

BANGLADESH WATER DEVELOPMENT BOARD

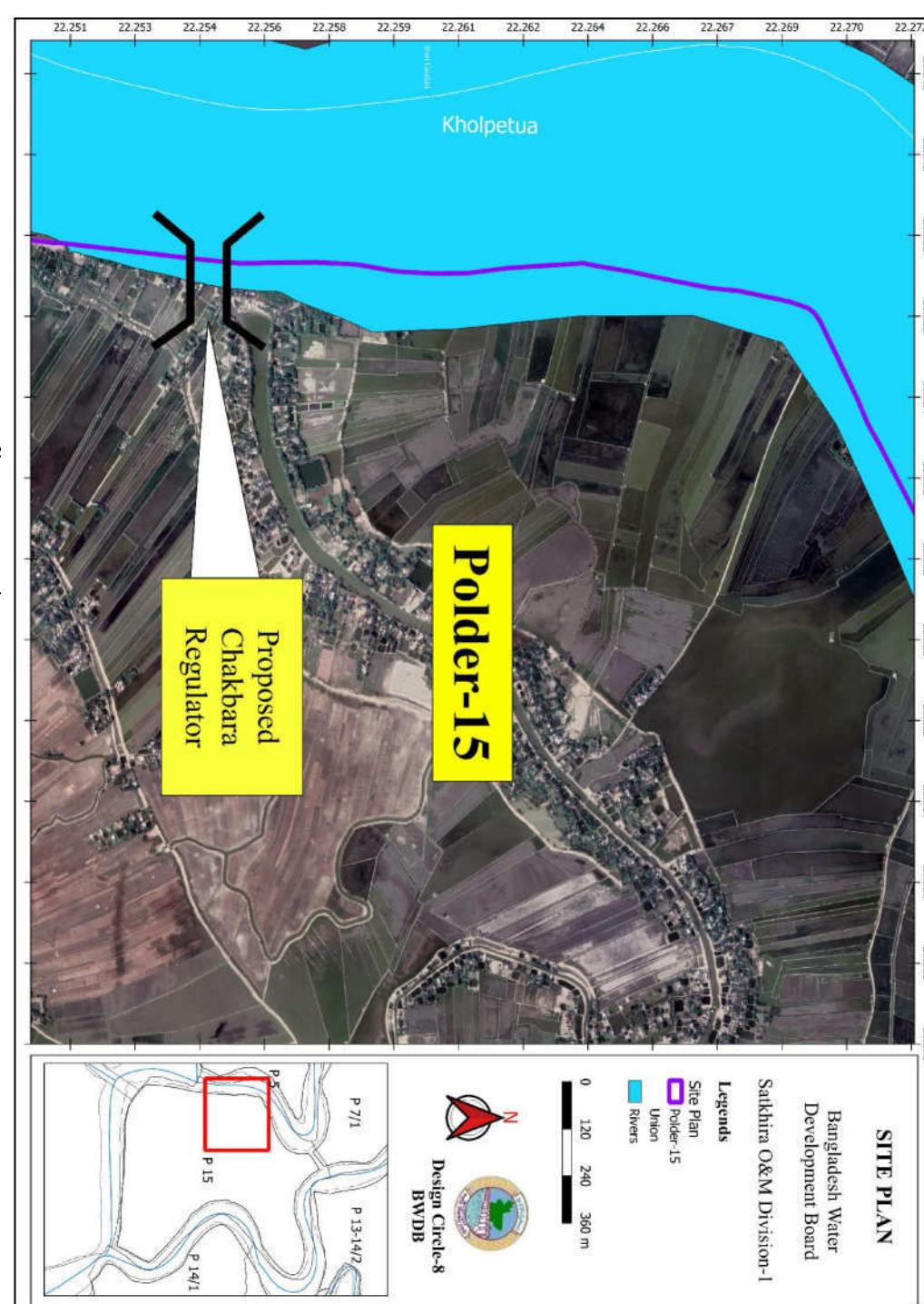
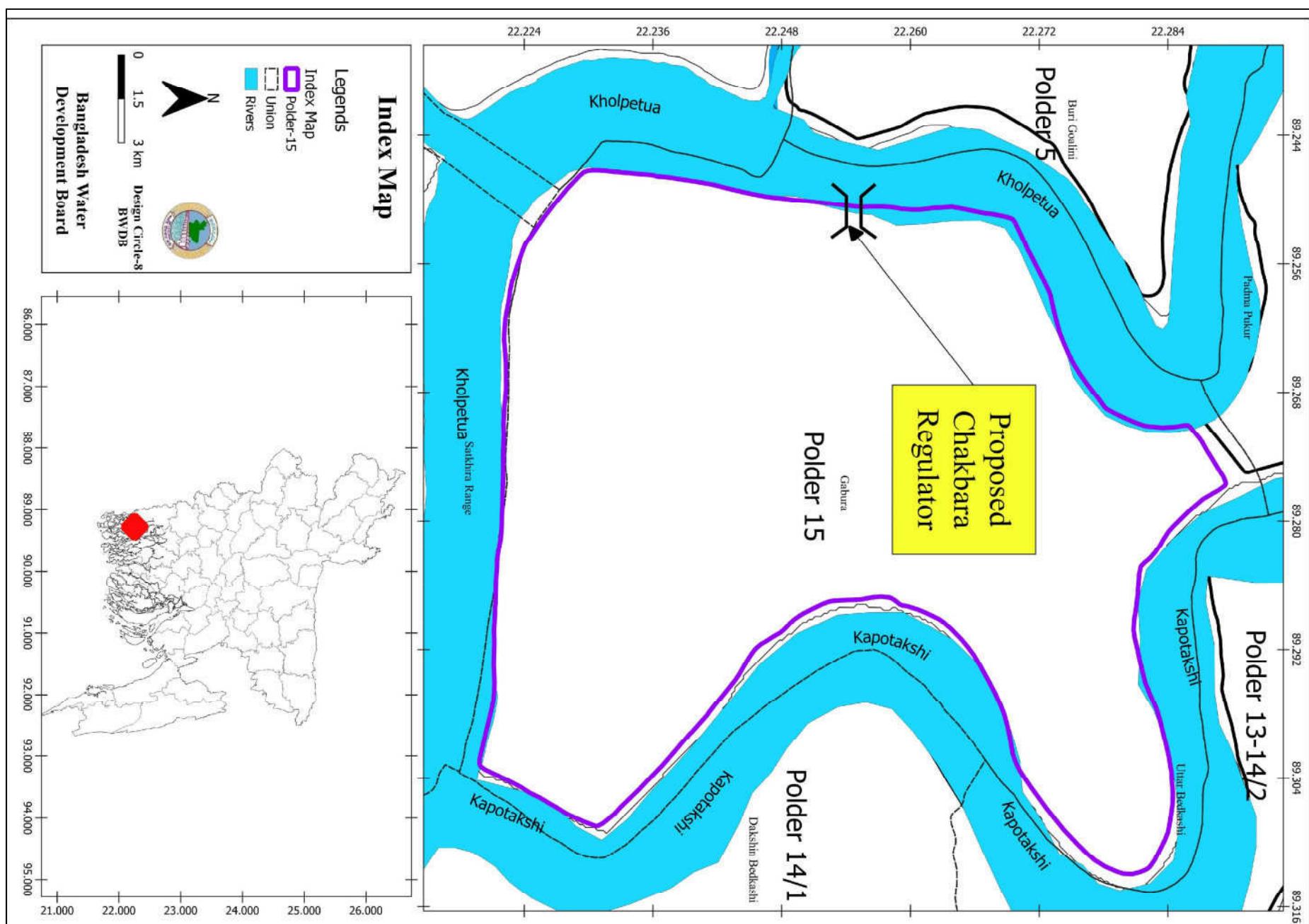


REHABILITATION OF POLDER-15 AT SATKHIRA DISTRICT

DESIGN OF DRAINAGE CUM FLUSHING REGULATOR
3-VENT(1.50mX1.80m) ON CHAKBARA KHAL AT KM 27.49 IN POLDER NO-15 IN SATKHIRA DISTRICT,
UNDER SATKHIRA O&M DIVISION-1, BWDB, SATKHIRA.

SATKHIRA O&M DIVISION-1, BWDB, SATKHIRA

**DESIGNED BY: DESIGN CIRCLE-8, BWDB, DHAKA.
OCTOBER, 2022**



INDEX MAP

JAKARIA PERVEZ, E.E **(MOHAMMAD SAIF UDDIN), S.E**
DATE: **DWG. NO.:DC-8-0000-01/21**

SPECIAL GEOTECHNICAL NOTES:

- PILE DESIGN IS CARRIED OUT ON THE BASIS OF BORE LOG UP TO 23m. THIS DESIGN HAS BEEN DONE BASED ON SOME ASSUMPTIONS.
- THE CONCERNED FIELD OFFICE MUST CARRY OUT REVISED BORING UP TO A DEPTH OF 40.0m AND SEND DATA TO THE CONCERNED DESIGN OFFICE FOR VERIFICATION OF PILE DESIGN.

- IN ANY CASE CONSTRUCTION MUST NOT BEGIN BEFORE THE VERIFICATION OF FOUNDATION DESIGN.

GENERAL NOTES

- THE SPECIFICATION OF MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE STANDARD TECHNICAL SPECIFICATION OF BWDB, IN GENERAL.
- ALL DIMENSIONS ARE IN MILLIMETERS AND ALL ELEVATIONS ARE IN mPWD UNLESS OTHERWISE MENTIONED IN THE DRAWINGS.
- COMPRESSIVE STRENGTH OF REINFORCED CEMENT CONCRETE SHALL HAVE MINIMUM 28 DAYS CYLINDER STRENGTH, $f_c \geq 25.0 \text{ N/mm}^2$ (ITEM CODE: 28-230-10) AND SHALL BE CHECKED BY COLLECTING SAMPLES AND TESTING DURING CONSTRUCTION.
- REINFORCING BAR SHALL BE DEFORMED MILD STEEL HAVING YIELD STRENGTH, $f_y \geq 400.00 \text{ N/mm}^2$. (ITEM CODE: 76-120-10), (MADE FROM BILLET) IN R.C.C. WORK.
- CONCRETE FOR CC BLOCKS SHALL HAVE MINIMUM STRENGTH, $f_c \geq 15.0 \text{ N/mm}^2$ AT 28 DAYS.
- CURING OF CONCRETE SHALL BE CONTINUED FOR MINIMUM 21 DAYS AFTER CASTING.
- CONCRETE SHALL BE POURED IN DRY BED CONDITION.
- CONCRETE MIXTURE SHALL BE POURED AS QUICK AS POSSIBLE BUT NOT LATER THAN 45 MINUTES AFTER MIXING.
- 75 mm LEAN CONCRETE AT BASE SHALL BE IN 1:3:6.
- THE LEAN CONCRETE AT FOUNDATION OF THE PROPOSED REGULATOR SHALL BE PLACED AFTER PROPERLY PREPARING & COMPACTING EXCAVATED BASE.
- CLEAR COVER FOR REINFORCEMENT SHALL BE AS FOLLOWS:
 - Operating deck & Railing : 25mm
 - Concrete adjacent to earth at foundation: 75mm
 - Concrete adjacent to earth: 75mm
 - Concrete exposed to weather and water or others: 75mm
 - Beam: 40mm
- MINIMUM LAP LENGTH SHALL BE 40 TIMES THE BAR DIAMETER.
- LAP SHALL BE STAGGERED SO THAT NOT MORE THAN 50% OF BARS ARE LAPPED IN ANY ONE CROSS SECTION. WHERE BARS MUST LAPPED IN ONE CROSS SECTION, THEN LAP LENGTH SHALL NOT BE LESS THEN 1.30 TIMES MINIMUM LAP LENGTH.
- REINFORCING BAR MUST BE SUPPORTED IN ITS PROPER POSITION BY USE OF MORTAR BLOCK, SUPPORTS OR BY OTHERS APPROVED MEANS.
- SAND FILLING IN FOUNDATION SHOULD BE DONE WITH SAND OF $F.M \geq 1.50$ IN LAYERS OF 150 mm THICK LAYER BY LAYER AND COMPACTED TO ATTAIN MINIMUM 50% RELATIVE DENSITY.
- UNLESS OTHERWISE SPECIFIED, BACK FILLING SHALL BE DONE WITH SAND ($F.M \geq 0.80$) FREE FROM VEGETABLE ROOTS AND ORGANIC MATTER, BACK FILLING FOR U-SHAPED WALL SHALL BE DONE SIMULTANEOUSLY ON BOTH WALLS.
- DESIGN OF GATE AND HOISTING SYSTEM WILL BE PREPARED BY DESIGN CIRCLE-III, BWDB, DHAKA.
- GATE TO BE OPERATED IN CONTROLLED WAY TO AVOID ANY SCOUR WHEN HEAD DIFFERENCE IS BEYOND 0.60m.
- THE EMBEDDED PARTS OF GATE TO BE INSTALLED DURING CONSTRUCTION OF BARREL PART AND IT SHALL BE DONE IN ACCORDANCE WITH APPROVED MECHANICAL DRAWING.
- THE GATE SHALL BE INSTALLED BEFORE THE OPERATION OF THE STRUCTURE.
- ANY ERROR/OMISSION IF DETECTED SHALL BE REFERRED TO THE CONCERNED DESIGN OFFICE TAKING NECESSARY ACTION.
- ALL BORRE HOLES SHALL BE SEALED BEFORE CONSTRUCTION OF REGULATOR.

SPECIAL NOTES:

- THIS DRAWING IS PREPARED AS PER PROPOSAL AND DESIGN DATA SUBMITTED BY SE, KHULNA O&M CIRCLE, BWDB, KHULNA VIDE HIS OFFICE MEMO NO: 1/d-3-644, DATE: 01-12-2021 AND ADDITIONAL DATA RECEIVED FROM EE, SATKHIRA O&M DIVISION-1 BWDB SATKHIRA TROUGH EMAIL ON 02-04-2022.

- THE WORK SHALL BE EXECUTED WITH PRIOR ADMINISTRATIVE AND FINANCIAL APPROVAL FROM THE COMPETENT AUTHORITY & WITHIN THE DPP / BUDGET PROVISION.
- EXISTING KHAL/LINK KHAL AT THE US & DS OF THIS PROPOSED REGULATOR TO BE RE-EXCAVATED UPTO THE REQUIRED LENGTH AND LEVEL IF NECESSARY.

NOTES FOR SHEET PILES:

- HOT ROLLED U-SHAPE STEEL SHEET PILE SHALL BE USED. COLD ROLLED SHEET PILE SHALL NEVER BE USED.
- COATING SHALL BE PROVIDED OVER SHEET PILE IN THE FOLLOWING WAY :
 - CLEAN THE SHEET PILE SURFACE PREFERABLY WITH SAND BLASTING.
 - PROVIDE 1 (ONE) COAT OF ZINK PHOSPHATE AS PRIMARY COAT.
 - PROVIDE 2 (TWO) COAT OF COALTAR EPOXY COAT OVER PRIMARY COAT.
- THICKNESS OF SHEET PILE SHALL BE 10.50mm ($\pm 0.50\text{mm}$) (ITEMCODE: 44-240-10).
- CONCERNED EXECUTIVE ENGINEER MUST ENSURE SHEET PILE INTERLOCKING, LENGTH, & DRIVING.
- TOP LEVEL OF EVERY CONNECTED SHEET PILES MUST HAVE SAME LEVEL.

NOTES FOR EMBEDDED PARTS, GROOVE AND GATE:

- ALL EMBEDDED PARTS OF GROOVE AND OTHERS WILL BE STAINLESS STEEL (SUS-304).
- ALL PARTS OF MECHANICAL GATE WILL BE STAINLESS STEEL (SUS-304).

Bangladesh Water Development Board

Office of the Superintending Engineer
Design Circle-8

REHABILITATION OF POLDER-15 AT SATKHIRA DISTRICT

DESIGN OF DRAINAGE CUM PUBLISHING REGULATOR
3-VENT(1.50mx1.90m) ON CHAKBARA KHAL AT KM 27.49 IN POLDER NO-15 IN
SATKHIRA DISTRICT, UNDER SATKHIRA O&M DIVISION-1, BWDB, SATKHIRA.

DESIGNED BY :

NOTES

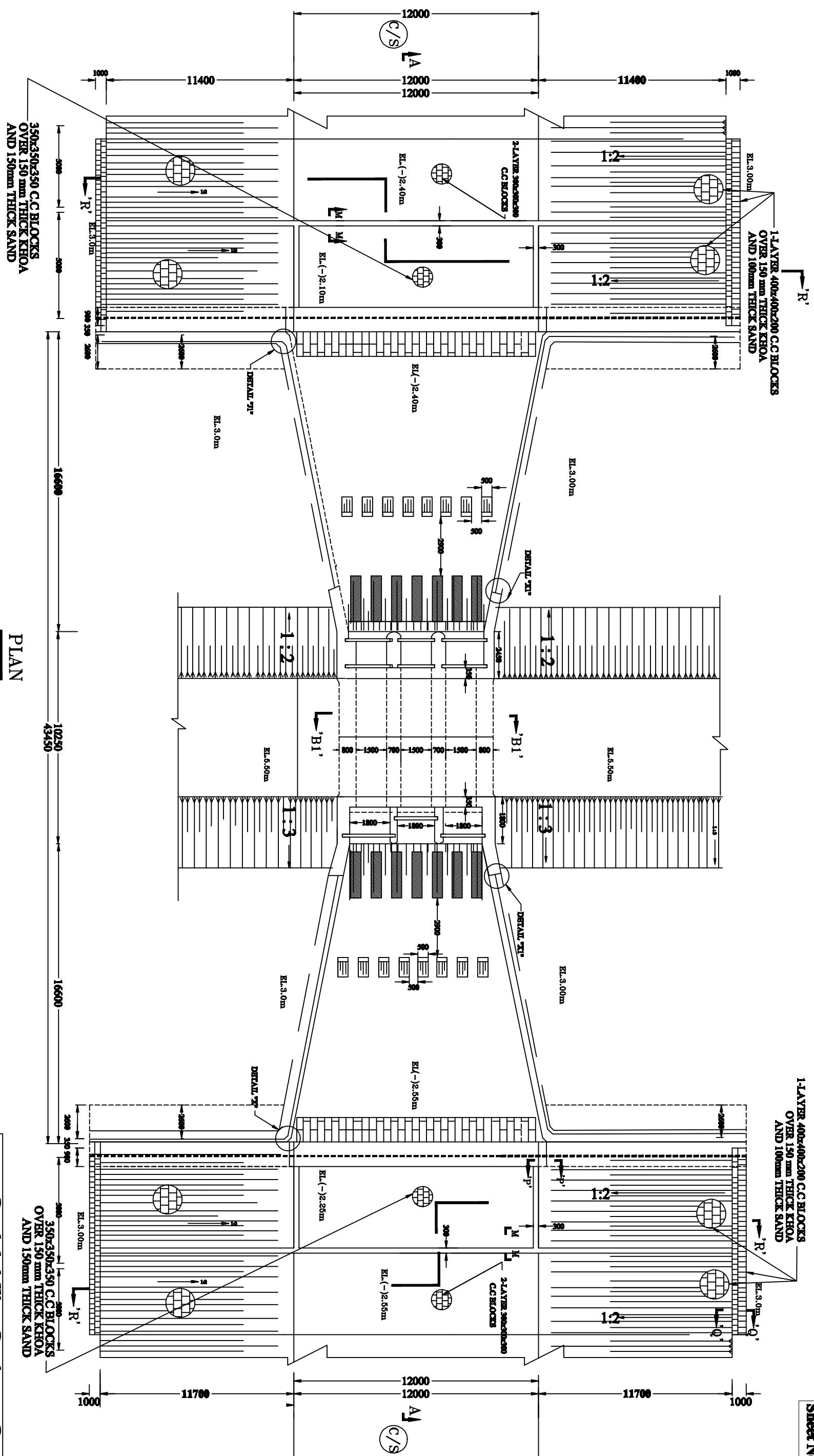
APPROVED BY :

(ZAYED BIN SAIF, AE)

CHECKED & RECOMMENDED BY :

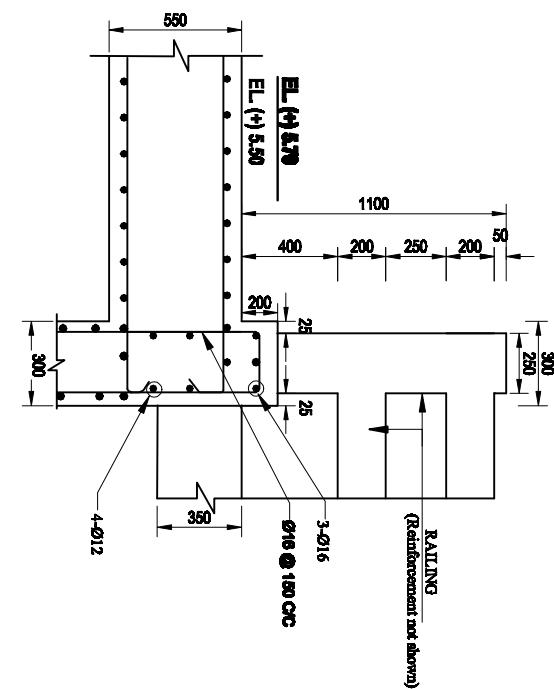
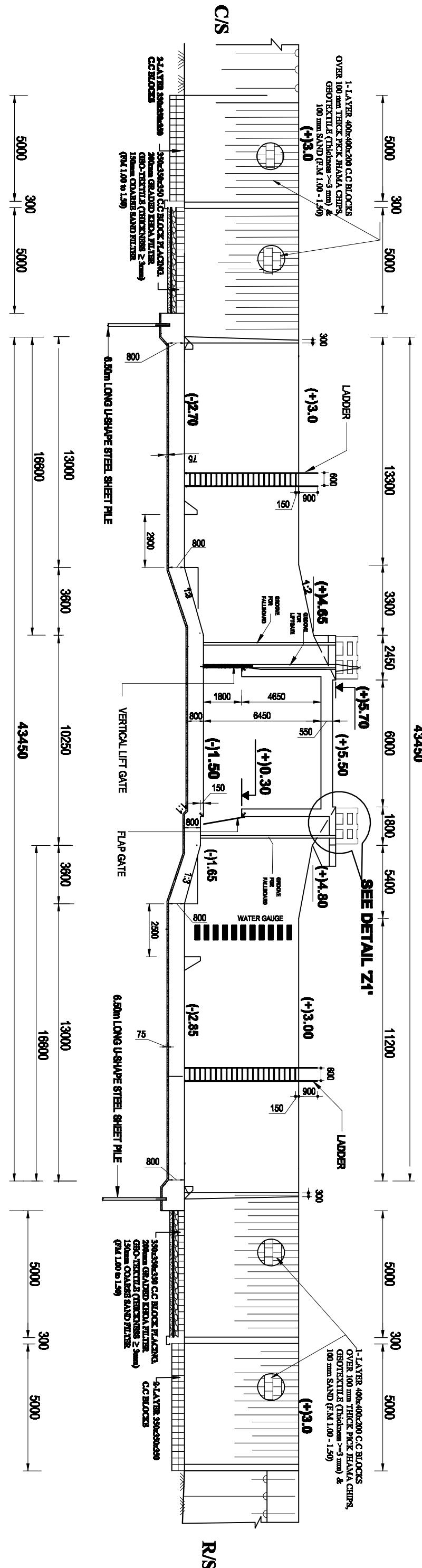
(MOHAMMAD SAIF UDDIN, SE)

DATE:**DWG. NO.:DC-8-0000-02/21**



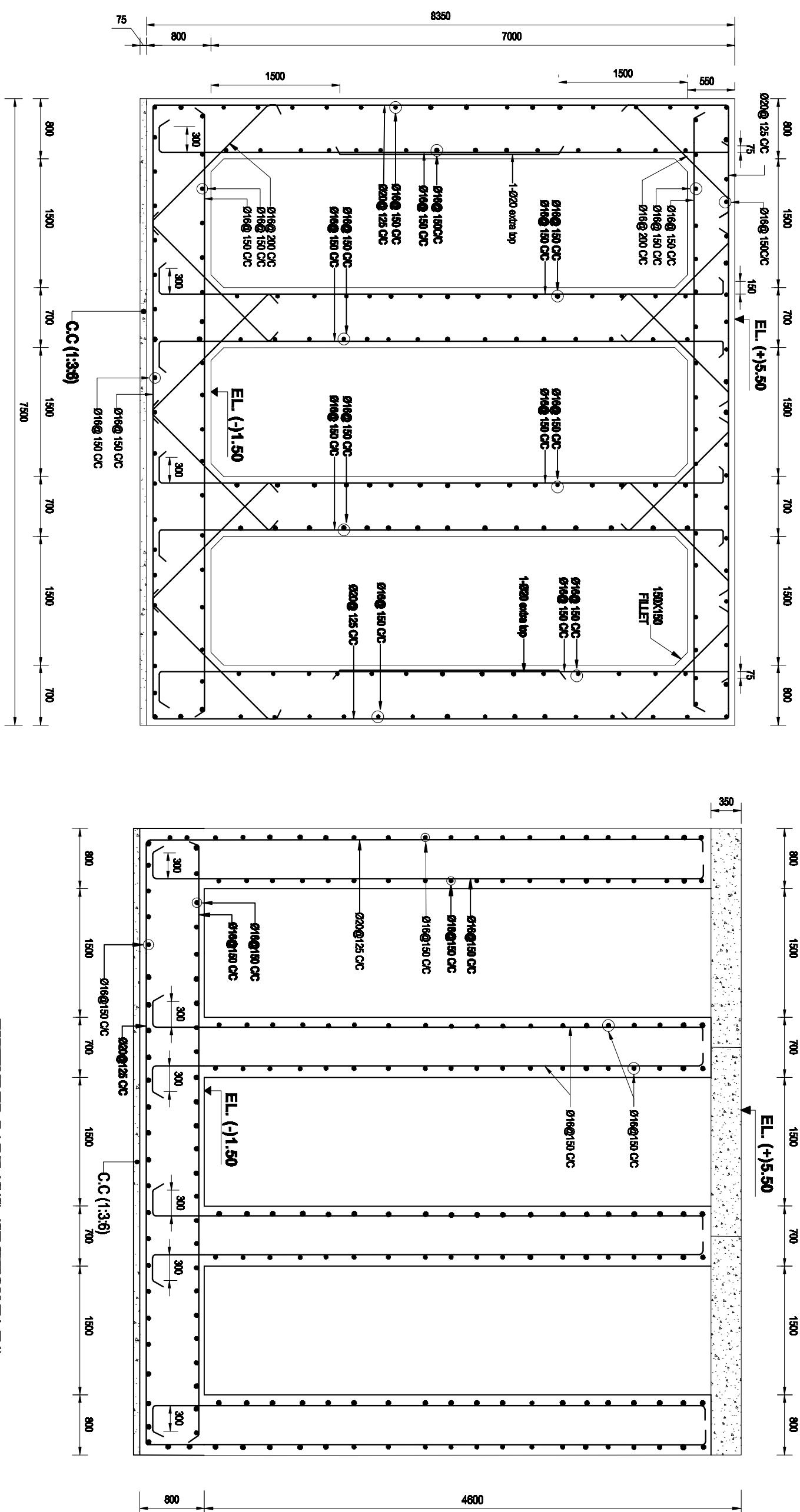
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Bangladesh Water Development Board	
Office of the Superintending Engineer	
Design Circle-8	
REHABILITATION OF FOLDER-15 AT SATKHIRA DISTRICT	
DESIGN OF DRAINAGE CUM FLUSHING REGULATOR	
3-VENT(1.50mX1.80m) ON CHAKBARA KHAL AT KM 27.49 IN FOLDER NO-15 IN SATKHIRA DISTRICT, UNDER SATKHIRA OEM DIVISION-1, BWDB, SATKHIRA.	
DESIGNED BY: (SAVED BIN SAIF, AE)	APPROVED BY: CHICKED & RECOMMENDED BY: (MOHAMMAD SAIK UDDIN, SE)
JAKARIA PERVEZ, EE	DATE: DWG. NO.:DC-8-0000-05/21



SECTIONAL ELEVATION (SECTION A-A)

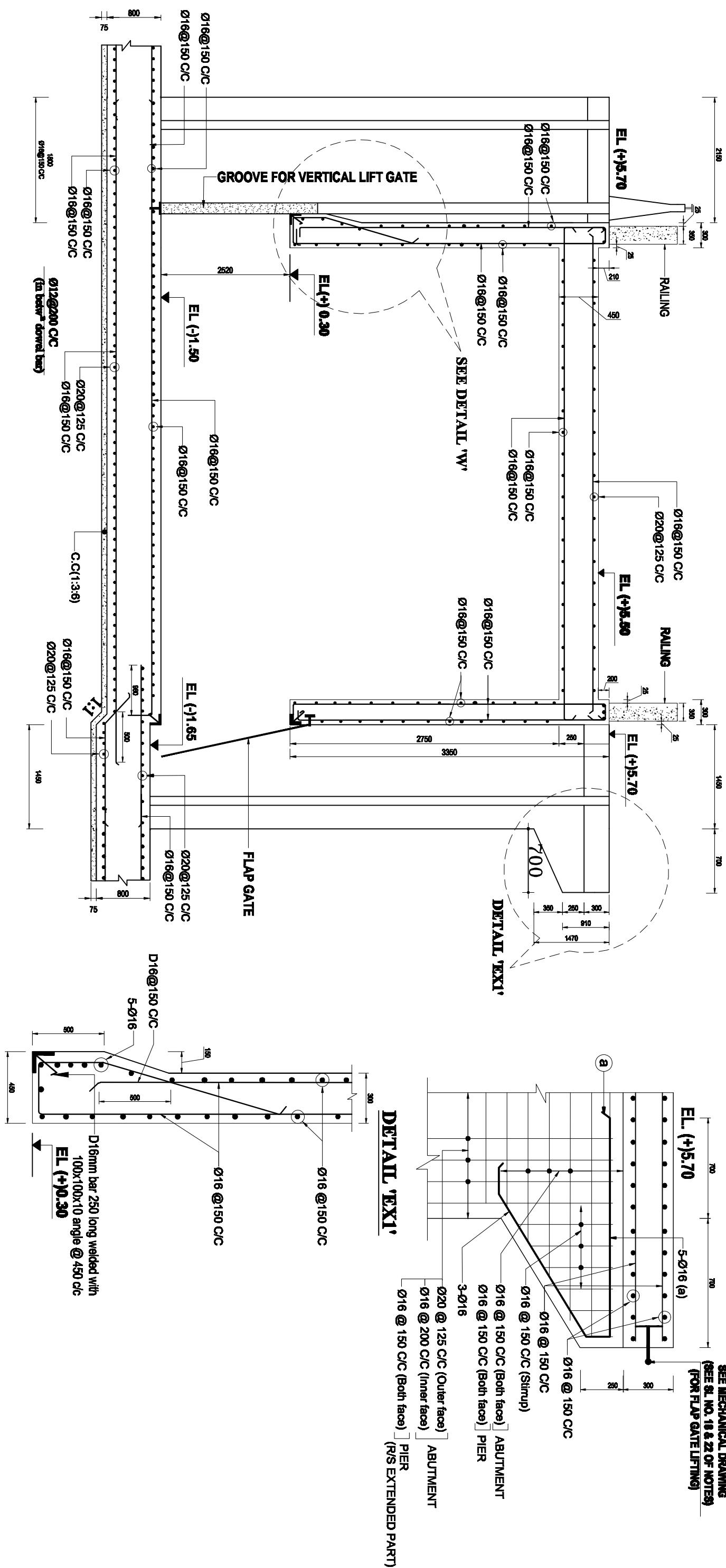
Bangladesh Water Development Board Office of the Superintending Engineer Design Circle-8	
REHABILITATION OF POLDER-15 AT SATKHIRA DISTRICT	
DESIGN OF DRAINAGE CUM FLUSHING REGULATOR 3-VENT(1.50mX1.80m) ON CHAKBARA KHAL AT KM 27.49 IN POLDER NO-15 IN SATKHIRA DISTRICT, UNDER SATKHIRA OEM DIVISION-1, BWDB, SATKHIRA.	
SECTIONAL ELEVATION & DETAIL	
DESIGNED BY : (ZAYED BIN SAID), AE	APPROVED BY : (MOHAMMAD SAIF UDDIN), SE
DATE: (JAKARIA PERVEZ), EE	DWG. NO.:DC-8-0000-04/21

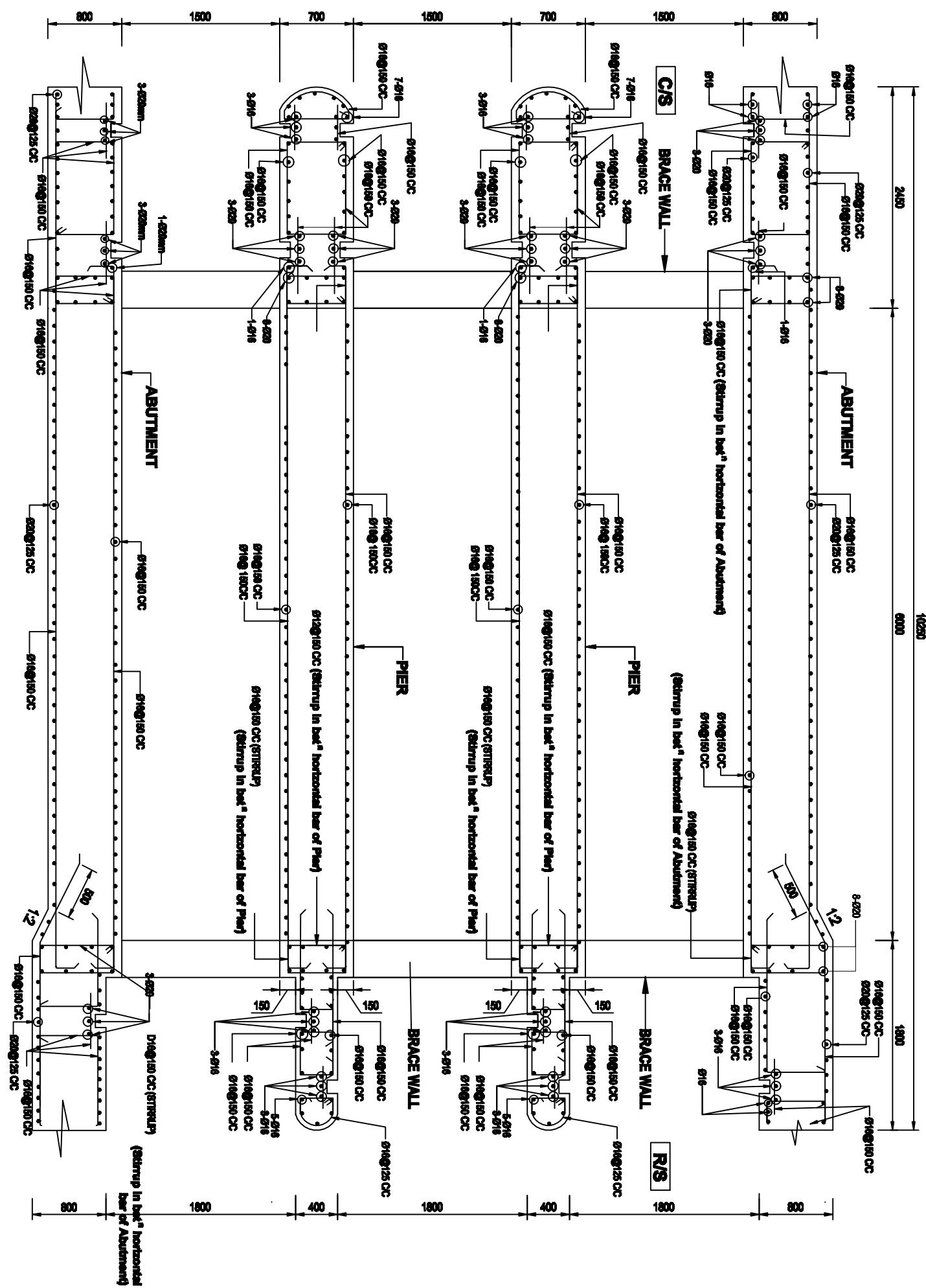


REINFORCEMENT DETAILS OF BARREL (SECTION B1-B1)

EXTENDED PART (C/S) (SECTION E1-E1)

Bangladesh Water Development Board
Office of the Superintending Engineer
Design Circle-8
REHABILITATION OF POLDER-15 AT SATKHIRA DISTRICT
DESIGN OF DRAINAGE CUM FLUSHING REGULATOR 3-VENTI(3m x 3m) ON CHAKHARA KHAL AT KM 27.49 IN POLDER NO-15 IN SATKHIRA DISTRICT, UNDER SATKHARA OEM DIVISION-1, BWDB, SATKHIRA.
REINFORCEMENT DETAILS OF ABUTMENT & BARREL
DESIGNED BY: (ZAYED BIN SAIF, AE)
CHECKED & RECOMMENDED BY: (MOHAMMAD SAIF UDDIN, SE)
APPROVED BY: DATE: DWG. NO.:DC-8-0000-06/21





REINFORCEMENT DETAILS OF ABUTMENT & PIER ACROSS THE CENTER LINE OF VENT OPENING
(FOUNDATION NOT SHOWN)

FOUNDATION NOT SHOWN

Bangladesh Water Development Board

**Office of the Superintending Engineer
Design Circle-8**

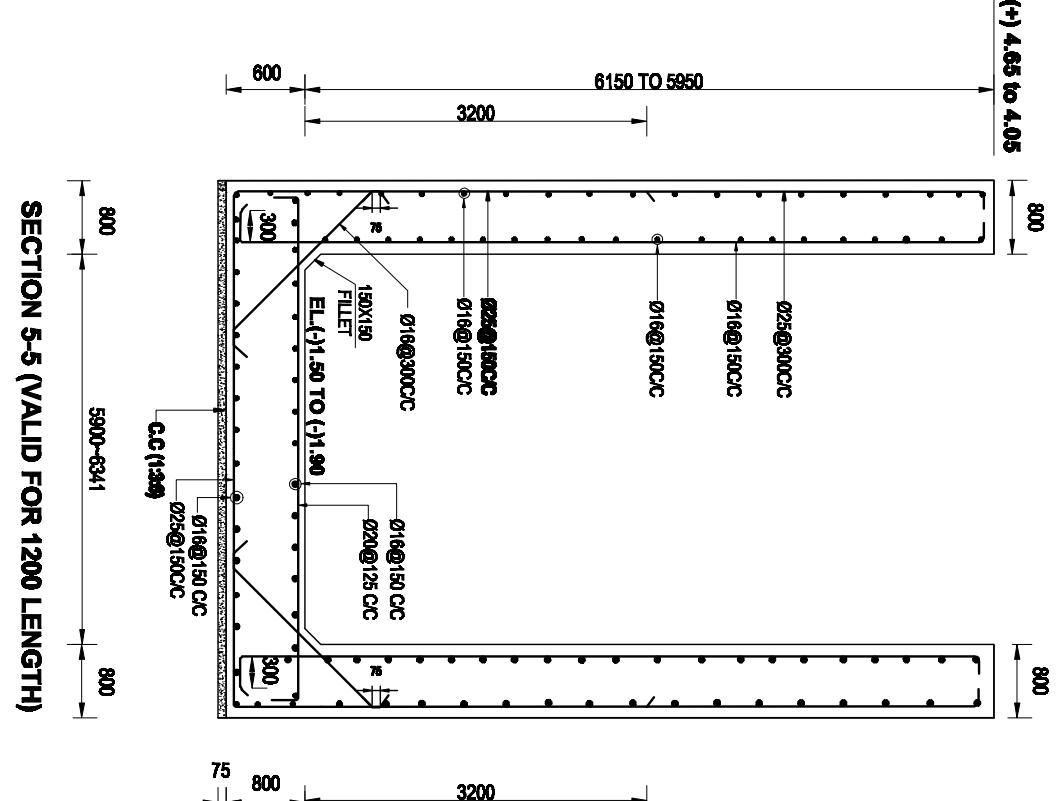
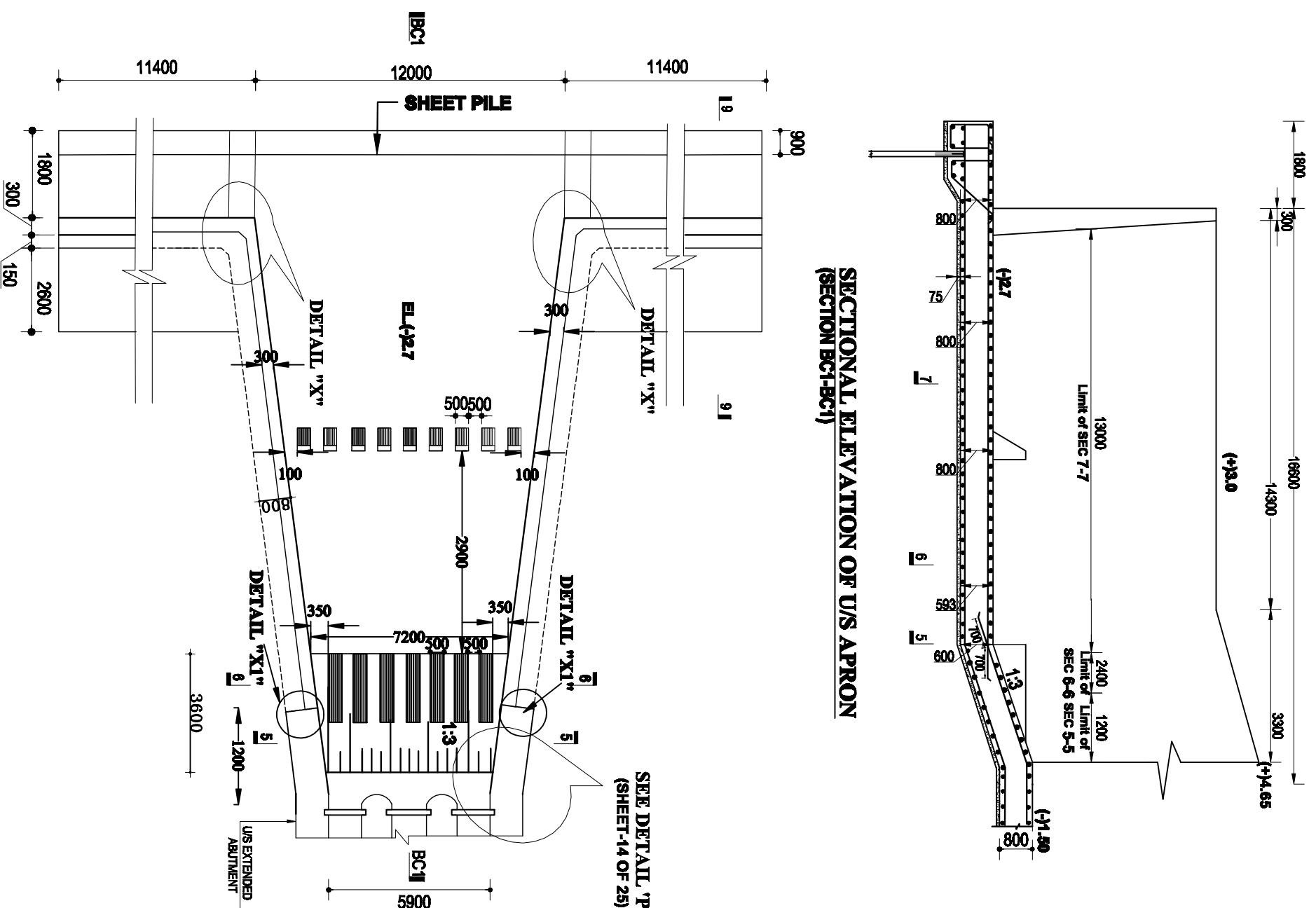
REHABILITATION OF POLDER-15 AT SATKHIRA DISTRICT

**DESIGN OF DRAINAGE CUM FLUSHING REGULATOR
3-VENTI(1.50mX1.80m) ON CHAKBARA KHAL AT KM 27.49 IN POLDER NO-15 IN
SATKHIRA DISTRICT, UNDER SATKHIRA O&M DIVISION-1, BWDB, SATKHIRA**

REINFORCEMENT DETAILS OF ABUTMENT, PIER & BRACE WALL ABOVE VENT OPENING

(ZAYED BIN SAIF), AE

Scale : Not To Scale



Scale : Not To Scale

PLAN OF C/S APRON & RETURN WALL

ZAYED BIN SAID, AE	MUHAMMAD SAIYUDIN, SE
CHECKED & RECOMMENDED BY:	
DATE:	DWG. NO.:DC-8-0000-09/21

Bangladesh Water Development Board
Office of the Superintending Engineer
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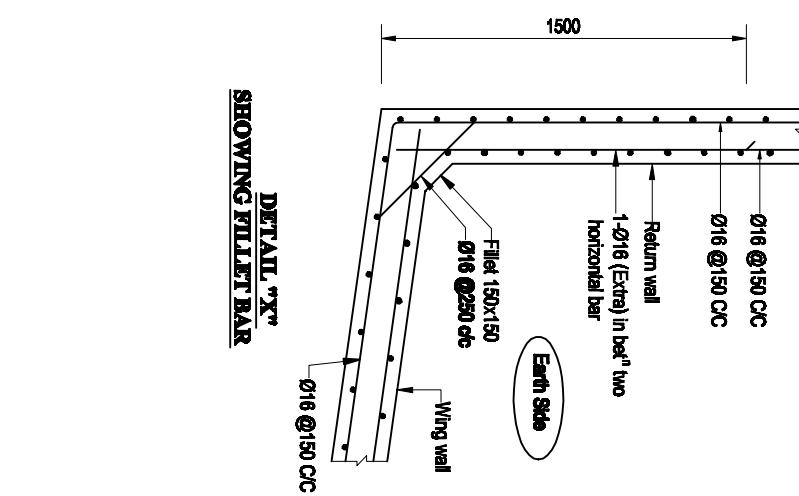
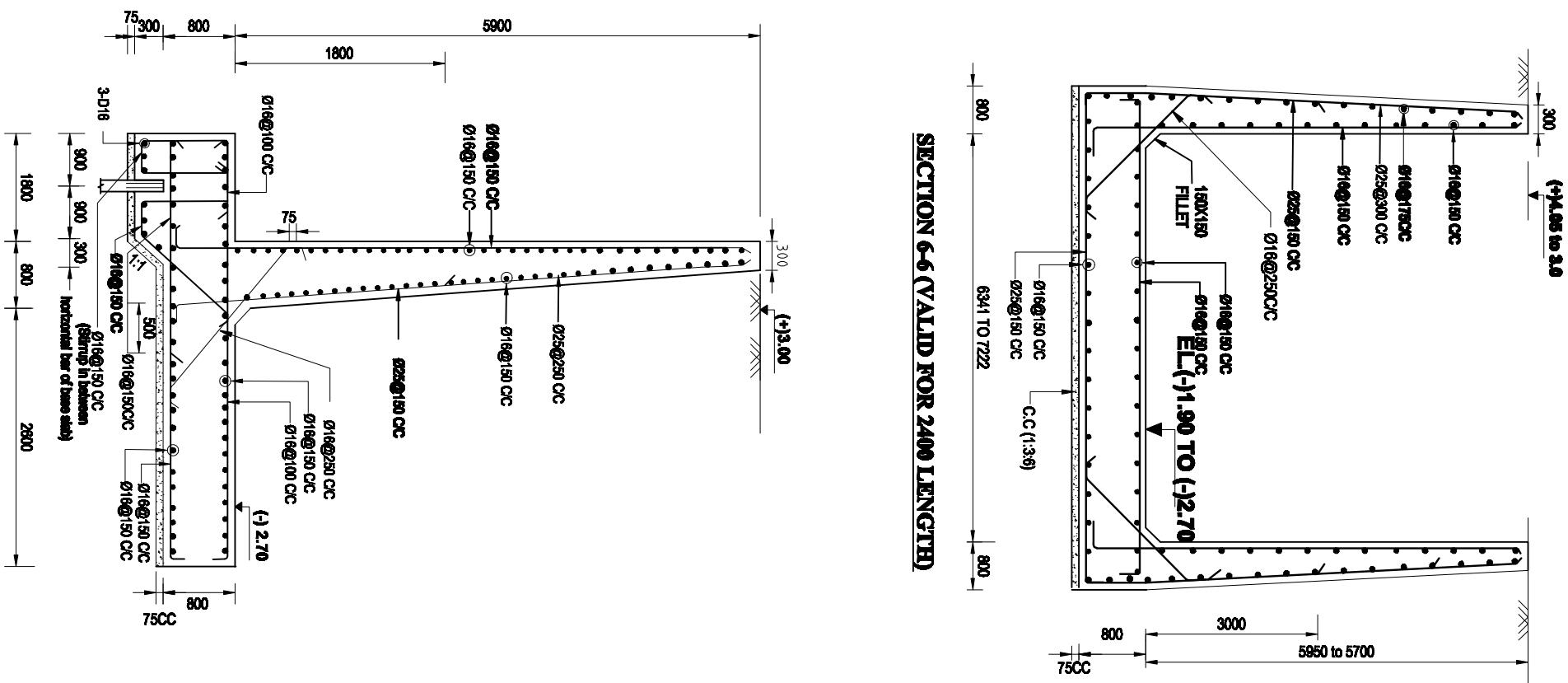
REHABILITATION OF POLDER-15 AT SATKHIRA DISTRICT

DESIGN OF DRAINAGE CUM FLOODING REGULATOR
3-VENTIL SHAKA LABON CHAKBARA KHAL AT KM 27.49 IN POLDER NO-15 IN
SATKHIRA DISTRICT, UNDER SATKHIRA OEM DIVISION, BWDB, SATKHIRA.

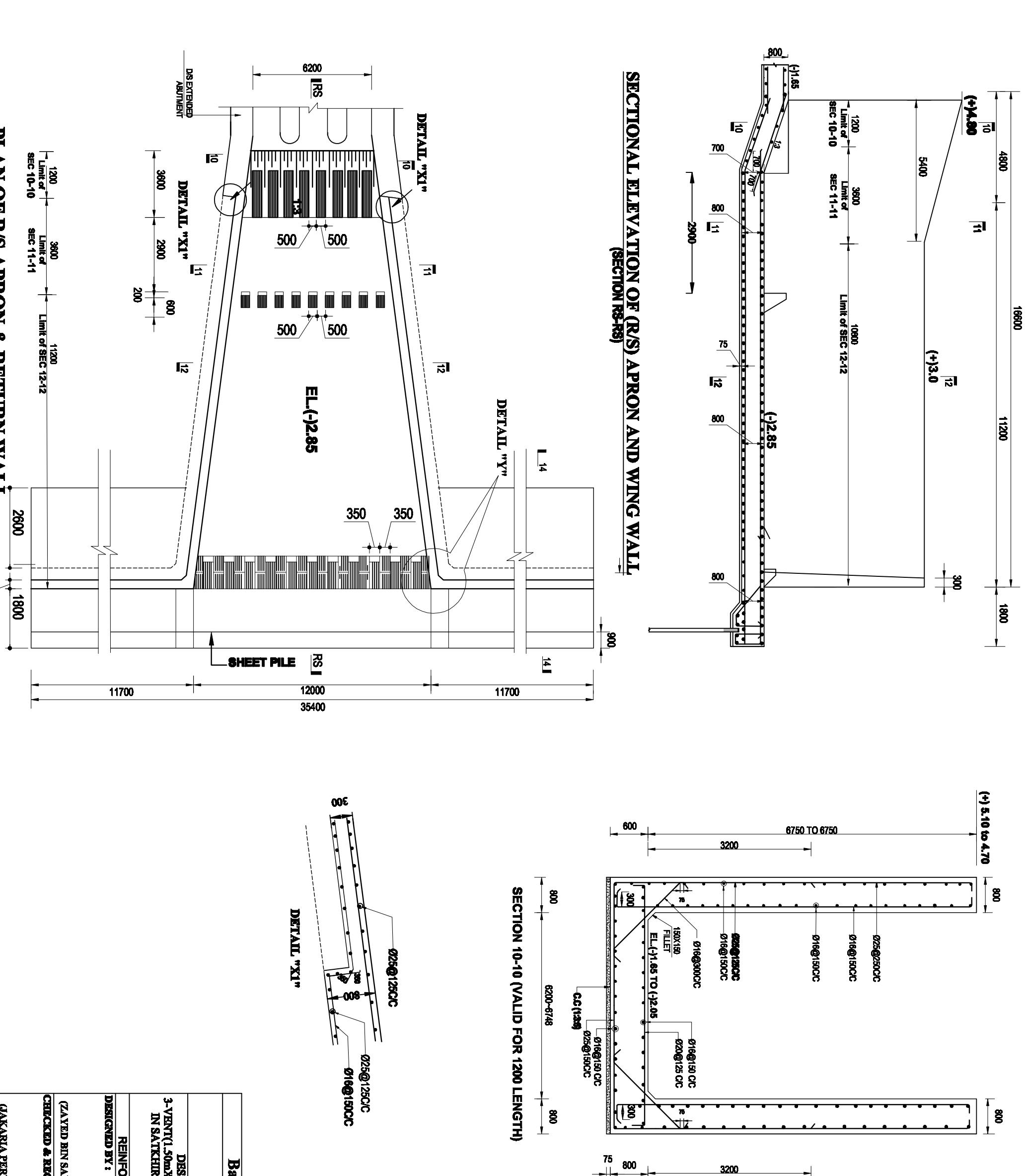
REINFORCEMENT DETAILS OF C/S APRON AND WING WALL

DESIGNED BY:

APPROVED BY:



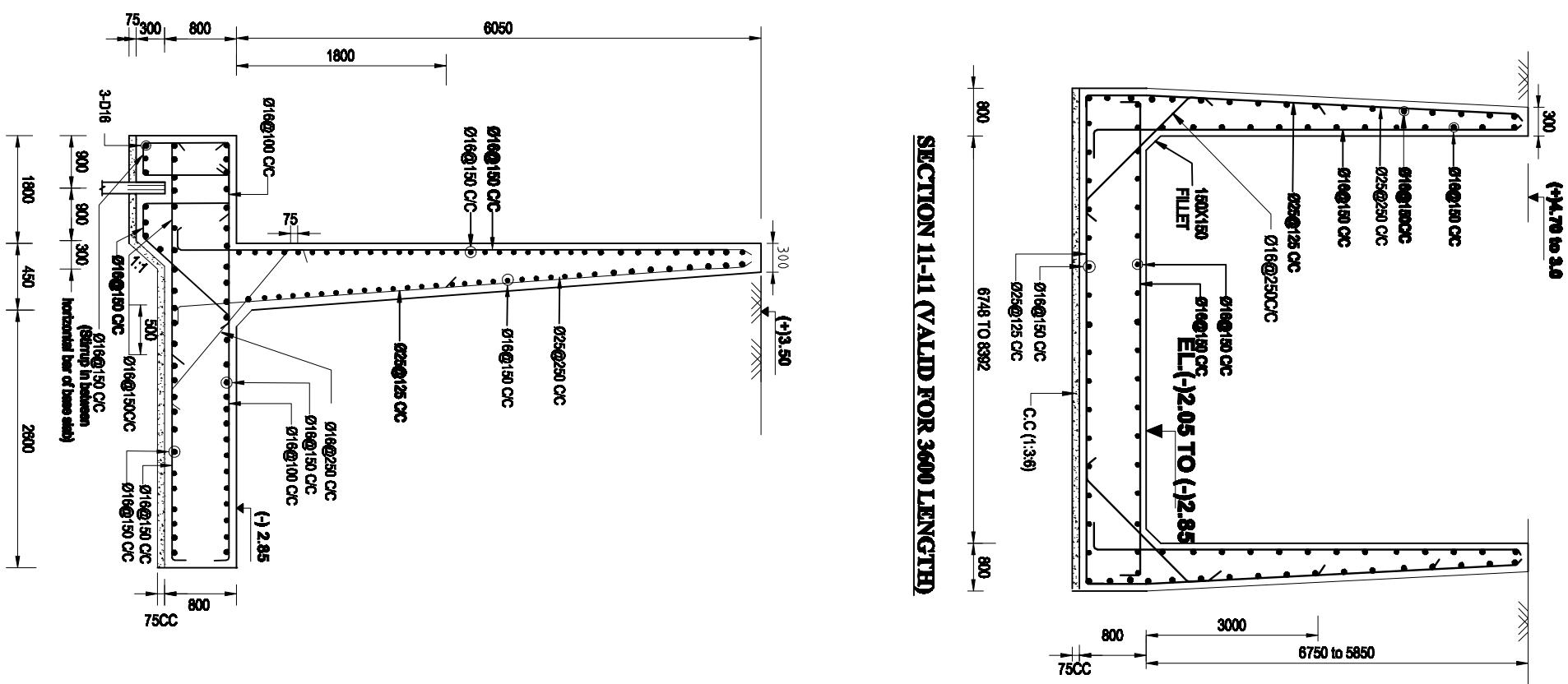
Bangladesh Water Development Board	
Office of the Superintending Engineer	
Design Circle-8	
REHABILITATION OF POLDER-15 AT SATKHIRA DISTRICT	
DESIGN OF DRAINAGE CUM FLUSHING REGULATOR	
3-VENT(1.50m x 1.80m) ON CHAKBARA KHAL AT KM 27.49 IN POLDER NO-15 IN	
SATKHIRA DISTRICT, UNDER SATKHIRA O&M DIVISION-1, BWDB, SATKHIRA.	
REINFORCEMENT DETAILS OF CIS APRON AND WING WALL	
DESIGNED BY:	
APPROVED BY:	
JAKARIA PERVEZ, AE	(MOHAMMAD SAIF UDDIN, SE)
DATE:	DWG. NO.:DC-8-0000-10/21



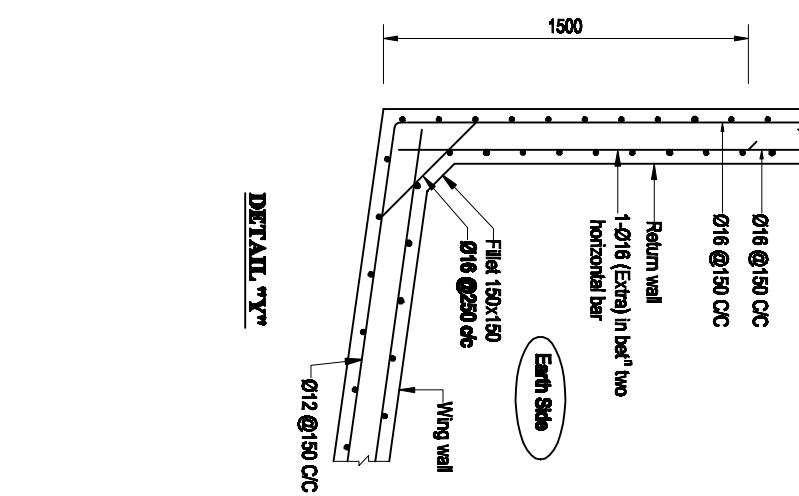
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PLAN OF R/S APRON & RETURN WALL

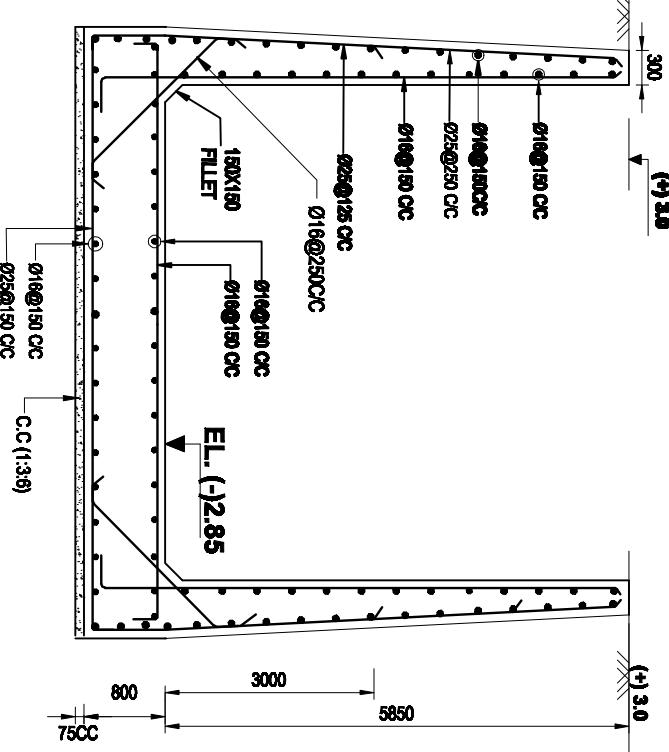
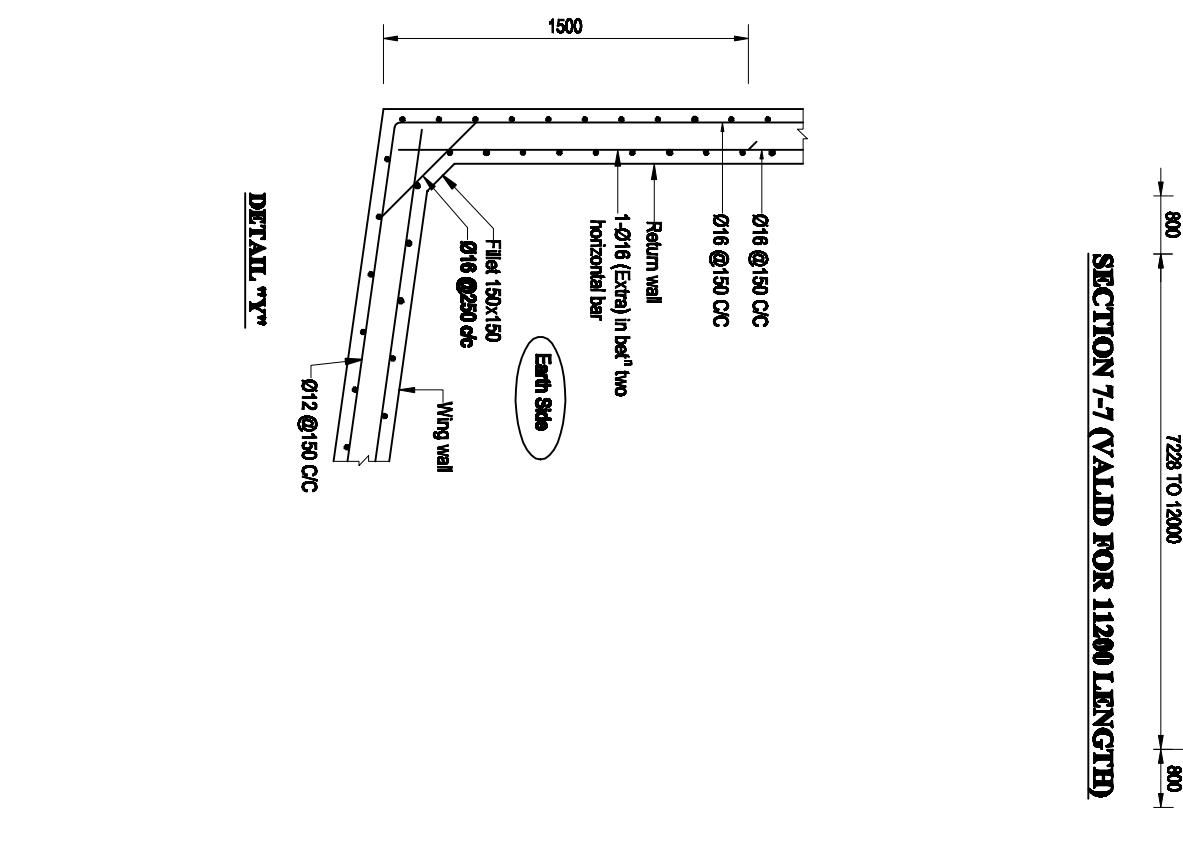
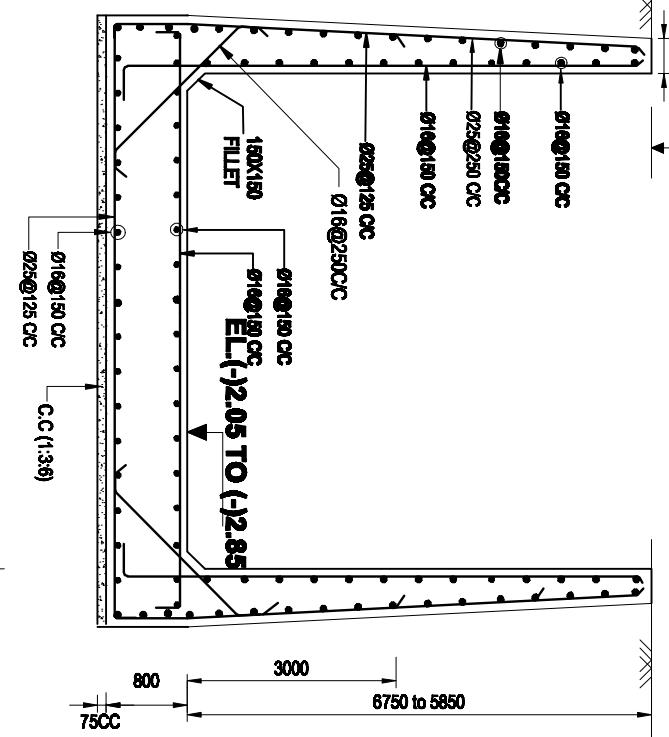
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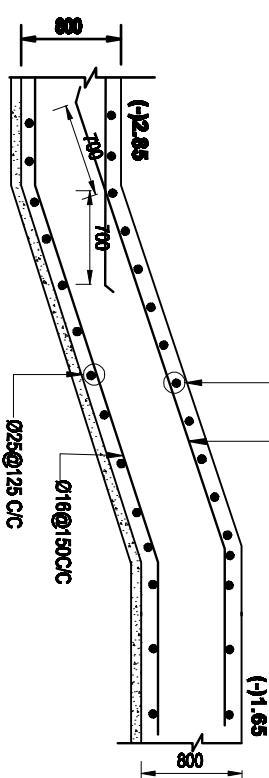
SECTION 11-11 (VALID FOR 3600 LENGTH)



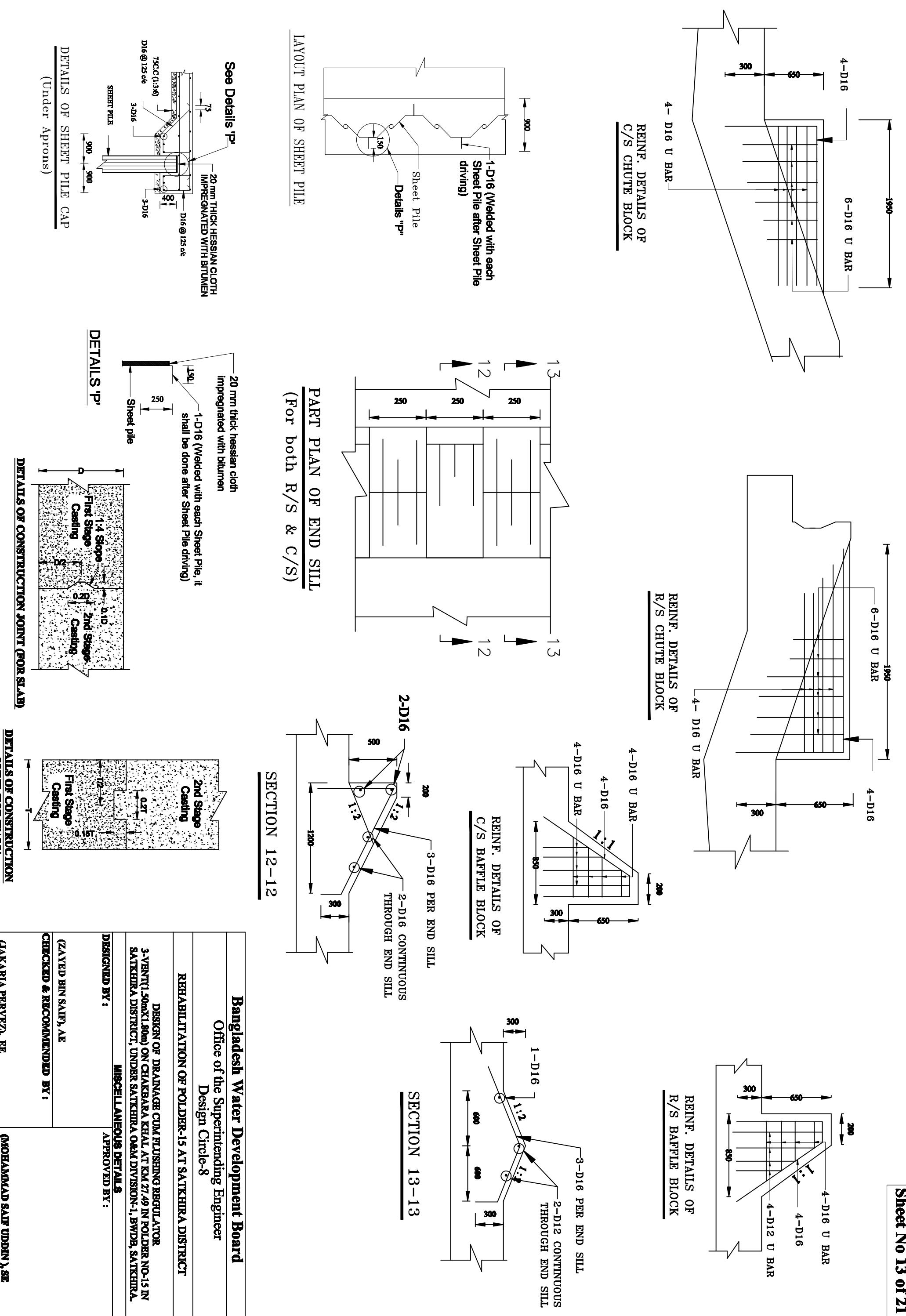
SECTION 7-7 (VALID FOR 11200 LENGTH)

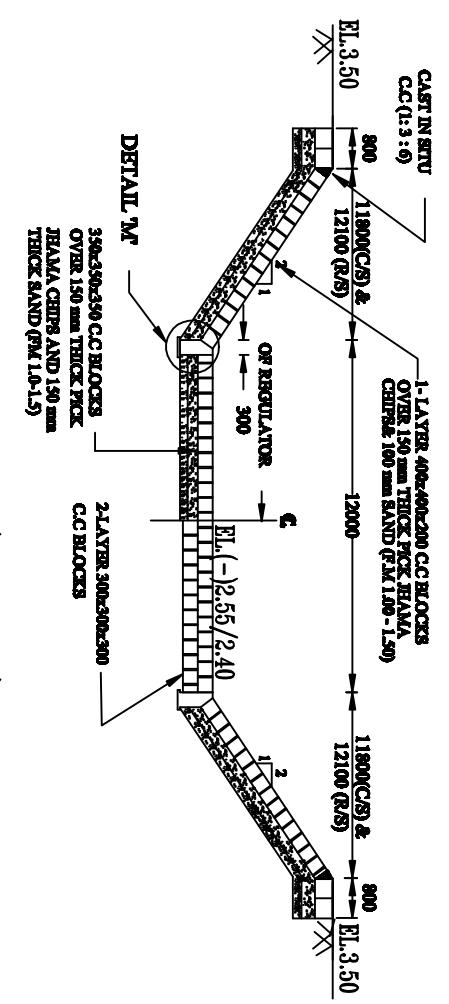


DETAIL 'F'

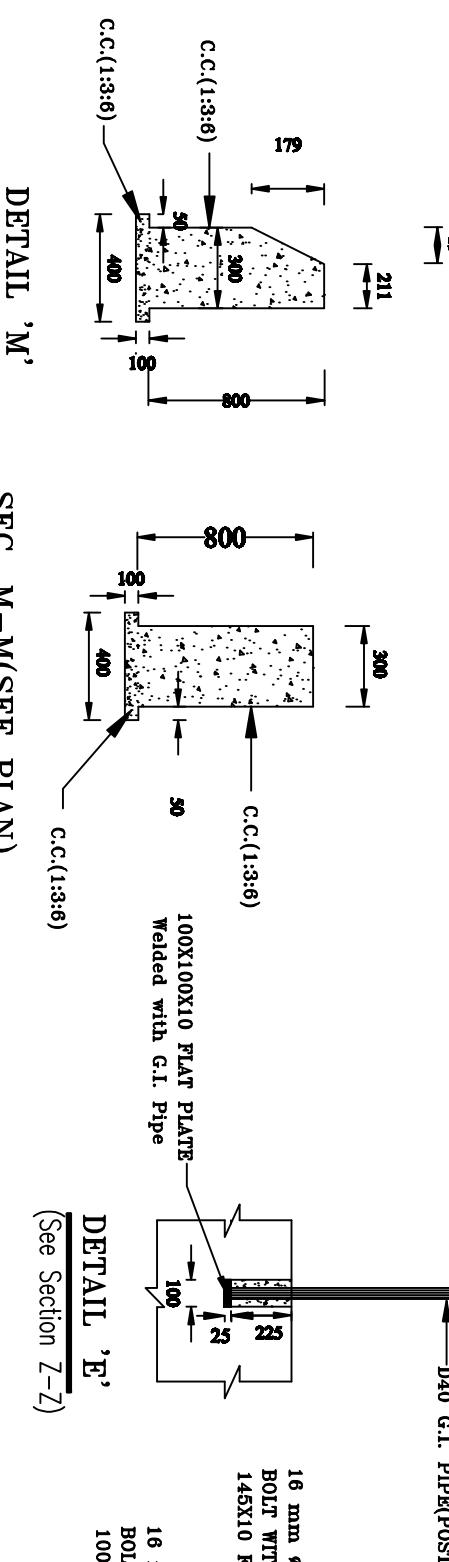


Bangladesh Water Development Board	
Office of the Superintending Engineer	
Design Circle-8	
REHABILITATION OF POLDER-15 AT SATKHIRA DISTRICT	
DESIGN OF DRAINAGE CUM FLUSHING REGULATOR	
3-VENT(1.50mX1.80m) ON CHAKBARA KHAL AT KM 27.49 IN POLDER NO-15 IN	
SATKHIRA DISTRICT, UNDER SATKHIRA O&M DIVISION-1, BWDB, SATKHIRA.	
REINFORCEMENT DETAILS OF CIS APRON AND WING WALL	
DESIGNED BY:	
APPROVED BY:	
JAKARIA PERVEZ, AE	(MOHAMMAD SAIF UDDIN, SE)
DATE:	DWG. NO.:DC-8-0000-12/21





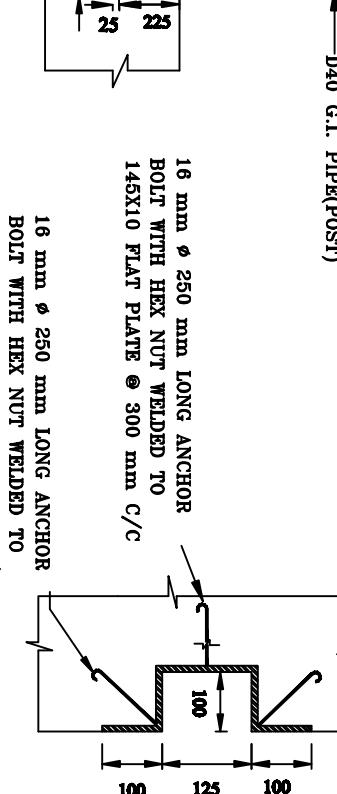
SECTION R-R(SEE PLAN)



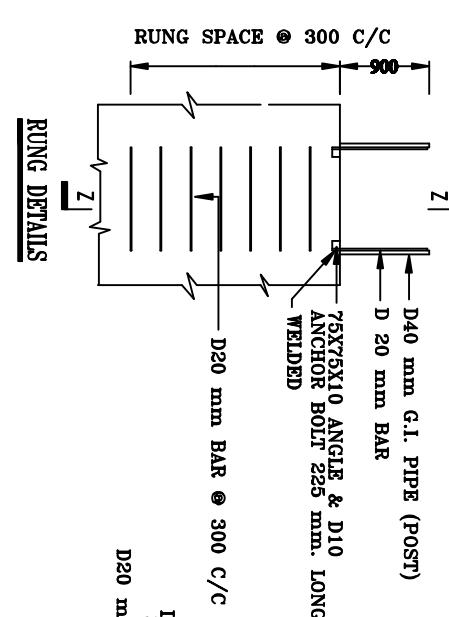
DETAILED

DET AIL E
(See Section Z-Z)

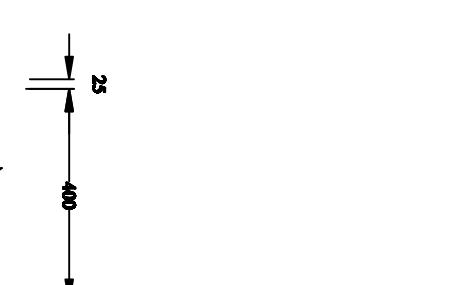
DETAILS OF GROWER



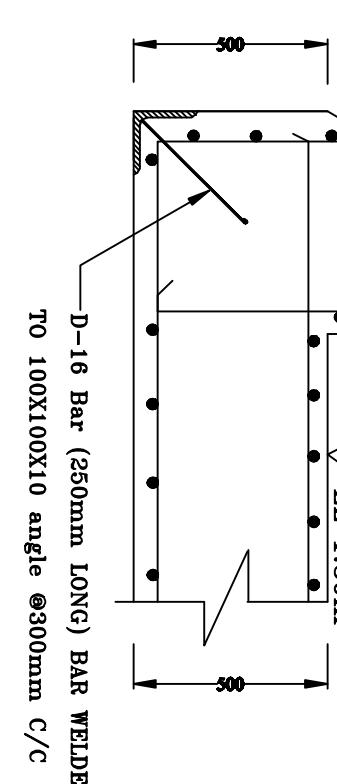
SECTION Z-



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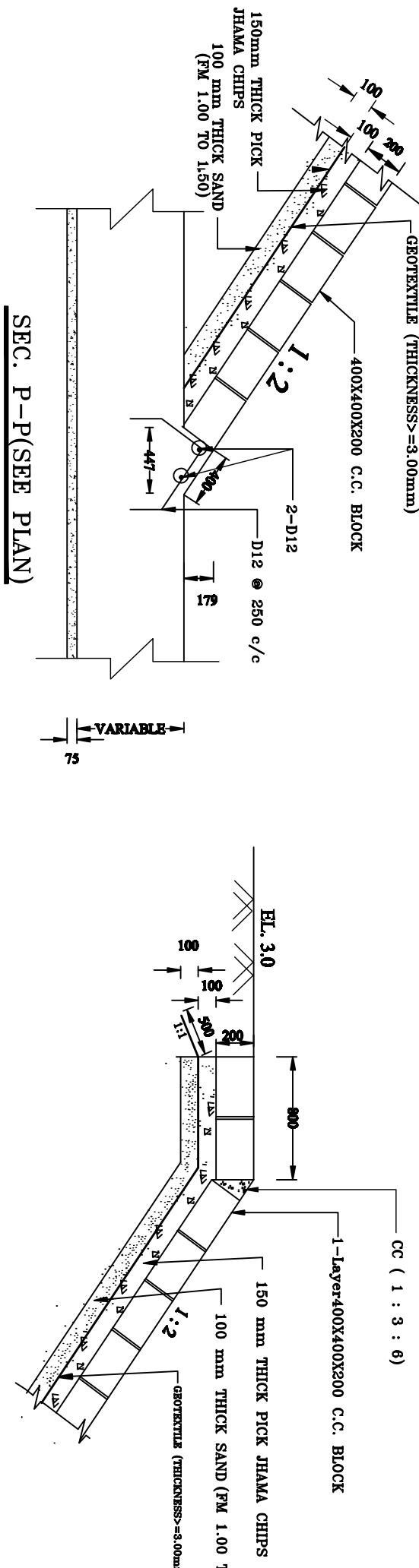


Office of the Superintending Engineer

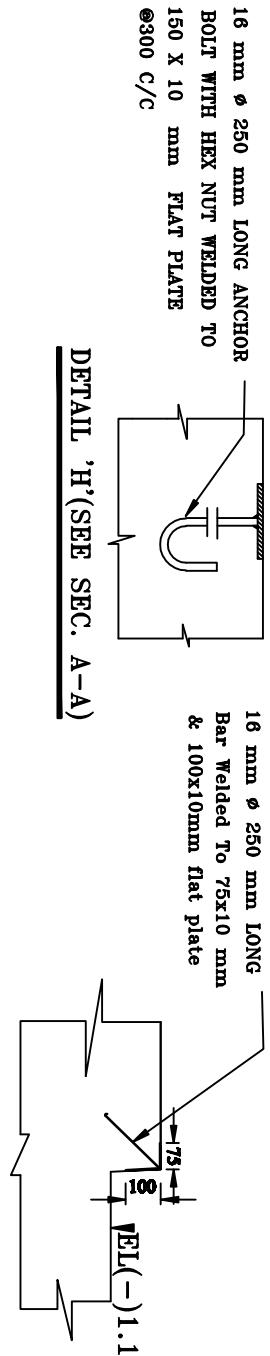
Design Circle-8

**DESIGN OF DRAINAGE CUM FLUSHING REGULATOR
1mx1.80m) ON CHAKBARA KHAL AT KM 27.49 IN POLDER NO-15 IN
DISTRICT, UNDER SATKHIRA O&M DIVISION-1, BWDB, SATKHIRA**

SEC. Q-Q(SEE PLAN



סְבִּירָה



**18 mm Ø 250 mm LONG ANG
BOLT WITH HEX NUT WELDED
150 X 10 mm FLAT PLATE
@300 C/C**

DETAIL 'H'(SEE SEC. A-A)

NOT TO SCALE

1000(C/S) 1000(C/S)
500(R/S) 500(R/S)

NAME PLATE

D16 @ 150 C/C

NOTES

1. THE NAME PLATE SHALL BE PLACED AT THE LEFT SIDE OF BOTH APPROACHES.
2. THE SIZE OF LETTER SHOULD BE 30 mm TO 40 mm & IT SHOULD BE ENGRAVED IN THE PLATE.
3. THE COLOR OF THE LETTER SHOULD BE WHITE ON MEDIUM BLUE SURFACE.
4. THE NAME PLATE SHOULD BE CAST MONOLITHICALLY WITH THE POST AND THE WRITINGS SHOULD BE WRITTEN ON THE PLATE AFTER PLASTERING.

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RAILING POST

25
2200(C/S)
2200(R/S)

RAILING

100

1000(C/S)
500(R/S)

250

250

4-D16

D8 @ 150 C/C

4-D16

D8 @ 150 C/C

SECTION 20-20

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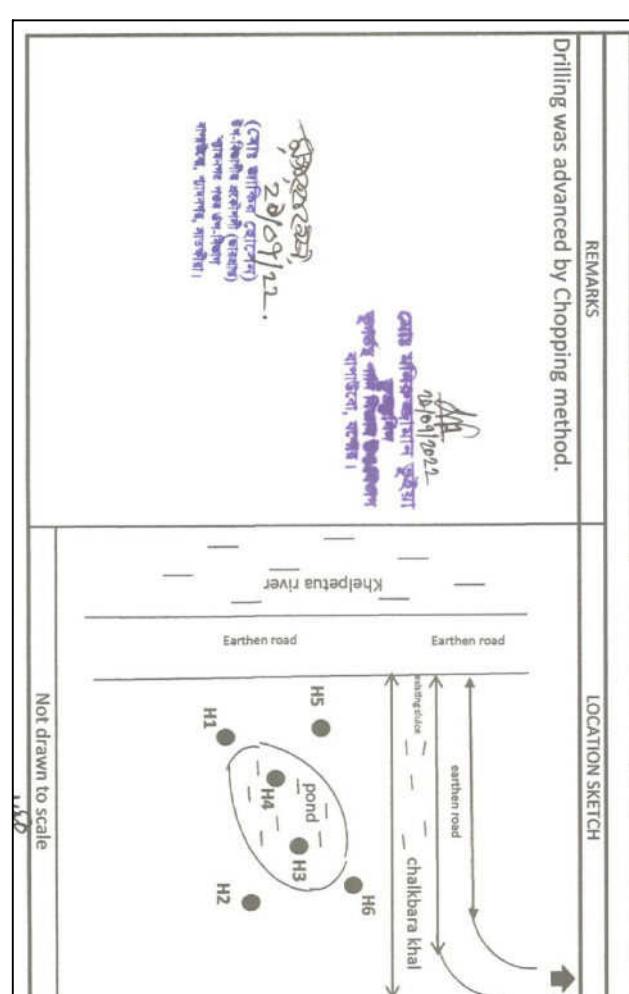
225

BANGLADESH WATER DEVELOPMENT BOARD
GROUNDWATER HYDROLOGY

GROUNDWATER HYDROLOGY
GROUNDWATER HYDROLOGY DIVISION-2
FIELD BORE LOG

FIELD BORE LOG

BORE LOG SITE PLAN



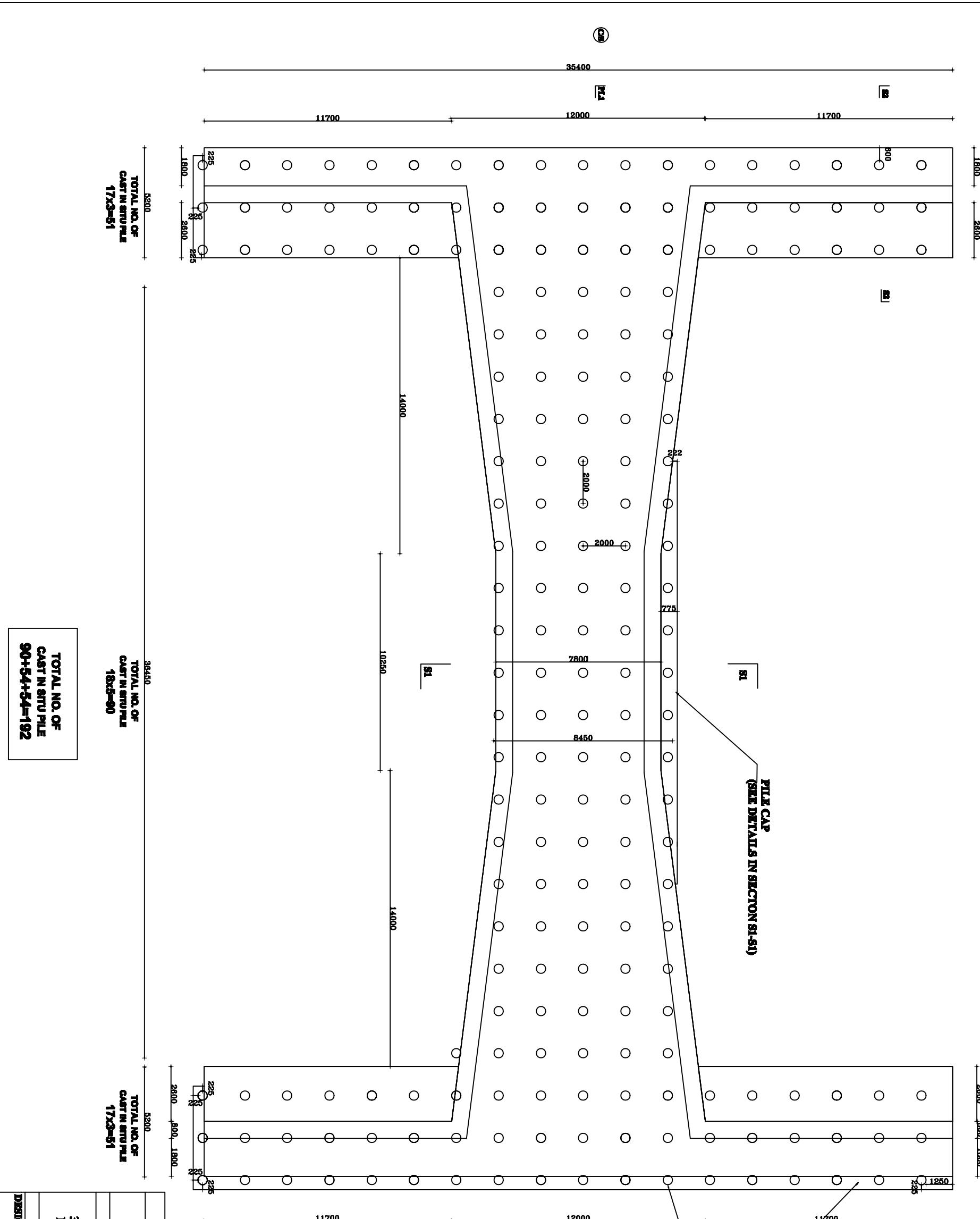
BORE LOG
(FOR BARREL PORTION)

Bangladesh Water Development Board
Office of the Superintending Engineer
Design Circle-8

REHABILITATION OF POLDER-15 AT SATKHIRA DISTRICT

DESIGN OF DRAINAGE CUM FLUSHING REGULATOR
3-VENT(1.50mX1.80m) ON CHAKBARA KHAL AT KM 27.49 IN POLDER NO-15 IN
SATKHIRA DISTRICT, UNDER SATKHIRA O&M DIVISION-1, BWDB, SATKHIRA.

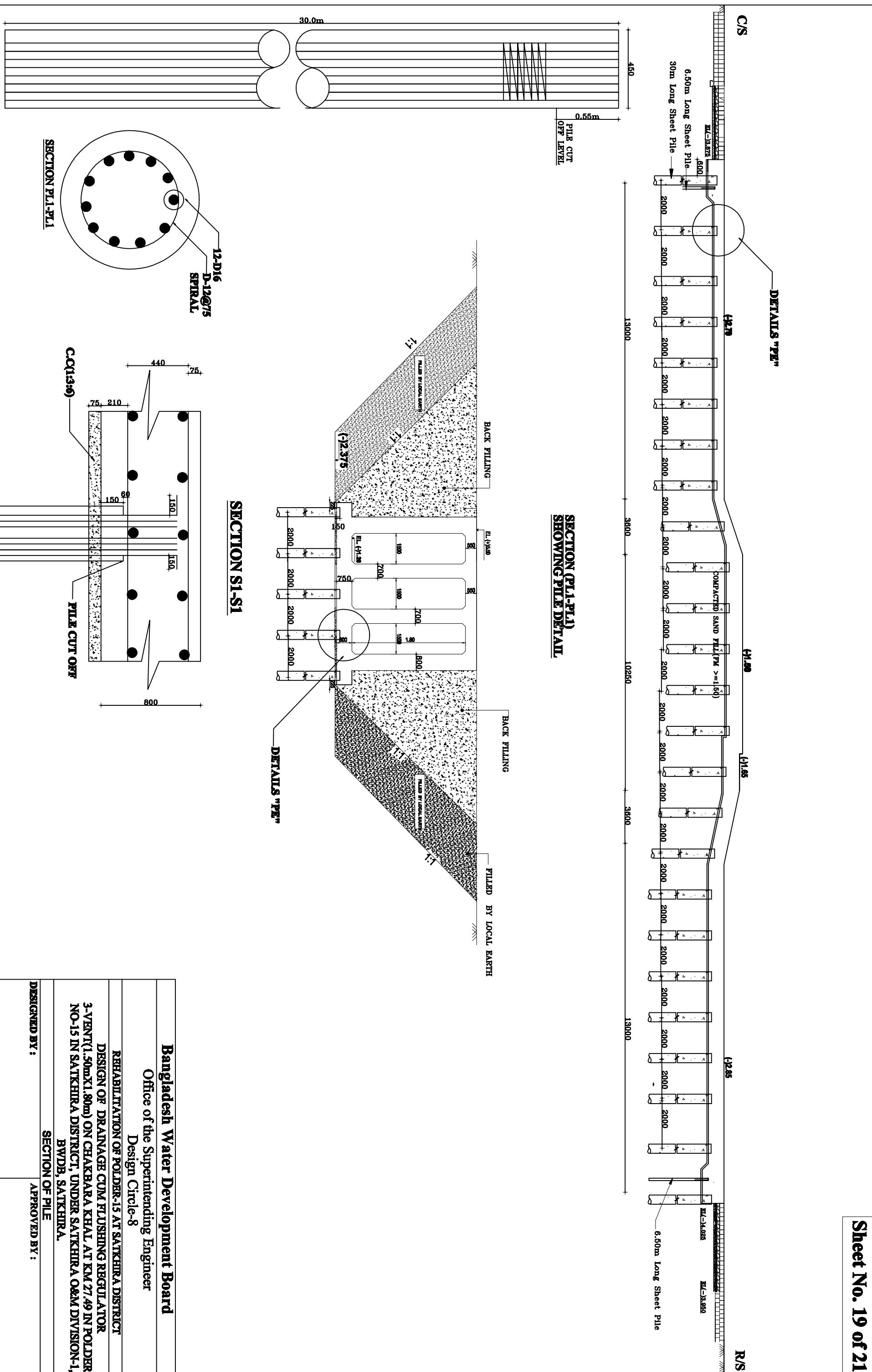
INDEX MAP & SITE PLAN



Sheet No 18 of 23

Scale : Net To Scale

Bangladesh Water Development Board Office of the Superintending Engineer Design Circle-8	
REHABILITATION OF POLDER-15 AT SATKHIRA DISTRICT DESIGN OF DRAINAGE CUM FLUSHING REGULATOR 3-VENT(1.50mX1.80m) ON CHAKBARA KHAL AT KM.27.49 IN POLDEER NO-15 IN SATKHIRA DISTRICT, UNDER SATKHIRA O&M DIVISION-1 BWDB, SATKHIRA.	
DESIGNED BY : ZAWEED BIN SAIF, AE	APPROVED BY : MOHAMMAD SAIF UDDIN, SE
CHECKED & RECOMMENDED BY : JAKARIA PERVIZ, EE	PLAN OF PILE
DATE: DWG. NO.:DC-8-0000-18/21	



NOTE FOR PILE:

1. CONCRETE FOR PILE SHALL BE WITH 20mm DOWN GRADED SHINGLES AND HAVE THE LEANEST MIX OF 1:1.5:13 HAVING MINIMUM CYLINDER STRENGTH OF 22.0 N/mm² AT 25 DAYS.
 2. CLEAR COVER FOR PILE=75mm.
 3. CASTING OF PILE SHALL BE CARRIED ON AS A CONTINUOUS OPERATION UNTIL THE ENTIRE PILE CASTING IS COMPLETED BEGINNING FROM THE BOTTOM TO TOP.
 4. ALL PILES SHALL BE CONSTRUCTED USING A TEMPORARY CASING UNLESS OTHERWISE APPROVED BY THE ENGINEER IN-CHARGE.
 5. ALL PILES SHALL BE CONSTRUCTED VERTICAL UNLESS SPECIFIED OTHERWISE. A TOLERANCE OF 50mm MAY BE ALLOWED IN THE FINAL LOCATION OF PILE.
 6. THE SURFACE WATER SHALL NOT BE ALLOWED TO ENTER THE HOLE IF GROUND WATER IS BOTTOM OF THE GOLE TO DISPLACE WATER. THE TREMIE DISCHARGE SHALL BE KEPT WELL AND INTO THE CONCRETE AND CAREFULLY WITHDRAWN AS THE CONCRETE IS PLACED.
 7. THE CASING WILL BE WITHDRAWN SMOOTHLY AND BOTTOM SHALL BE MAINTAINED AT A MINIMUM OF 150mm BELOW THE TOP OF CONCRETE.
 8. THE LOAD TEST SHOULD CARRIED OUT 28 DAYS AFTER COMPLETION OF CONCRETE OPERATIONS
 9. NO PILE SHALL BE BORED WITHIN 3000mm DISTANCE BEFORE 24 HOURS OF CASTING OF A PARTICULAR PILE HAS ELAPSED.
 10. STATIC LOAD TEST FOR 400KN TEST LOAD FOR BARREL SHALL BE PERFORMED FOR 1 PILE AND TEST RESULT SHOULD BE SENT TO CONCERNED DESIGN OFFICE(DESIGN CIRCLE-8).
 11. NO SERVICE PILE SHALL BE CONSTRUCTED UNTIL AND UNLESS LOAD TEST IS PERFORMED AND TEST RESULT IS OBTAINED.
- DETAILS "PE"**
- (SECTION S2-S2)**
- SECTION OF RETAINING WALL**
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NOTES

**BACK FILLING SHALL BE DONE
BY SAND OF FM>=1.50.**

Bangladesh Water Development Board	
Office of the Superintending Engineer	
Design Circle-8	
REHABILITATION OF POLDER-15 AT SATKHIRA DISTRICT	
DESIGN OF DRAINAGE CUM FLUSHING REGULATOR	
3-VENT(1.50mX1.80m) ON CHAKBARA KHAL AT KM 27.49 IN POLDER NO-15 IN SATKHIRA DISTRICT, UNDER SATKHIRA O&M DIVISION-1, BWDB, SATKHIRA.	
NOTES FOR PILE	
DESIGNED BY:	APPROVED BY:
(ZAYED BIN SAIF, AE)	
CHECKED & RECOMMENDED BY:	
JAKARIA PERVEZ, JE	MOHAMMAD SAIF UDDIN, SE
DATE:	DWG. NO.:DC-8-0000-20/21