

PROJECT : AS BUILT DRAWING OF ENTRY GATE
FOR SAYDABAD WATER TREATMENT
AT DHAKA WASA, GOLAPBAG, SAYDABAD.

LOCATION : DHAKA.

CONSULTANT:



HOUSE # 27&29 (4B), ROAD # 13,
NIKUNJA-2, DHAKA-1229.
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E-MAIL : inspacedevelopments@gmail.com

CLIENT:



DHAKA WASA
Wasa Bhavan, 98 Kazi Nazrul Islam
Avenue, Kawran Bazar, Dhaka.

Analysis & Design Parameters:

Parameters	Values	Reference(s)
Yield Strength, f_y	72500 psi	BDS ISO 6935-2:2006 or ASTM A615
Design Compressive Strength f'_c	For All = 4.0 ksi	ACI 301-16 and ASTM C39
Required Cylinder Strength f_{cr}	For All = 5.0 ksi	ACI 301-16 and ASTM C39
Frame Type	Special Reinforced Concrete Shear Wall (Bearing Wall System)	
Aggregate Type	20mm Down Well Graded Stone Aggregate & 100% Sylhet Sand (Minimum FM = 2.2)	
Mix Ratio	As Per Mix Design	
Response modification factor	5	BNBC-2020
Importance factor (Seismic)	1.0 (Occupancy II)	
Seismic zone factor	0.2 (Zone-II)	
Soil profile	SD	
Seismic Design category	SDC D	
Wind speed	65.7 m/s	
Importance factor (Wind)	1.0 (Occupancy II)	
Exposure Category	A	
Dead load	As constructed	
Live load	As Per BNBC-2020	
Load Combination		



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	DHAKA WASA Wasa Bhawan, 98 Kazi Nazimul Islam Avenue, Kewran Bazar, Dhaka.	
CLIENT	PROJECT NAME	AS BUILT DRAWING OF ENTRY GATE DESIGN FOR SAYDABAD WATER TREATMENT PLANT
	PROJECT ADDRESS	DHAKA WASA GOLAPBAG, SAYDABAD
STRUCTURAL TEAM		
DESIGN BY:		SIGNATURE:
Md. Mustafijur Rahman Nayem B.Sc. in Civil Engineering IEB Membership: A-21066		
CHECKED BY:		SIGNATURE:
KAWSAR AHMED Sr. Structural Engineer B.Sc. in Civil Engineering, BUET IEB Membership: M-40942		
DRAFTING TEAM		
MAHADI HASAN Team Leader B.Sc. in Civil Engineering.		MD. NUR ALAM Sr. Draftsman
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01		03
02		04
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DRAWING TYPE		☒ As Built Drawing ☒ Construction Drawing ☒ Approval Drawing
DATE	20.06.2026	
SCALE	Not to Scale	
DRAWING TITLE	GENERAL NOTE-01	
SHEET NO.	GN-01	

STRUCTURAL DESIGN NOTES & MINIMUM REQUIREMENTS FOR BUILDING STRUCTURES

GENERAL

- DESIGN METHOD USED IS USED ACCORDING TO BANGLADESH NATIONAL BUILDING CODE (BNBC) 2020 AND AQ 318-08.
- THE STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL, ELECTRICAL AND PLUMBING DRAWINGS, SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONSTRUCTION. ANY ANOMALY BETWEEN THE ARCHITECTURAL AND STRUCTURAL DRAWING REGARDING THE DIMENSIONS SHALL BE REPORTED TO THE STRUCTURAL DESIGNER.
- FOLLOW BNBC (2020) FOR SPECIFICATIONS/STRUCTURAL REQUIREMENTS NOT MENTIONED IN THE DRAWINGS OR IN THIS NOTE SHEET.
- ANY DETAILS NOT SHOWN IN THE DRAWING SHOULD BE DONE ACCORDING TO AQ DETAILING MANUAL (1994)
- BASIC WIND SPEED = As per BNBC (2020)
- SEISMIC ZONE = As per BNBC (2020)
- OTHER LOADS = As per BNBC (2020)
- THE CONTRACTOR IS TO CHECK ALL DIMENSIONS PRIOR TO COMMENCING WORK AND ANY QUESTIONS ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
- NO DIMENSION SHALL BE SCALED FROM THE DRAWINGS.
- DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION AND DURING THAT PERIOD NO PART IS OVER STRESSED UNDER CONSTRUCTION ACTIVITIES.

FOUNDATIONS AND EARTH WORKS :

- ALL EXCAVATION, DRAINAGE, FILLING AND COMPACTION SHALL BE MADE IN ACCORDANCE WITH THE SPECIFICATION.
- THE ENGINEER IS TO APPROVE ALL EXCAVATIONS PRIOR TO PLACING CONCRETE.
- THE EXCAVATION SHALL BE KEPT FREE OF WATER AT ALL TIMES. CONCRETE QUALITY AND MIX CONSTITUENTS ARE TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE :

- ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONCRETE DIMENSIONS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES AND/OR THICKNESS OF BUILDING CONCRETE.
- CONCRETE QUALITY AND MIX CONSTITUENTS ARE TO BE IN ACCORDANCE WITH THE SPECIFICATION
- TYPE : CONCRETE COMPRESSIVE STRENGTH (CYLINDER) CONSIDERED AS FOLLOWS : SEE GENERAL NOTE-01 (04-01)
- MINIMUM CYLINDER STRENGTH: BASED ON CYLINDER TEST OF DIAMETER $\phi = 100\text{mm}$ & HEIGHT = 200mm
 - 28 DAYS STRENGTH = AS SPECIFIED IN 2(a)
 - 7 DAYS STRENGTH = 75% OF THE 28 DAYS STRENGTH.
- CURING OF C.C. & R.C.C. WORK :
 - CURING TIME MINIMUM 20 DAYS
 - METHOD OF CURING :
 - HORIZONTAL SURFACE: BY PONDING OF WATER
 - OTHER SURFACES: BY WRAPPING MOST ATE FABRIC AND SPRINKLING WATER BY HOSE PIPE FREQUENTLY.

CEMENT

Portland Composite Cement /TYPE-2 CONFORMING TO BCS 222 : 1874/ASTM C150 COMPOSITE CEMENT/ TYPE-2 CONFORMING TO BCS 222 : 1874/ASTM C150

CONCRETE AGGREGATE

- THE AGGREGATES: AS PER SPECIFICATION
- COARSE AGGREGATES: AS PER SPECIFICATION

WATER

POTABLE WATER TO BE USED IN CONCRETE MIX

7. STEEL REINFORCEMENT

- ALL REINFORCEMENTS ARE 72 GRADE HIGH STRENGTH DEFORMED BAR MADE FROM RILLET STEEL (UNLESS OTHERWISE SPECIFIED)
- FOR COLUMN TIE & BEAM STIRRUP ENSURE 72.5 GRADE
- YIELD STRENGTH OF STEEL $f_y = 72,500$ psi CONFORMED TO ONE OF THE FOLLOWING SPECIFICATIONS : i) BCS 1313 : 1991, ii) ASTM A615M
- THE FOLLOWING TESTS FOR REINFORCING BARS FROM RANDOM SAMPLES SHALL BE CONDUCTED AT BUET AS PER BCS 1313 : 1991 AND TEST RESULT SHALL BE SUBMITTED TO THE ENGINEER FOR CHECKING AND RECORD :
 - TENSILE STRENGTH TEST
 - PERCENTAGE ELONGATION TEST

8. DEVELOPMENT & LAP SPICE LENGTH

Bar Dia.	Development Length	Lap Splice Class B	Tension Hook	
		Column and Beam	Embedment Length (L _{db})	Lap Length (L _s)
10	420mm	540mm	160mm	160mm
12	500mm	650mm	190mm	210mm
16	660mm	860mm	240mm	260mm
20	825mm	1040mm	300mm	310mm
22	1140mm	1440mm	330mm	360mm
25	1290mm	1640mm	380mm	410mm



Note: Lap Splice for beam top reinforcement is Class A but the splice length given is same for all types.

9. SPACER BARS

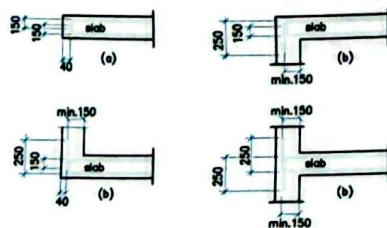
TO SUPPORT SECOND LAYER BARS IN BEAMS/SLABS, USE 25# SPACER BARS @ 750 C/C WHERE REQUIRED.

10. CHAIRS

USE CHAIRS OF NECESSARY DIMENSION MADE OF 10# /12#/16# BAR TO SUPPORT TOP BARS @ 750 C/C.

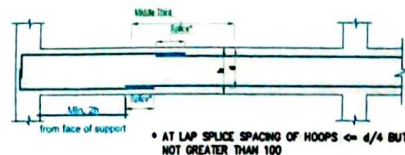
16. SLAB END REINFORCING DETAILS

- FREE END OF SLAB INCAPABLE OF EMBEDDING OF STEEL BAR IN BEAM/WALL
- OTHERS



11. LAP LOCATION :

- FOR BEAM BOTTOM BAR, LAP SPICE CANNOT BE DONE IN 2h DISTANCE FROM THE FACE OF JOINT, WHERE h IS DEPTH OF BEAM
- FOR BEAM TOP BAR, LAP MAY BE PROVIDED AT MIDDLE THIRD ZONE OF THE SPAN
- NOT MORE THAN SIX OF THE BARS SHALL BE SPICED AT ONE PLACE
- LAP SPICES ARE TO BE CONFINED BY HOOPS WITH MAXIMUM SPACING OR PITCH OF $d/4$ OR 100mm WHERE d IS THE EFFECTIVE DEPTH OF THE BEAM.



12. DEVELOPMENT LENGTH

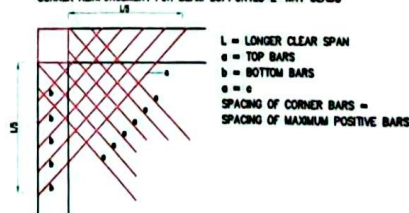
ALL BEAM AND SLAB REBARS SHOULD BE EXTENDED INTO THE SUPPORT UP TO DEVELOPMENT LENGTH.

13. ADMIXTURE

WATER PROOFING ADMIXTURE, PLASTICISER AND JOINTING ADMIXTURE SHALL BE USED AS MENTIONED IN THE RESPECTIVE DRAWINGS AND IN THE SPECIFICATION AFTER APPROVAL BY THE ENGINEER.

14. CORNER REINFORCEMENT

CORNER REINFORCEMENT FOR BEAM SUPPORTED 2-WAY SLABS



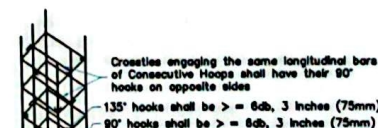
17. RECOMMENDED END HOOKS

bar hook	Form and Bend Angle Extension (degree)	Bend Radius (r)	Used Bar	Location
primary reinf.	180°	$r = 2db$	6 to 25	lap splice end of anchorage
tie/stirrups	135°	$r = 1.25db$	6 to 12	stirrups fastening bar diagonal hoop
primary reinf.	90°	$r = 2.5db$	6 to 32	bend-up for embedment
slab	45°	$r = 5db$	6 to 20	bend bar in slab

15. CONCRETE CLEAR COVER FOR REINFORCING BARS

Member	Location or Condition	Thickness of Cover	Figure
foundation	side	75	
	bottom	75	
column	above ground level	40	
	below ground level	60	
Grade beam	Indoors face : top, side & bottom	60	
	Outdoors face : top, side & bottom	60	
Floor beam	Indoors face : top, side & bottom	40	
	Outdoors face : top, side & bottom	40	
slab and stair	top and bottom	20	
drain wall	exterior and bottom	50	
	interior	25	
water tank	water face	50	
	other face	25	

* from tile
** from stirrups
15A. COLUMN HOOPS AND CROSSIE DETAILS



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PROJECT NAME

AS BUILT DRAWING OF
ENTRY GATE DESIGN FOR
SAYDABAD WATER
TREATMENT PLANT

PROJECT ADDRESS

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GOLAPBAG, SAYDABAD

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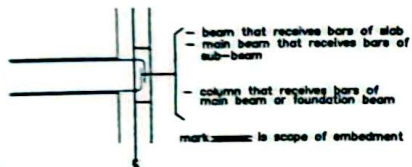
DRAWING TITLE GENERAL NOTE-02

SHEET NO.

01 of 02

STRUCTURAL DESIGN NOTES & MINIMUM REQUIREMENTS FOR BUILDING STRUCTURES

18. SCOPE OF EMBEDMENT



19. COMPACTED SAND FILL

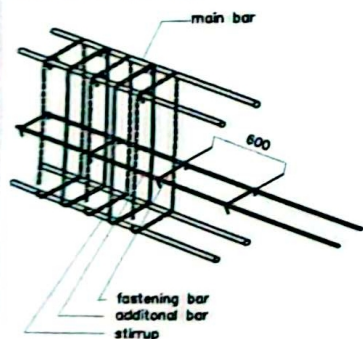
THE COMPACTED SAND FILL WOULD MEAN FILLING OF SAND (FM > 1.2) IN LAYERS OF 150mm AND COMPACTED TO 95% PROCTOR DRY DENSITY

20. ADDITIONAL BAR, FASTENING BAR IN BEAM

(Unless shown otherwise in the drawing(s))

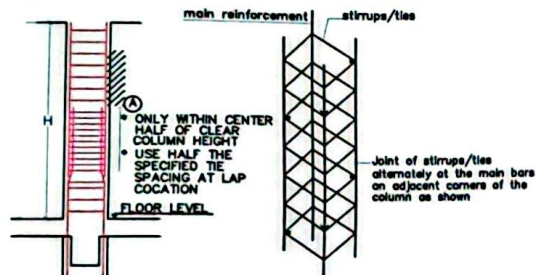
depth (D)mm	D < 600	600 ≤ D < 900	900 ≤ D < 1200	D ≥ 1200
additional bar not necessary	2-D10	4-D12	4-D12	n-D12
SECTION				
fastening	—	ø6 mm @ 600 mm	—	—

21. END HOOK OF STIRRUPS



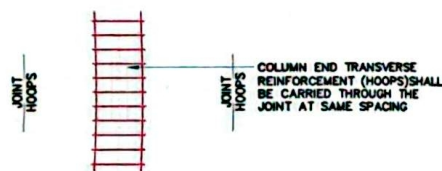
END HOOKS OF STIRRUPS ARE LOCATED ALTERNATELY AT TOP CORNER BAR OF THE SECTION.

22. COLUMN SPLICE LOCATION

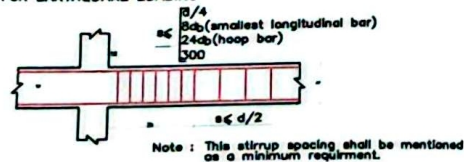


Ⓐ IS AREA FOR SPLICE OF COLUMN REINFORCEMENT. MAXIMUM 50% OF TOTAL BAR IS SPICED AT ONE LEVEL
H = CLEAR COLUMN HEIGHT

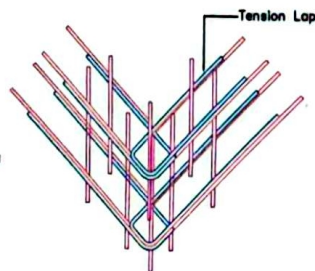
23. JOINT HOOPS DETAILS



24. CONFINEMENT REQUIREMENTS OF BEAM AT JOINTS FOR EARTHQUAKE LOADING



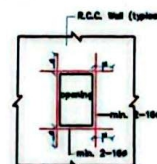
28. Reinforcement Details at Corner of RCC Walls



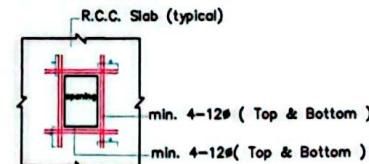
25. STIRRUP AND TIE DETAIL



26. DETAILS OF RE-BARS AT WALL OPENING

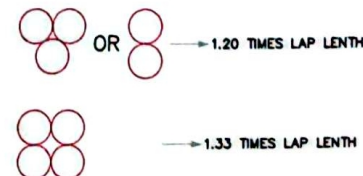


27. DETAILS OF RE-BARS AT SLAB OPENING



29. Roofs of all Flat-Roofed Structured shall be provided with 50mm to 100mm Lime Concrete with adequate Drainage Slope as per Directions.

30. LAP SPLICES FOR BUNDLE BAR



THE CUTOFF POINT SHALL BE STAGGERED BY AT LEAST 40 DIAMETER



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STRUCTURAL TEAM

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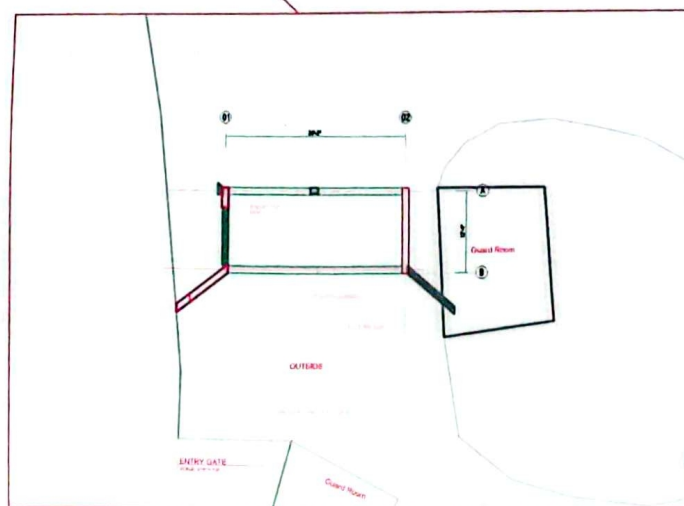
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DRAWING TITLE GENERAL NOTE-03

SHEET NO. GN-03



⊖ MASTER PLAN



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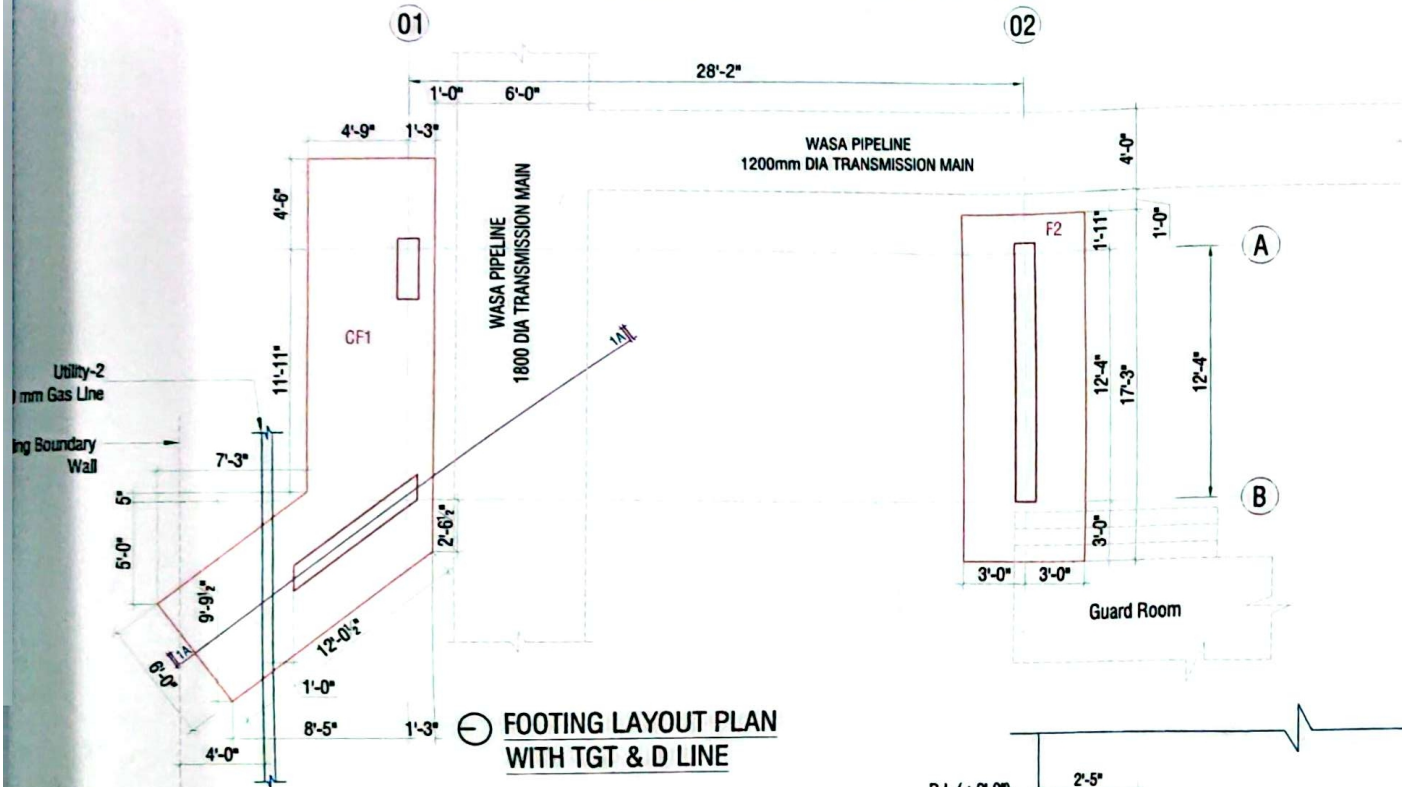
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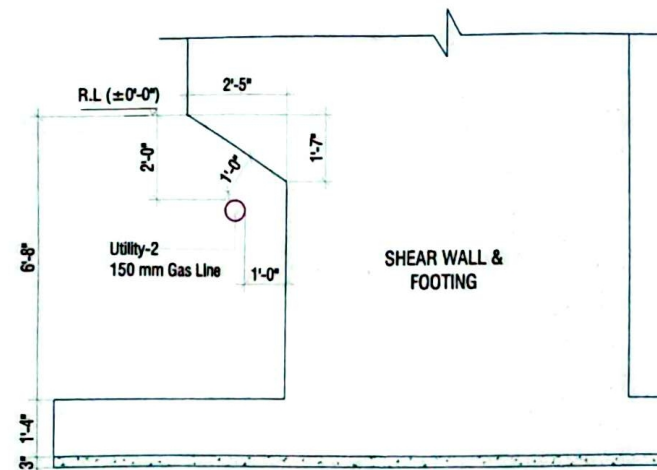
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DRAWING TITLE MASTER LAYOUT

SHEET NO. ST-00



FOOTING LAYOUT PLAN
WITH TGT & D LINE

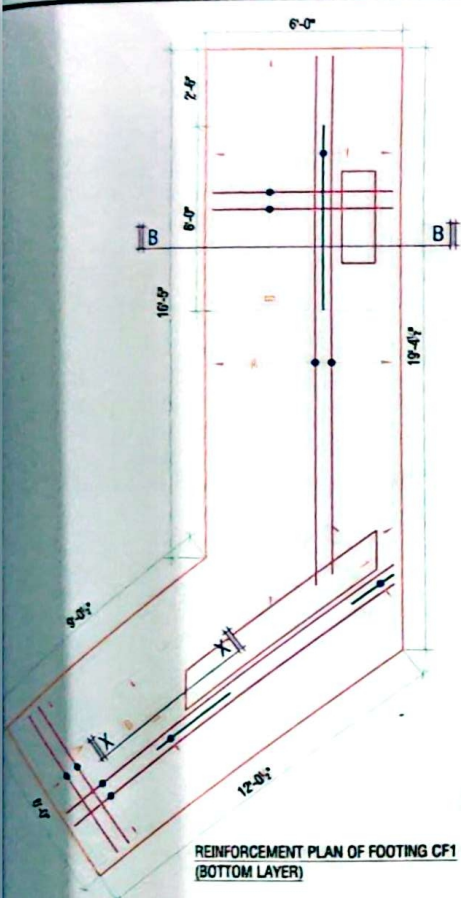


SECTION 1A-1A
WITH TGT & D LINE

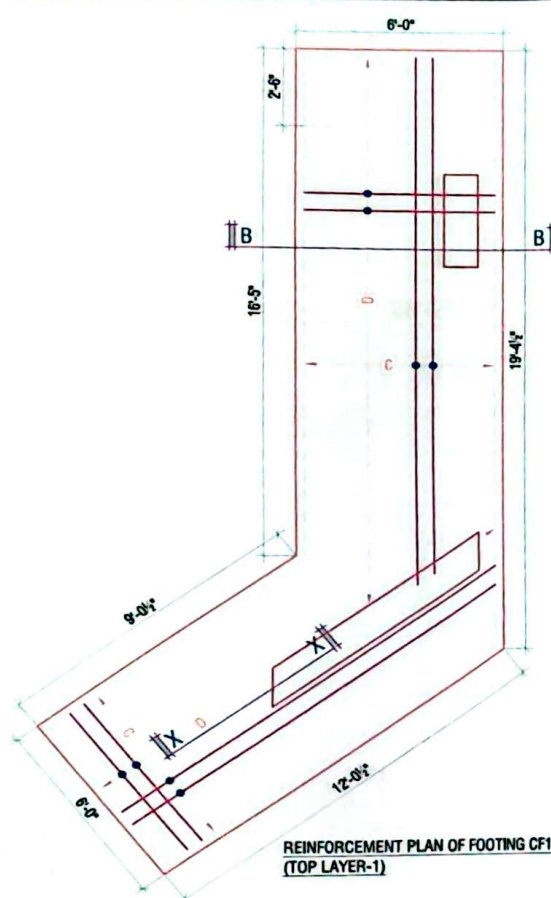


WASA PIPELINE
1800 DIA
TRANSMISSION MAIN

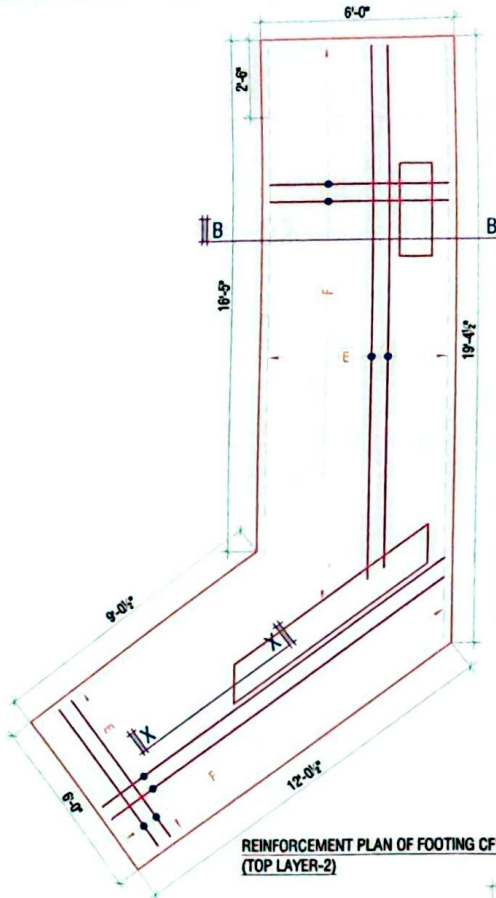
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SHEET NO.		ST-01			



REINFORCEMENT PLAN OF FOOTING CF1
(BOTTOM LAYER)



REINFORCEMENT PLAN OF FOOTING CF1
(TOP LAYER-1)



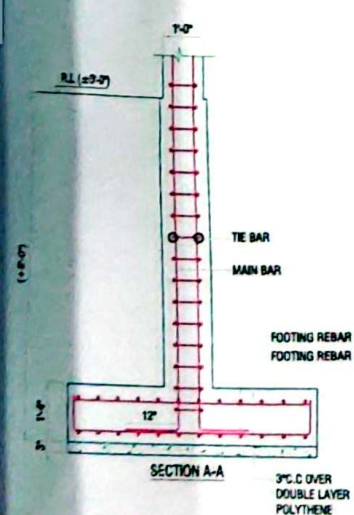
REINFORCEMENT PLAN OF FOOTING CF1
(TOP LAYER-2)

REINFORCEMENT
(A) 16 mm ϕ @ 8" c/c Bot.
(B) 16 mm ϕ @ 8" c/c Bot.
(1) 1-16 mm ϕ Extra in Between A & B
(C) 12 mm ϕ @ 8" c/c Top.
(D) 12 mm ϕ @ 8" c/c Top.
(E) 12 mm ϕ @ 8" c/c Top.
(F) 12 mm ϕ @ 8" c/c Top.

NOTES:
USING STONE CHIPS AS AGGREGATE.
CLEAR COVER FOR FOOTING = 3"

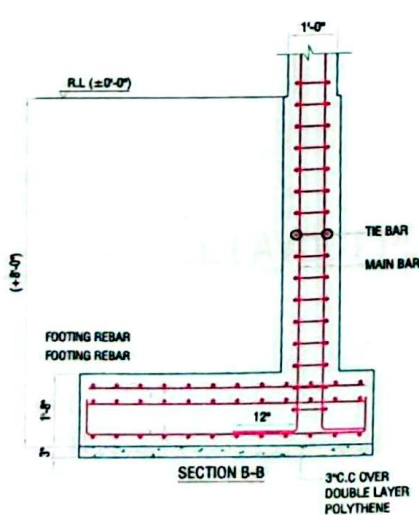
CF1 THICKNESS = 20"

F2 THICKNESS = 18"



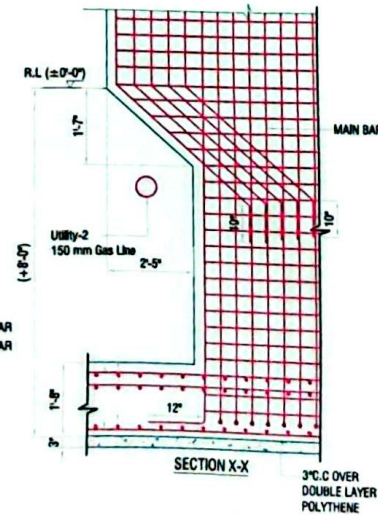
SECTION A-A

3" C.C OVER
DOUBLE LAYER
POLYTHENE



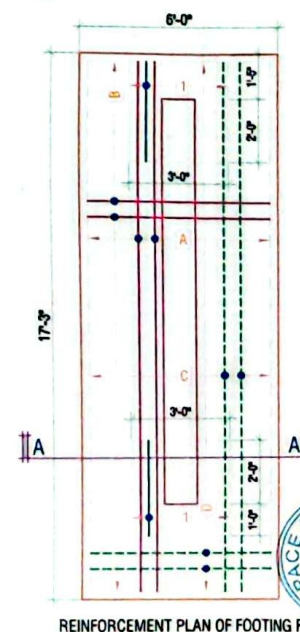
SECTION B-B

3" C.C OVER
DOUBLE LAYER
POLYTHENE



SECTION X-X

3" C.C OVER
DOUBLE LAYER
POLYTHENE



REINFORCEMENT PLAN OF FOOTING F2

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ADDRESS

DHAKA WASA
GOLAPBAG, SAYDABAD

STRUCTURAL TEAM

DESIGN BY:

SIGNATURE:

Md. Mustaffur Rahman Nayem
B.Sc. in Civil Engineering
IEB Membership: A-21066

CHECKED BY:

SIGNATURE:

KAW/SAR AHMED
Sr. Structural Engineer
B.Sc. in Civil Engineering, BUET
IEB Membership: M-40942

DRAFTING TEAM

MAHADI HASAN
Team Leader
B.Sc. in Civil Engineering.

MD. NUR ALAM
Sr. Draftsman

Notes:

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☒ Construction Drawing
☒ Approval Drawing

DATE

20.06.2026

SCALE

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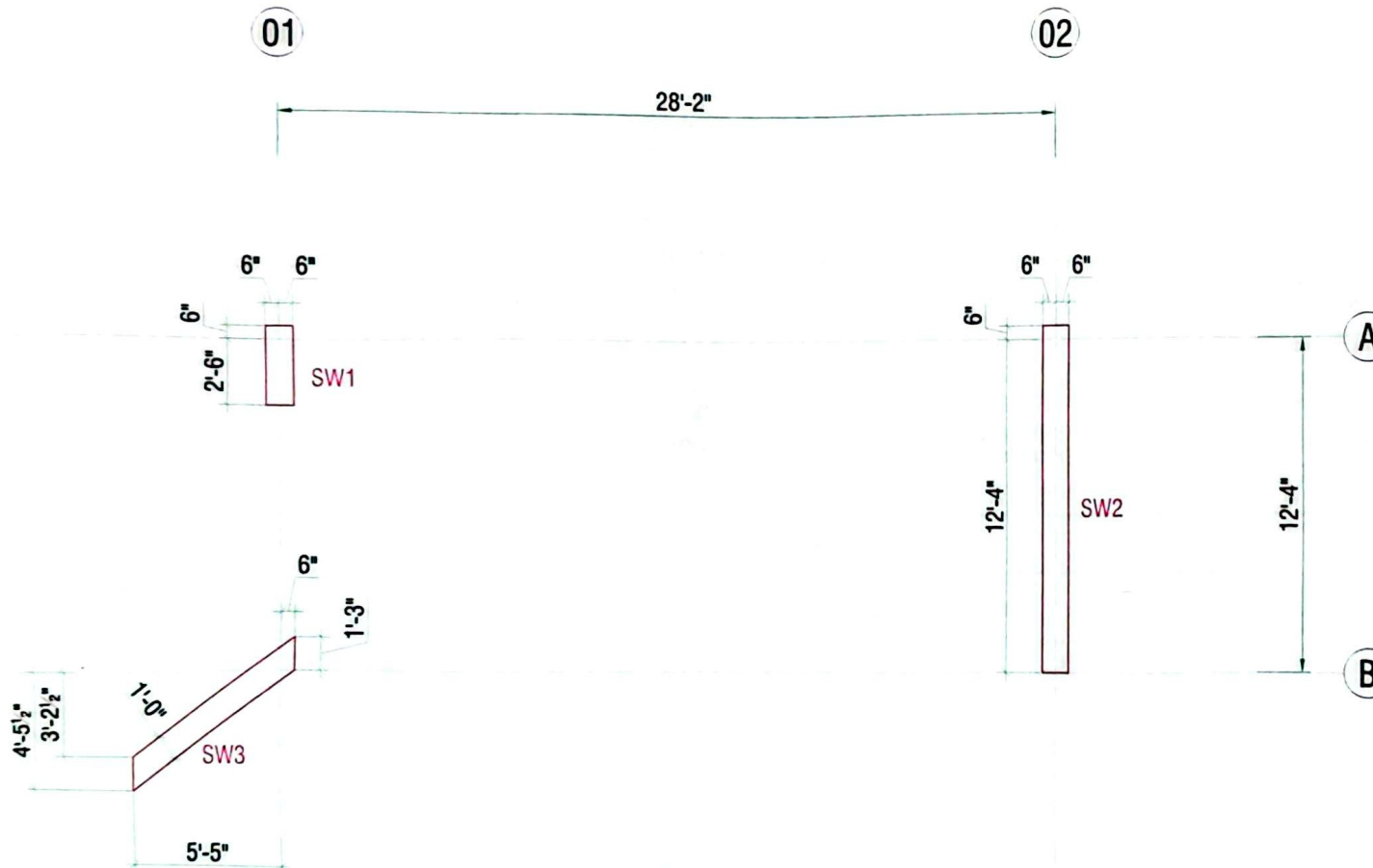
DRAWING TITLE

FOOTING DETAILS

SHEET NO.

ST-02



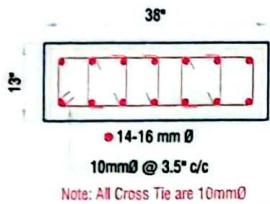
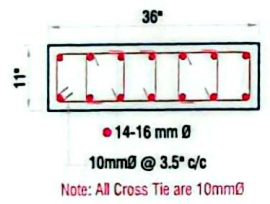


⊖ RCC WALL LAYOUT PLAN



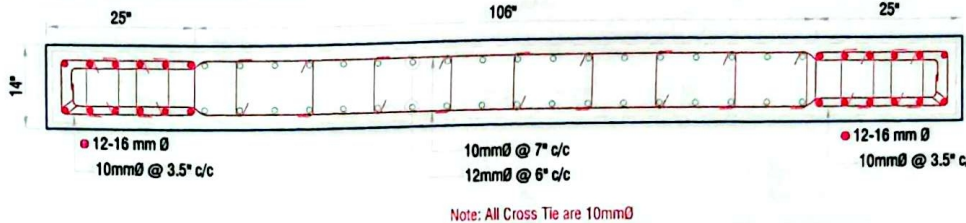
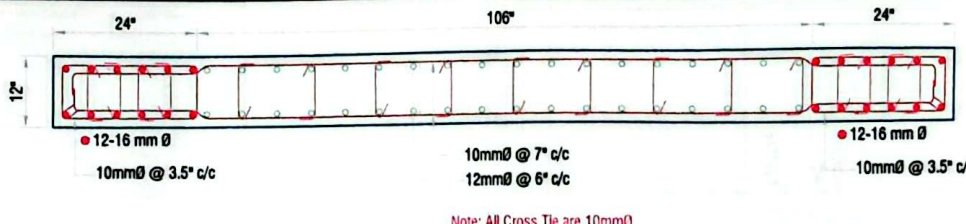
CONSULTANTS	INSPEACE DEVELOPMENTS HOUSE # 27&29 (4B), ROAD # 13, NGULAJA-2, DHAKA-1228. MOBILE : +88 01687003919, +88 01762522977 E-MAIL : inspacedevelopments@gmail.com	
	CLIENT  DHAKA WASA Wasa Bhawan, 98 Kad Nazrul Islam Avenue, Kawran Bazar, Dhaka.	
PROJECT NAME	AS BUILT DRAWING OF ENTRY GATE DESIGN FOR SAYDABAD WATER TREATMENT PLANT	
PROJECT ADDRESS	DHAKA WASA GOLAPBAG, SAYDABAD	
STRUCTURAL TEAM		
DESIGN BY:	SIGNATURE:	
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MAHADI HASAN Team Leader B.Sc. in Civil Engineering.	MD. NUR ALAM Sr. Draftsman	
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DRAWING TITLE	COLUMN LAYOUT	
SHEET NO.	ST-03	

SCHEDULE OF SHEAR WALL REINFORCEMENT

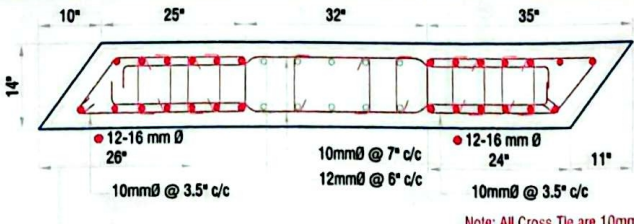
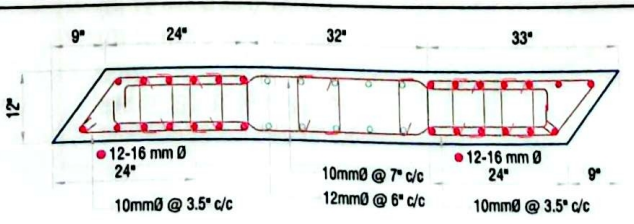
NAME OF WALL	UP TO INTERNAL ROAD LEVEL
SW1	 14-16 mm Ø 10mmØ @ 3.5" c/c Note: All Cross Tie are 10mmØ
	INTERNAL ROAD LEVEL TO ABOVE
	 14-16 mm Ø 10mmØ @ 3.5" c/c Note: All Cross Tie are 10mmØ

NOTES:
USING STONE CHIPS AS AGGREGATE.
CLEAR COVER FOR COLUMN & WALL BELOW I.R.L=2.5"
CLEAR COVER FOR COLUMN & WALL ABOVE I.R.L=1.5"

SCHEDULE OF SHEAR WALL REINFORCEMENT

NAME OF WALL	UP TO INTERNAL ROAD LEVEL
SW2	 12-16 mm Ø 10mmØ @ 7" c/c 12mmØ @ 6" c/c Note: All Cross Tie are 10mmØ
	INTERNAL ROAD LEVEL TO PLINTH
	 12-16 mm Ø 10mmØ @ 7" c/c 12mmØ @ 6" c/c Note: All Cross Tie are 10mmØ

SCHEDULE OF SHEAR WALL REINFORCEMENT

NAME OF WALL	UP TO INTERNAL ROAD LEVEL
SW3	 12-16 mm Ø 10mmØ @ 7" c/c 12mmØ @ 6" c/c Note: All Cross Tie are 10mmØ
	INTERNAL ROAD LEVEL TO PLINTH
	 12-16 mm Ø 10mmØ @ 7" c/c 12mmØ @ 6" c/c Note: All Cross Tie are 10mmØ

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Islam Avenue, Kawan Bazar,
Dhaka.

PROJECT NAME
AS BUILT DRAWING OF
ENTRY GATE DESIGN FOR
SAYDABAD WATER
TREATMENT PLANT

PROJECT ADDRESS
DHAKA WASA
GOLAPBAG, SAYDABAD

STRUCTURAL TEAM

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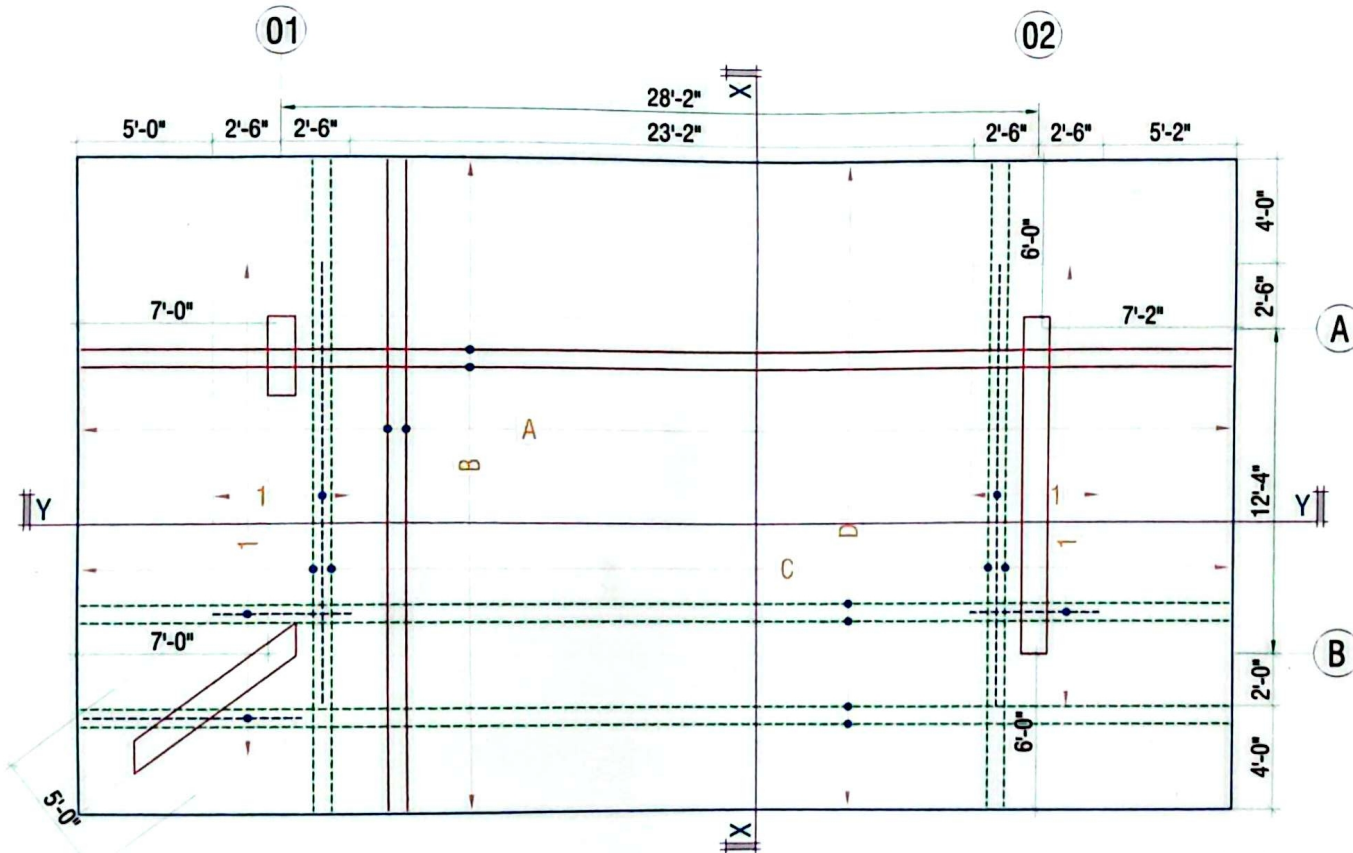
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DATE
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DRAWING TITLE
COLUMN SCHEDULE





⊖ SLAB LAYOUT PLAN

REINFORCEMENT

- (A) 12 mm Ø @ 6" c/c Bot.
 (B) 12 mm Ø @ 6" c/c Bot.
 (1) 1-12mmØ Extra in Between
 (C) 12 mm Ø @ 6" c/c Bot.
 (D) 12 mm Ø @ 6" c/c Bot.

NOTE:

BINDER IS NOT SHOWN IN THE DRAWING 10 mm Ø @ 10" C/C.

NOTES:

USING STONE CHIPS AS AGGREGATE.
 CLEAR COVER FOR SLAB=1.5"

SLAB THICKNESS = 12"

NOTES:

PLEASE FOLLOW ARCHITECTURAL DRAWING FOR SLAB OUTLINE & SHAPE



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PROJECT
NAME

AS BUILT DRAWING OF
ENTRY GATE DESIGN FOR
SAYDABAD WATER
TREATMENT PLANT

PROJECT
ADDRESS

DHAKA WASA
GOLAPBAG, SAYDABAD

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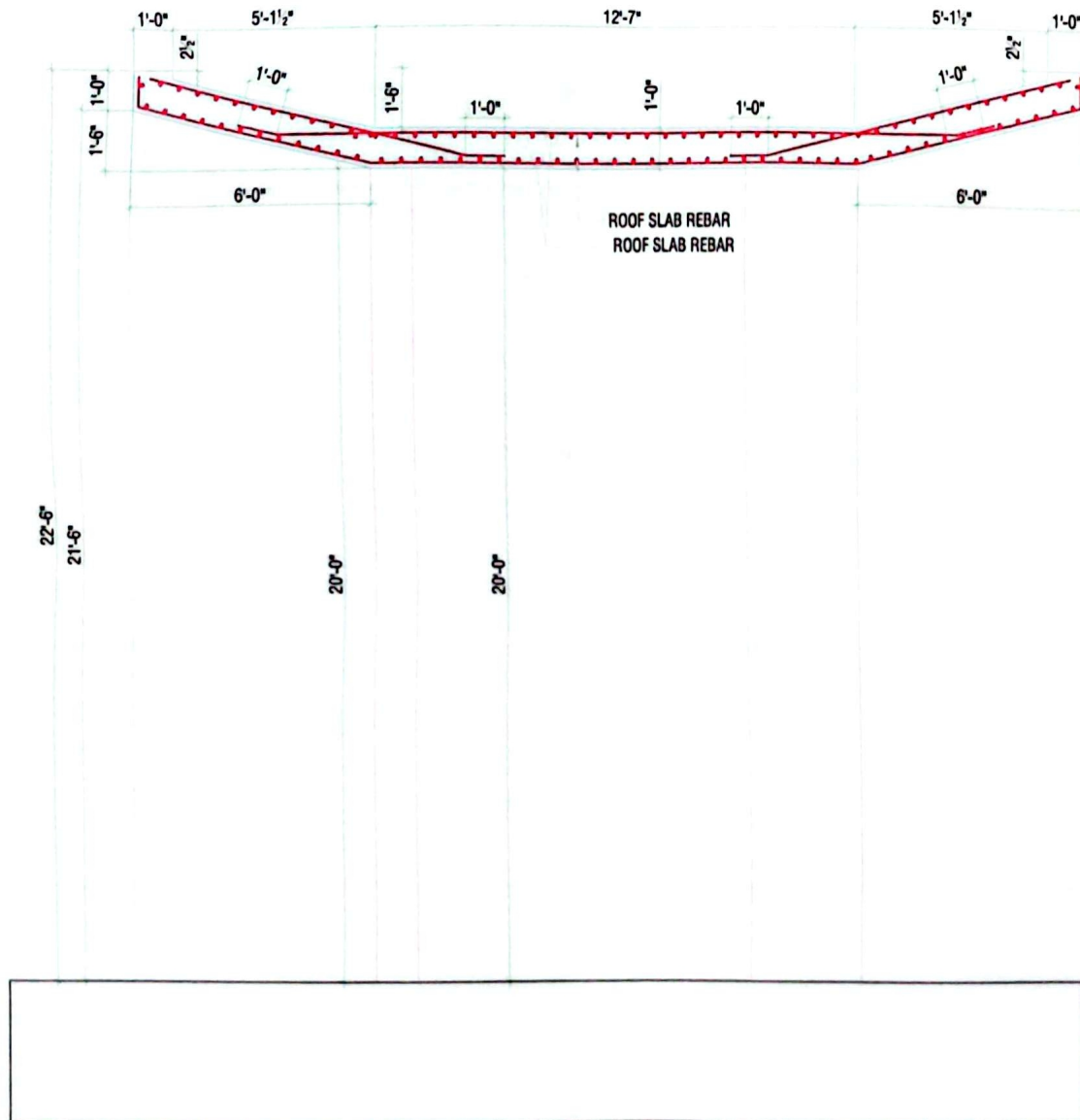
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DATE 20.06.2026

SCALE Not to Scale

DRAWING TITLE ROOF SLAB LAYOUT

SHEET NO. ST-05



SECTION X-X



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PROJECT
NAME

AS BUILT DRAWING OF
ENTRY GATE DESIGN FOR
SAYDABAD WATER
TREATMENT PLANT

PROJECT
ADDRESS

DHAKA WASA
GOLAPBAG, SAYDABAD

STRUCTURAL TEAM

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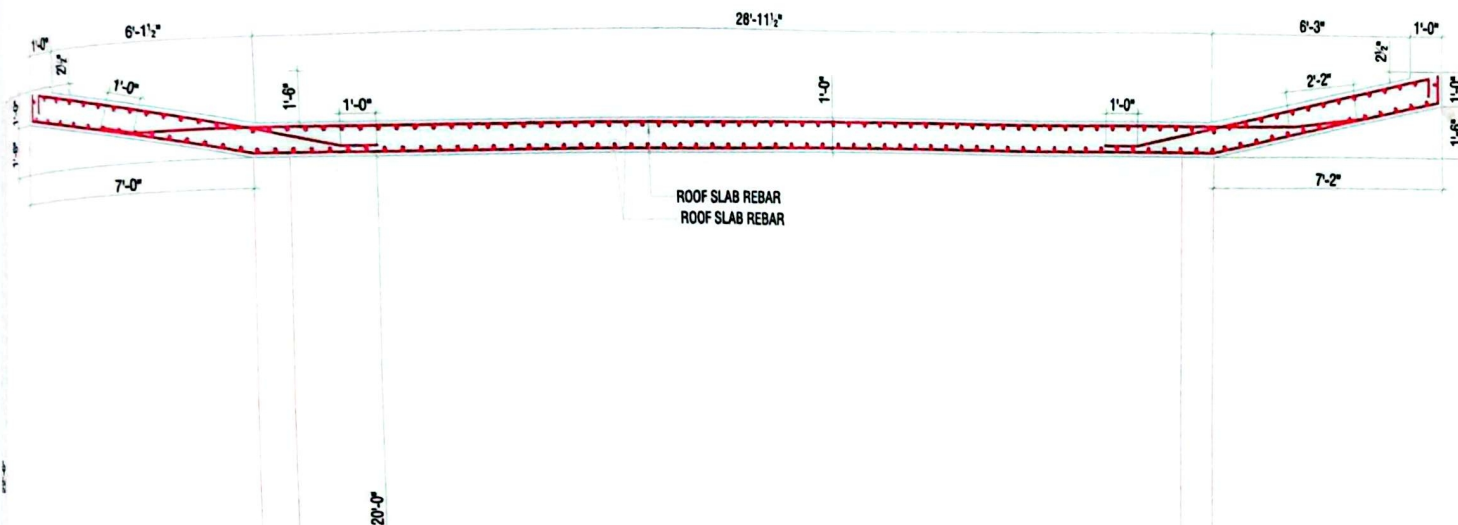
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☒ Construction Drawing	
☒ Approval Drawing	

DATE 20.06.2026

SCALE Not to Scale

DRAWING TITLE SECTION DETAILS

SHEET NO. ST-06



CONSULTANTS

PROJECT
NAME

PROJECT ADDRESS

STRUCTURAL TEAM

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DRAFTING TEAM

MD. NUR ALAM
Sr. Draftsman

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20.06.2026

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DRAWING TITLE

SECTION DETAILS

SHEET NO.

ST-07