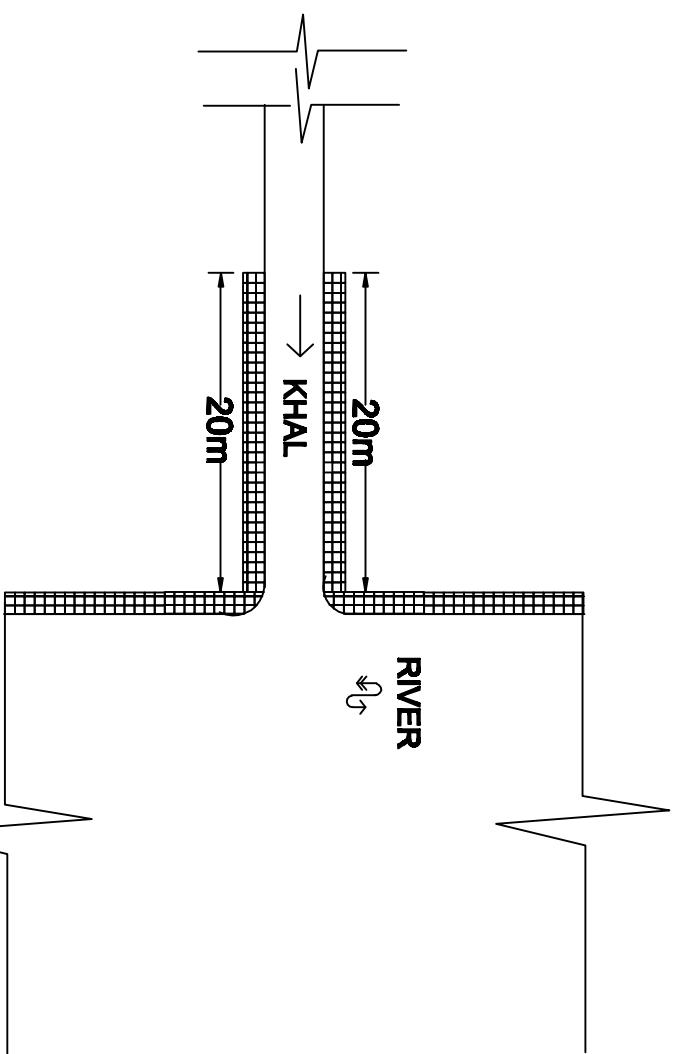
RECOMMENDED BY:

(ANKARA PERVEZ JEE (MD. ENAYET ULLAH) C.E. DESIGN
DATE:00-00-2022 Drawing No:DC-8-XXXX-14/19



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)

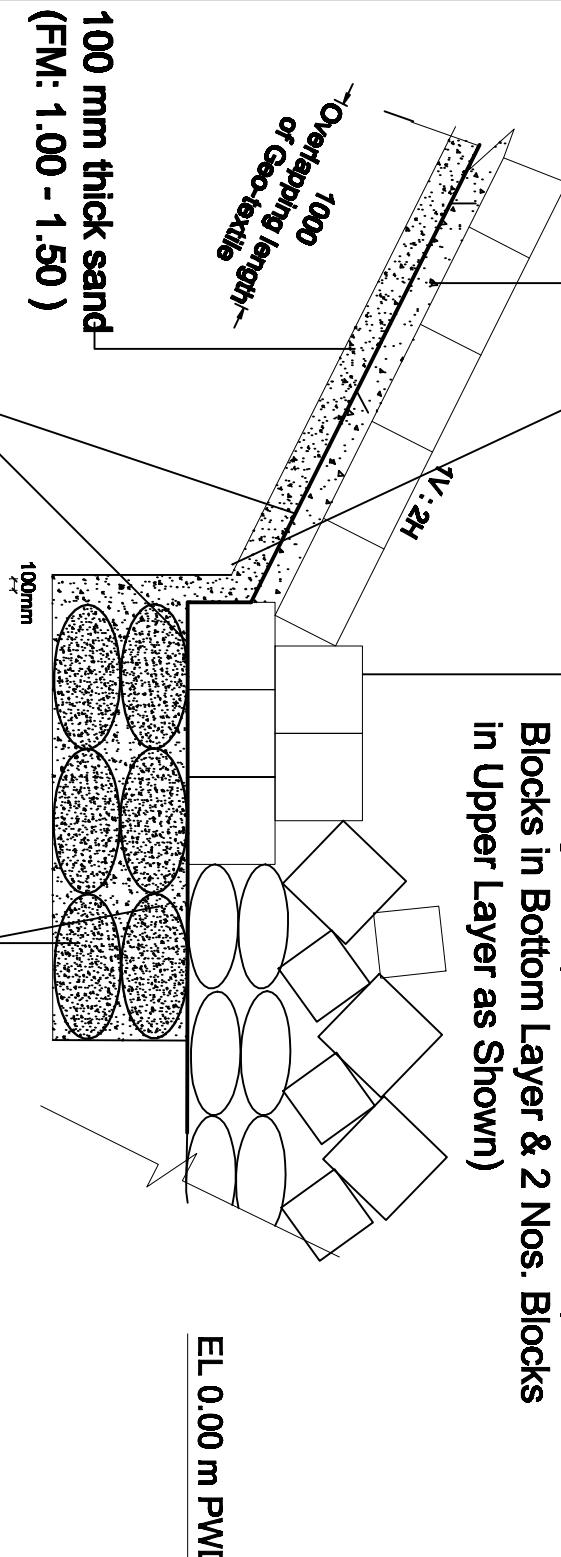
DESIGNED BY:	RECOMMENDED BY:
ZAYED BIN SAIF, AE CHECKED BY:	(MOHAMMAD SAIF UDDIN, SE)
JAKARIA PERVEZ, EE	MD. ENAYET ULLAH, CE, Design
DATE: 00-00-2022	DWG NO.: DC-8-0316-06/07

Pick Jhama Chips (40mm to 5mm well graded)

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)

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

Turving over 300mm earth filling.



100 mm thick sand
(FM: 1.00 - 1.50)

Geo textile filter
(thickness \geq 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)

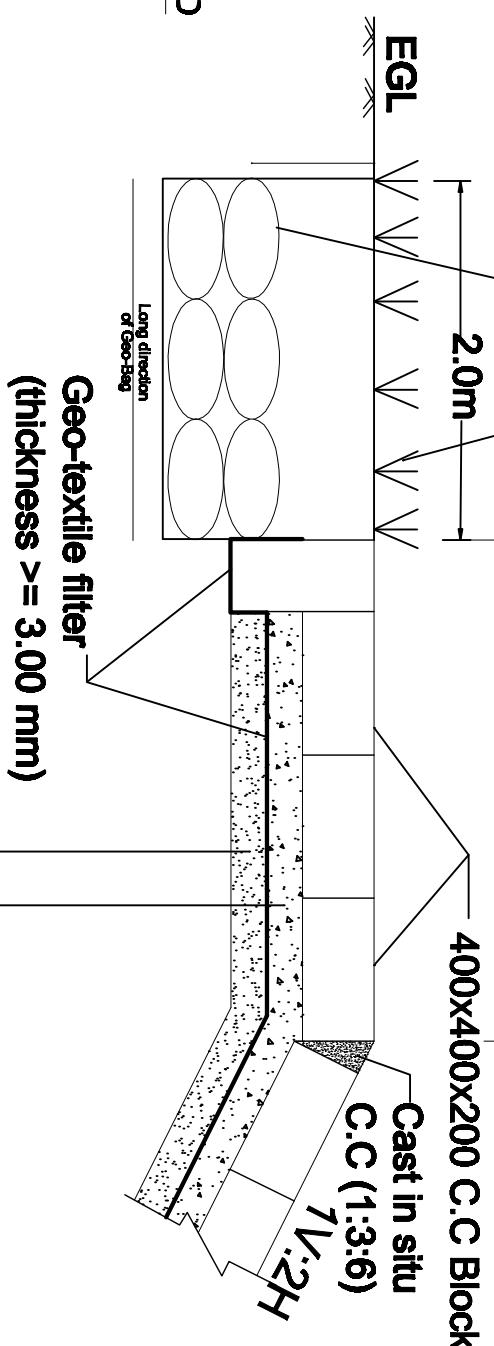
1- layer 400x400x200 C.C block (ITEM CODE 40-190-40)

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 \geq 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)

DETAILS "X"
(Not to Scale)



Geo-textile filter
(thickness \geq 3.00 mm)

100 mm thick sand
(FM: 1.00 - 1.50)

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

DETAILS "Y"
(Not to Scale)

BANGLADESH WATER DEVELOPMENT BOARD
OFFICE OF THE SUPERINTENDING ENGINEER
DESIGN CIRCLE-8
Protection of Monerajuri Upazila Sader & Adjacent Area from
Erosion of Panguchi River & Re-excavation/Dredging of Biskhali
River in Bagerhat District.

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

DETAILS "Y"
(Not to Scale)

DESIGNED BY:	DETAILS	RECOMMENDED BY:
(ZAYED BIN SAIF, AE)		(MOHAMMAD SAIF UDDIN, SE)
CHECKED BY:		APPROVED BY:
JAKARLA PERVEZ, ME		(MD. ENAYET UL HAQUE, CE, Design)
DATE: 00-00-2022	DWG NO.: DC-8-0000-07/07	