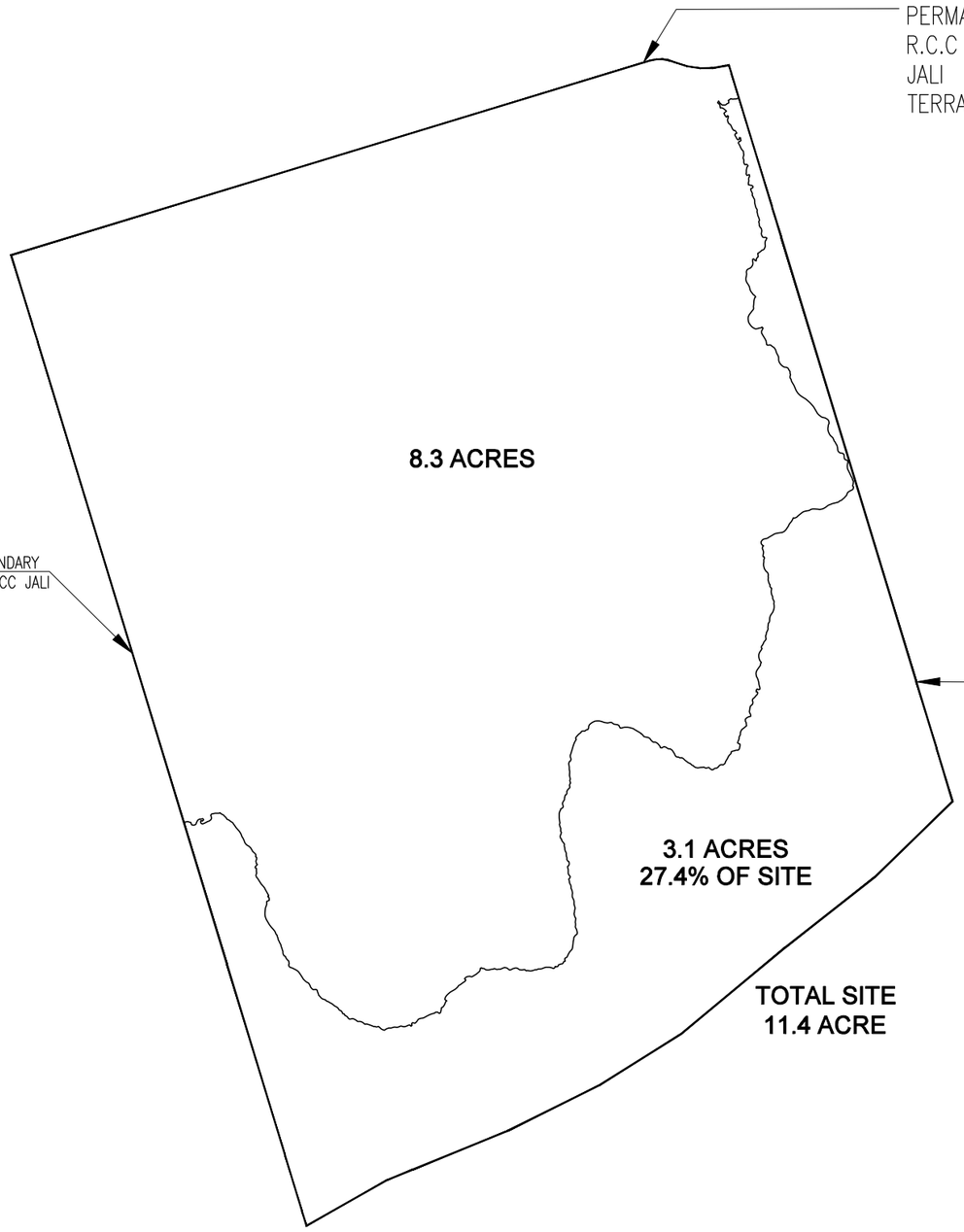
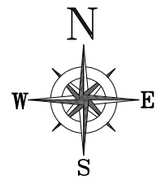
Establishment of PEC Engineering Complex at
DHA City, Karachi. Phase -1

Boundary wall & Gate House Bidding Drawings (Volume III)

National Engineering Services, Pakistan (Pvt.) Ltd.
Architecture & Planning Division, Karachi
4th floor, N.I.C.L building, Abbasi Shaheed Road, Karachi.

ARCHITECTURE



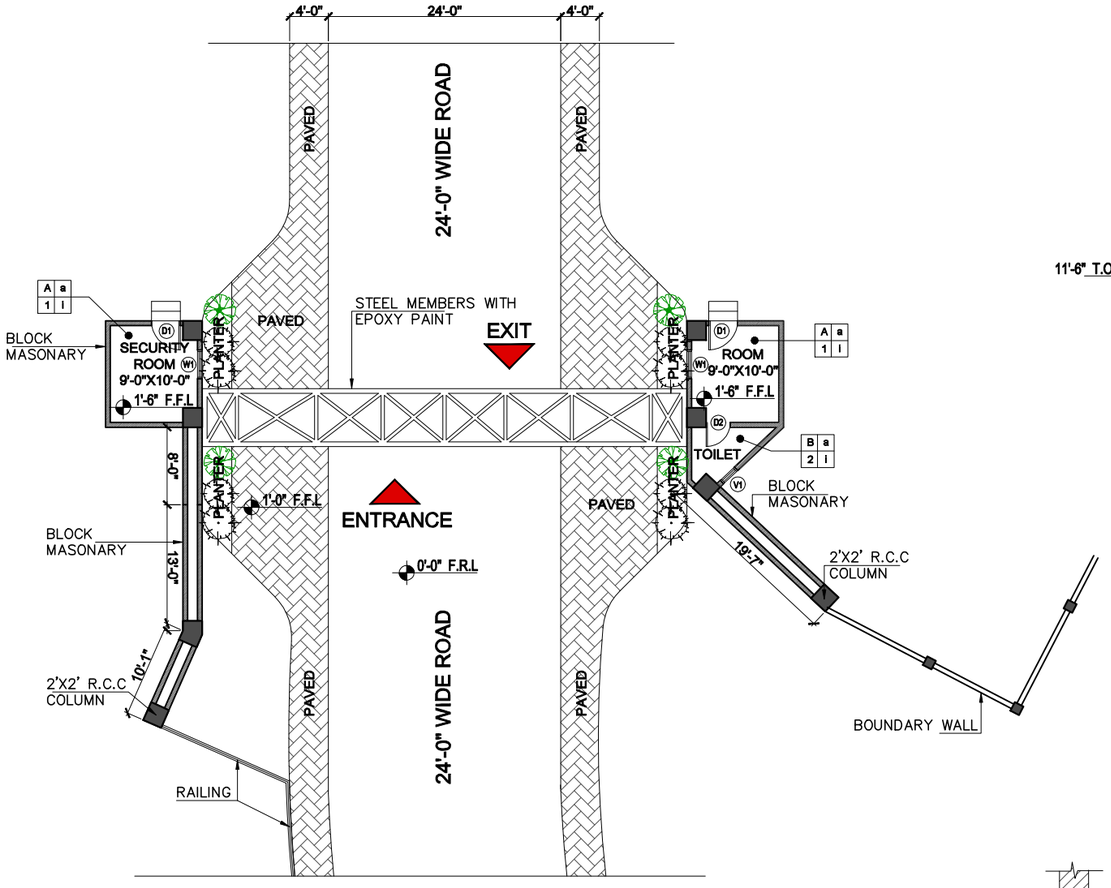


CLIENT: **PAKISTAN ENGINEERING COUNCIL**	CONSULTANT: NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ARCHITECTURE & PLANNING DIVISION KARACHI. 4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi, Tel: 99225430-34	PROJECT: **ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I**	**BOUNDARY WALL DESIGN**	SCALE: 1/32"=1'-0"	
			DATE: FEBRUARY, 2026	DRAWING No.: **44010/08/TD/ B000**	REV.: 0

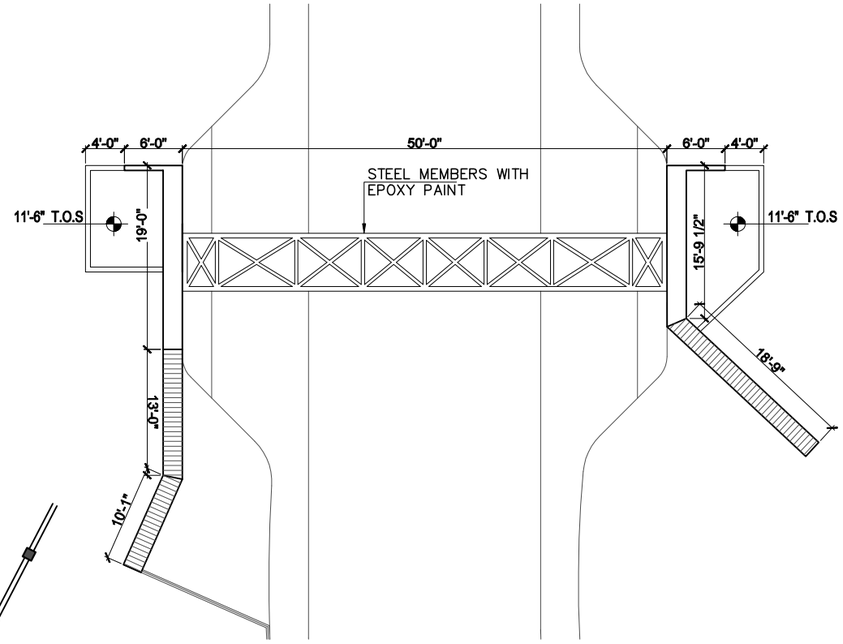
REV.	DATE	DESCRIPTION	APPROVED		
04				DRAWN	I.K
03				SUBMITTED	
02				RECOMMENDED	
01				CHD./VER.	KIRAN
				APPROVED	

G:\NESPAK PROJECTS (IMRAN)\KIRAN\PEC\STRUCTURE DRAWINGS\PEC-GATE & BOUNDARY WALL\BOUNDARY WALL-ELEVATION.DWG

1/32"=1'-0" SHEET SIZE: A2



GATE HOUSE-1
PLAN



GATE HOUSE-1
ROOF PLAN

FLOOR WALL
A a
1 i
SKIRTING CEILING

SCHEDULE OF FINISHES

FLOOR

A – 24"X24" PORCELAIN TILE LOCAL PREMIUM QUALITY OR APPROVED EQUILENT.

B – 24"X12" PORCELAIN TILES OVER 1/2" THICK MORTAR WITH MATCHING GROUTING AS PER APPROVED COLOUR & DESIGN.

WALL

a – 3 COATS OF MATT EMULSION PAINT OVER 1/2" THICK CS PLASTER.

b – 3 COATS OF WEATHER SHIELD PAINT OVER 3/8" THICK CS PLASTER.

SKIRTING

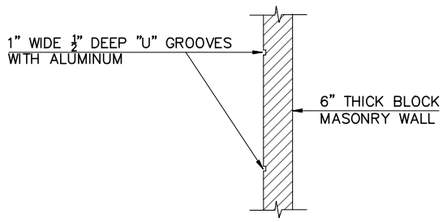
1 – 24"X4" PORCELAIN SKIRTING MATCHING WITH FLOOR TILES.

2 – 12"X12" MATT GLAZED TILES UPTO 5'–0" HIGH MATCH WITH FLOOR TILES AS PER DESIGN/PATTERN

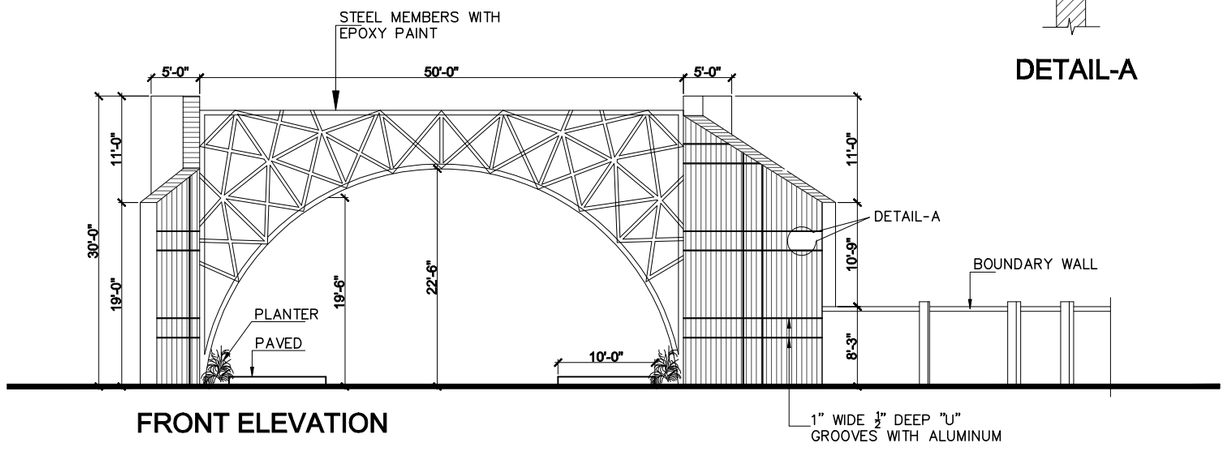
CEILING

i – 3 COATS OF DISTEMPER ON CEILING (NIPPON / ICI) .

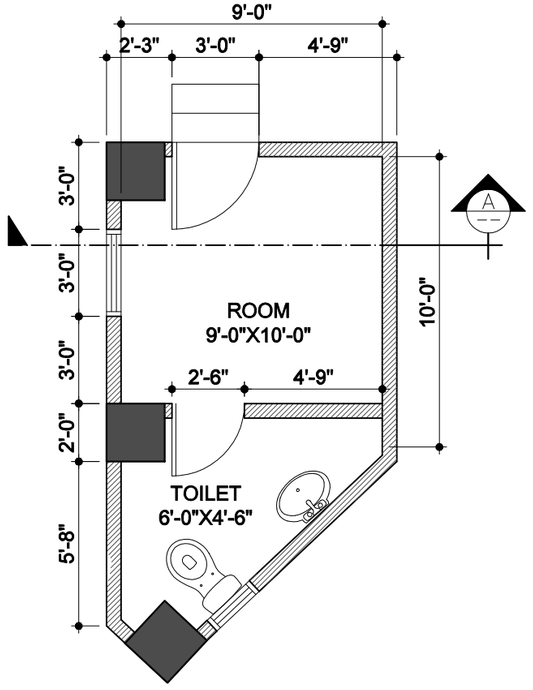
ii – 2 COATS OF ECONOMY EMULSION PAINT (NIPPON / ICI).



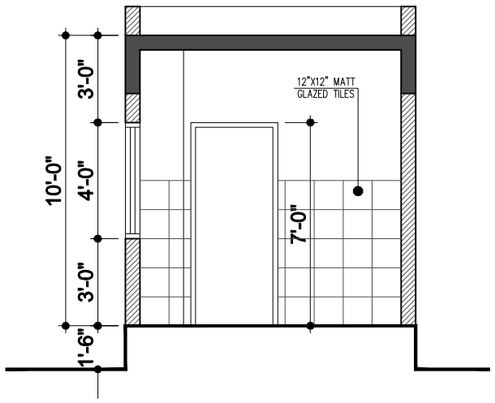
DETAIL-A



FRONT ELEVATION



GUARD ROOM PLAN
(SCALE 3/16"=1'–0")



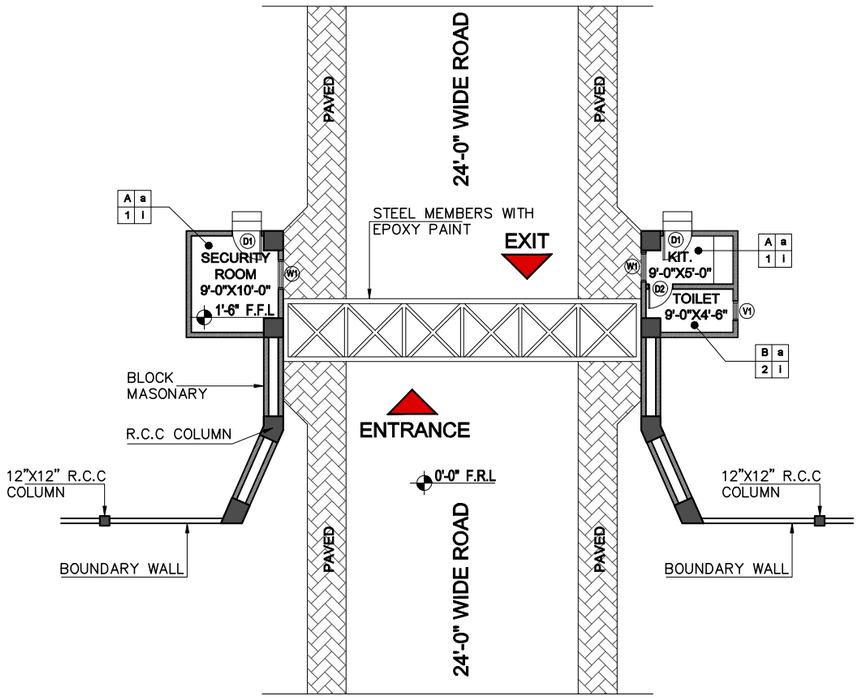
SECTION–AA
(SCALE 3/16"=1'–0")

CLIENT: PAKISTAN ENGINEERING COUNCIL	CONSULTANT: NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ARCHITECTURE & PLANNING DIVISION KARACHI. 4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi, Tel: 99225430–34	PROJECT: ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I	GATE HOUSE - 1 PLAN & ELEVATION	SCALE: 1/16"=1'–0"	
			DATE: DECEMBER, 2025	DRAWING No.: 44010/08/TD/ B001	REV.: 0

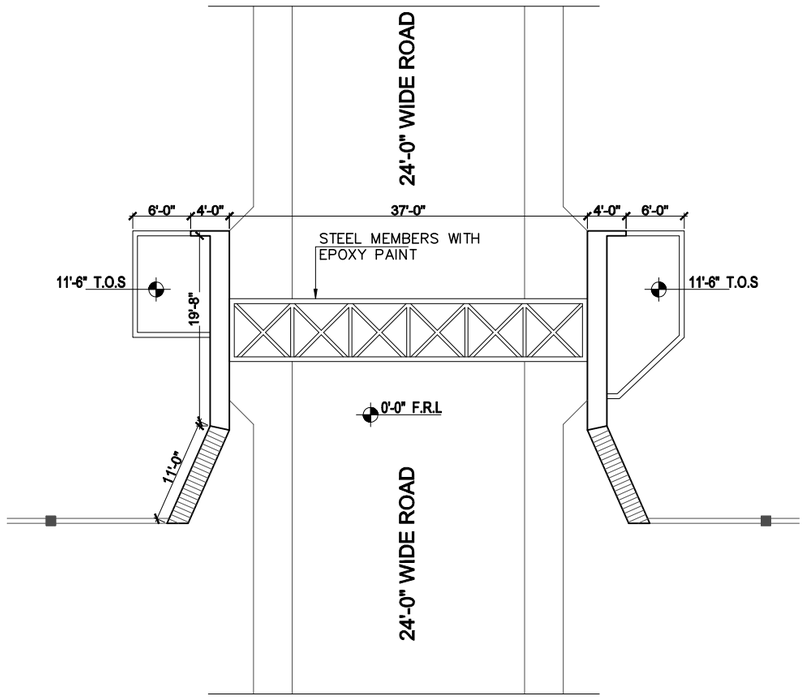
REV.	DATE	DESCRIPTION	APPROVED		
04				DRAWN	I.K
03				SUBMITTED	
02				RECOMMENDED	
01				CHD./VER.	KIRAN
				APPROVED	

G:\NESPAK PROJECTS (IMRAN)\KIRAN\PEC\DHA GATE HOUSE\PEC GATE HOUSE 18.03.2026.DWG

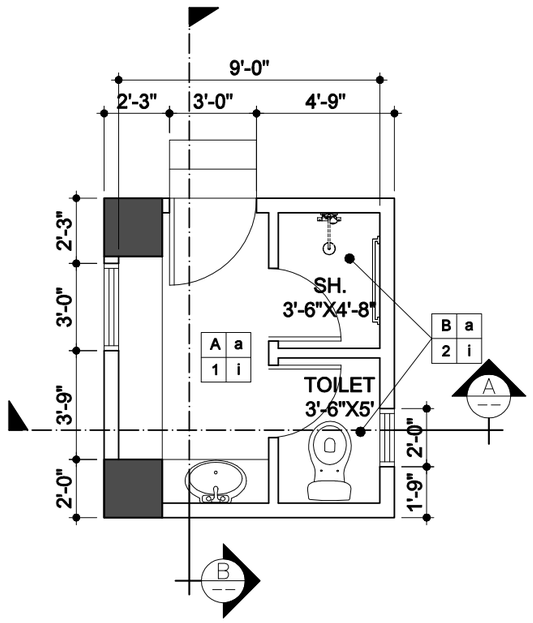
3/32"=1'–0" SHEET SIZE: A2



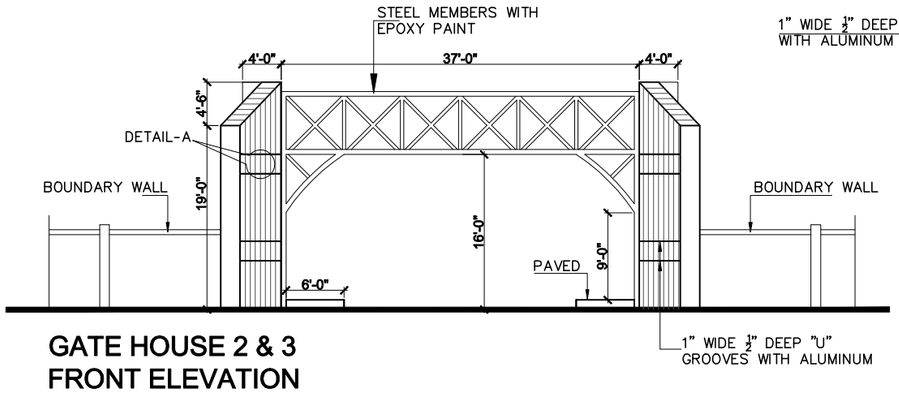
GATE HOUSE-2 & 3 PLAN



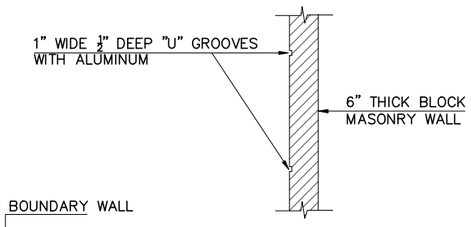
GATE HOUSE-2 & 3 ROOF PLAN



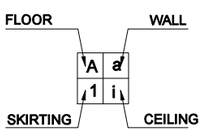
KITCHENETTE & TOILET PLAN
(SCALE 3/16"=1'-0")



GATE HOUSE 2 & 3 FRONT ELEVATION



DETAIL-A



SCHEDULE OF FINISHES

FLOOR

A – 24"X24" PORCELAIN TILE LOCAL PREMIUM QUALITY OR APPROVED EQUILENT.

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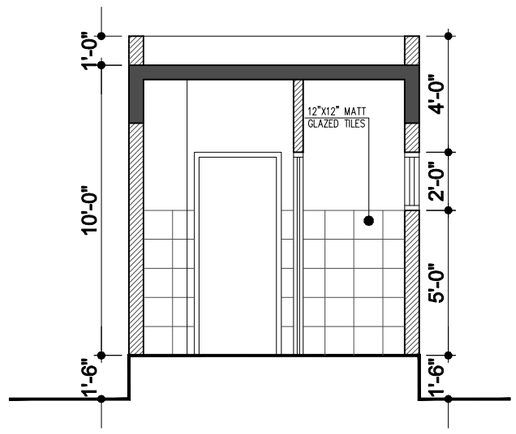
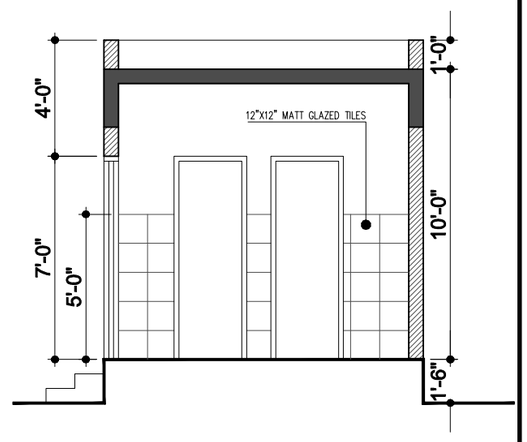


SECTION–AA
(SCALE 3/16"=1'-0")



SECTION–BB
(SCALE 3/16"=1'-0")

CLIENT	CONSULTANT	PROJECT	SCALE
PAKISTAN ENGINEERING COUNCIL	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ARCHITECTURE & PLANNING DIVISION KARACHI. 4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi, Tel: 99225430-34	ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I	1/16"=1'-0"

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	I.K
SUBMITTED	
RECOMMENDED	
CHD./VER.	KIRAN
APPROVED	

GATE HOUSE - 2 & 3
PLAN & ELEVATION

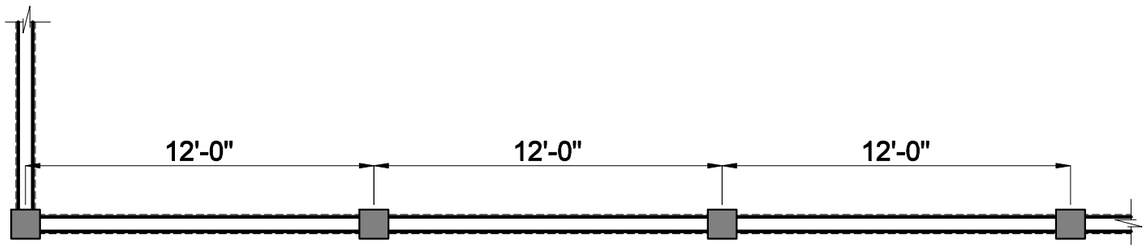
DATE: DECEMBER, 2025

DRAWING No.: 44010/08/TD/ B002

REV.: 0

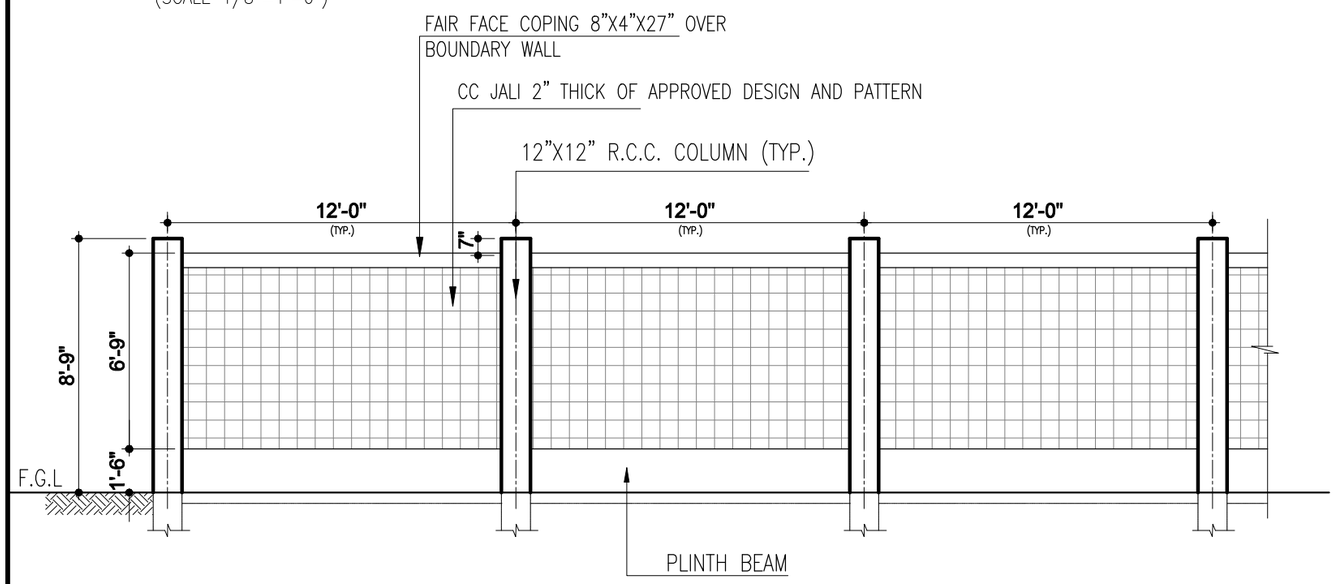
G:\NESPAK PROJECTS (IMRAN)\KIRAN\PEC\DHA GATE HOUSE\PEC GATE HOUSE 18.03.2026.DWG

3/32"=1'-0" SHEET SIZE: A2



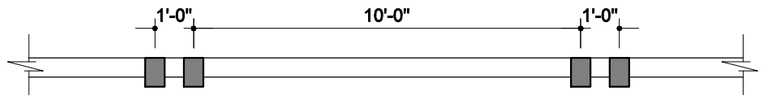
PLAN BOUNDARY WALL

(SCALE 1/8"=1'-0")



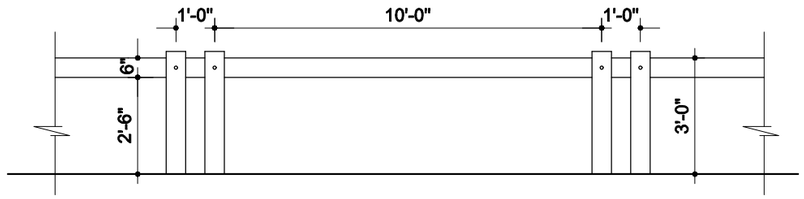
PART ELEVATION OF BOUNDARY WALL

(SCALE 1/8"=1'-0")



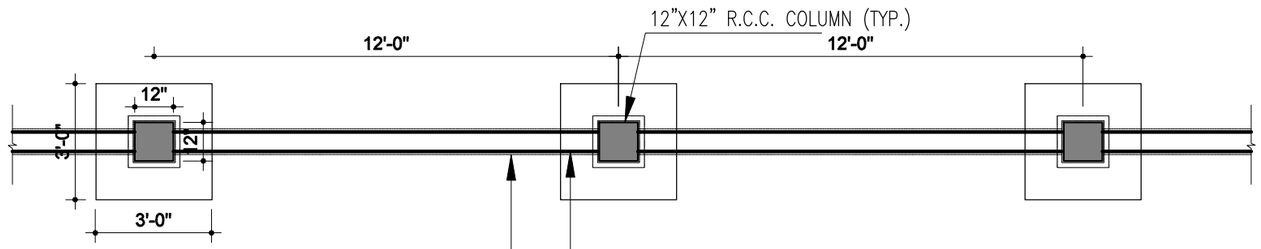
PLAN RAILING

(SCALE 1/4"=1'-0")



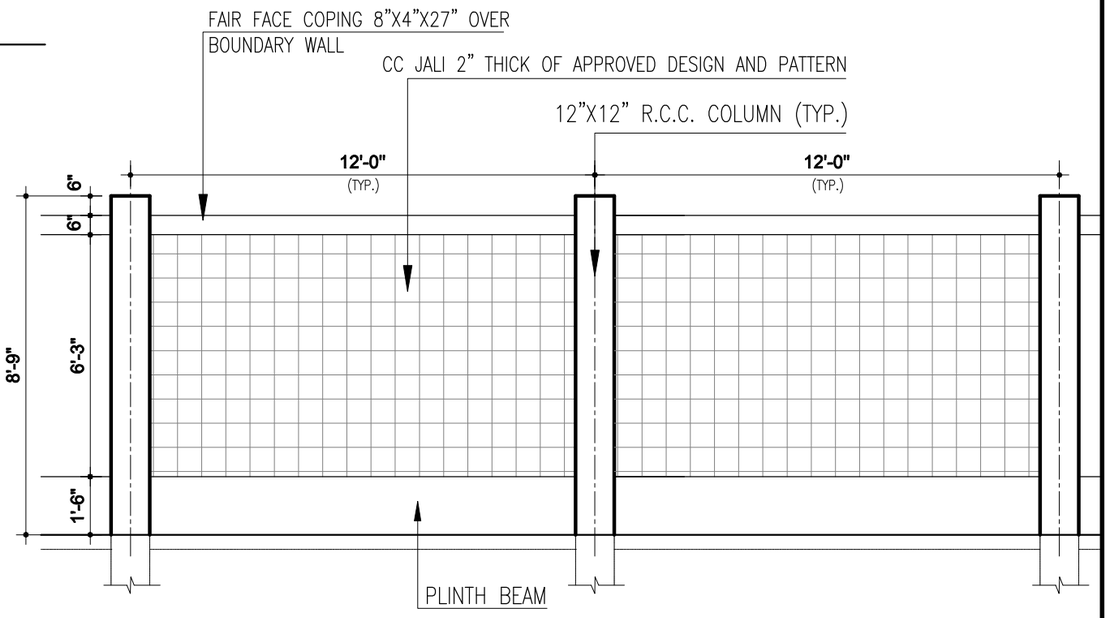
TYPICAL ELEVATION OF RAILING

(SCALE 1/4"=1'-0")



BLOWUP DETAIL -01

(SCALE 3/16"=1'-0")



BLOWUP PART ELEVATION

(SCALE 3/16"=1'-0")

CLIENT

PAKISTAN ENGINEERING COUNCIL

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

ARCHITECTURE & PLANNING DIVISION KARACHI.
4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi,
Tel: 99225430-34

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	I.K
SUBMITTED	
RECOMMENDED	
CHD./VER.	KIRAN
APPROVED	

PROJECT

ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

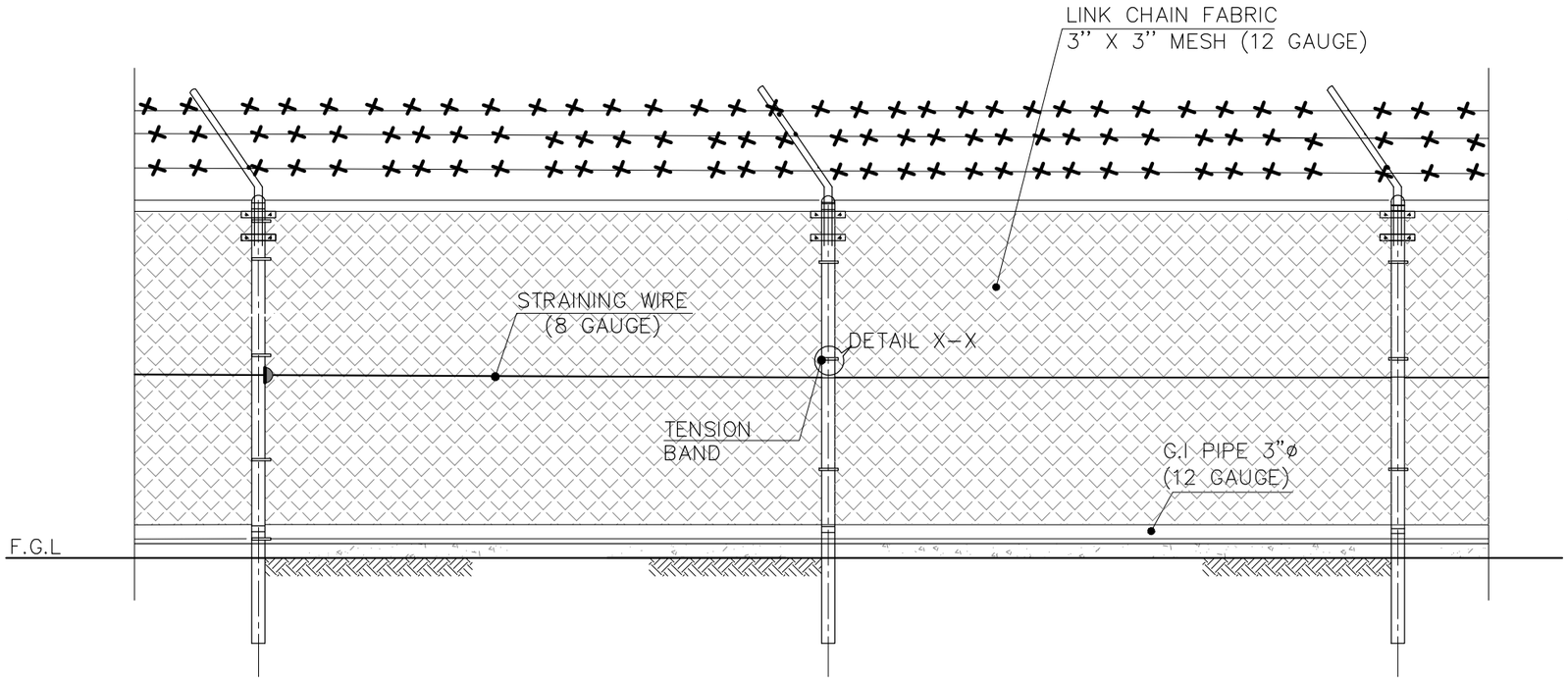
TYPICAL DETAIL OF BOUNDARY WALL & RAILING

DATE	DRAWING No.	REV.
DECEMBER, 2025	44010/08/TD/ B003	0

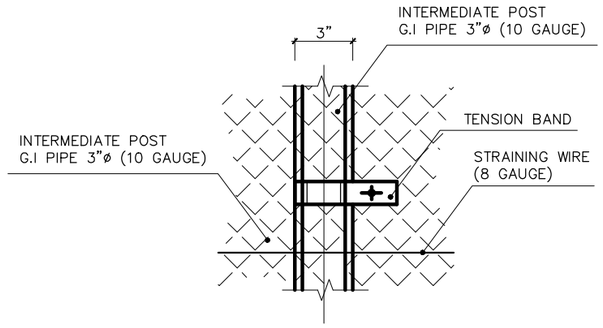
SCALE: AS SHOWN

G:\NESPAK PROJECTS (IMRAN)\KIRAN\PEC\DHA GATE HOUSE\PEC GATE HOUSE 18.03.2026.DWG

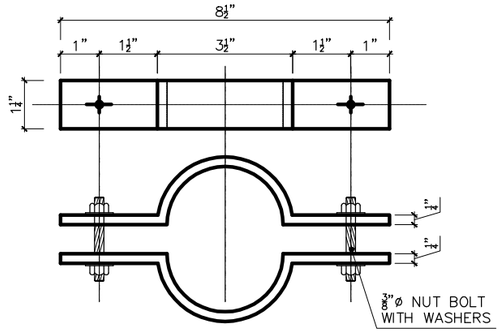
3/32"=1'-0" SHEET SIZE: A2



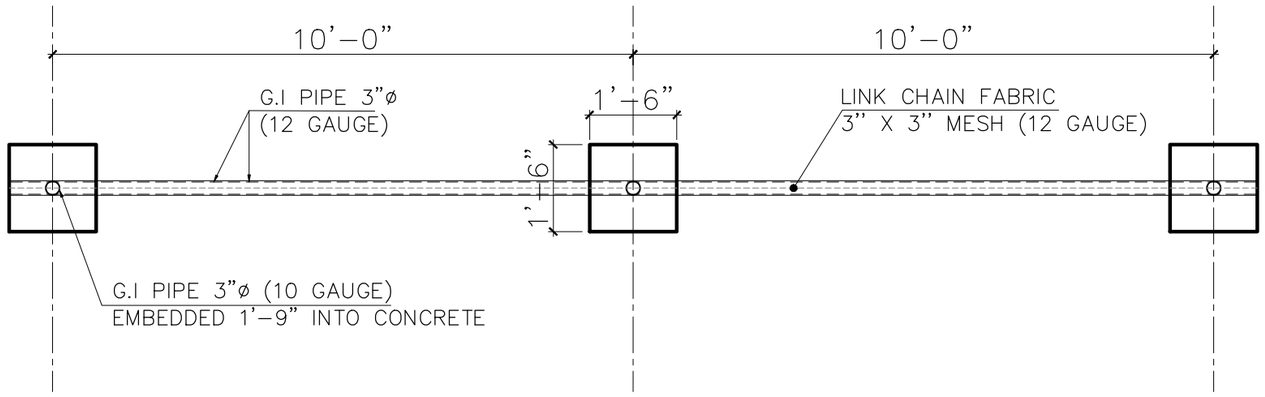
TYPICAL ELEVATION OF CHAIN LINK FENCE BOUNDARY WALL



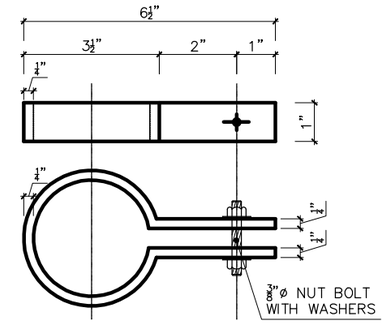
DETAIL X-X



TYP. DETAIL OF BRACE BAND



TYPICAL PLAN OF CHAIN LINK FENCE BOUNDARY WALL

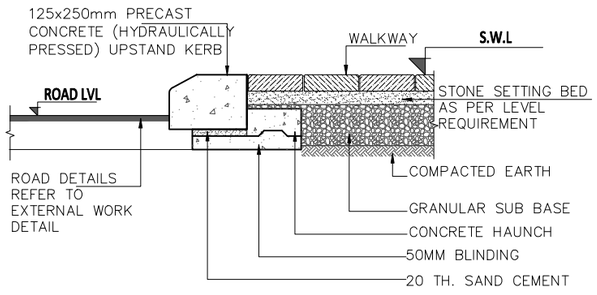


TYP. DETAIL OF TENSION BAND

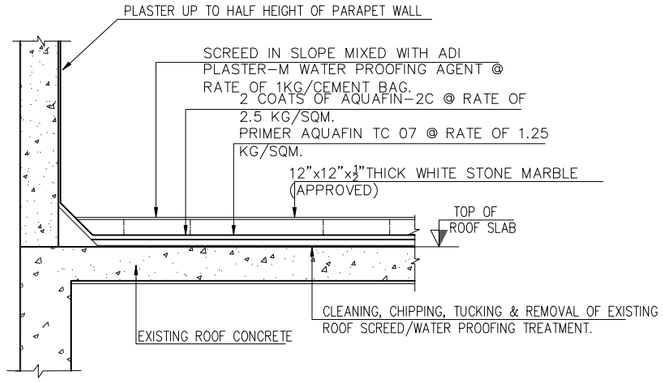
CLIENT: PAKISTAN ENGINEERING COUNCIL	CONSULTANT: NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ARCHITECTURE & PLANNING DIVISION KARACHI. 4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi, Tel: 99225430-34	04		DRAWN	I.K
		03		SUBMITTED	
		02		RECOMMENDED	
		01		CHD./VER.	KIRAN
		REV. DATE DESCRIPTION	APPROVED	APPROVED	
PROJECT: ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I	CHAIN LINK FENCE BOUNDARY WALL TYPICAL ELEVATION & DETAIL			SCALE: 1/16"=1'–0"	
	DATE: DECEMBER, 2025	DRAWING No.: 44010/08/TD/ B004		REV.: 0	

G:\NESPAK PROJECTS (IMRAN)\KIRAN\PEC\DHA GATE HOUSE\PEC GATE HOUSE 18.03.2026.DWG

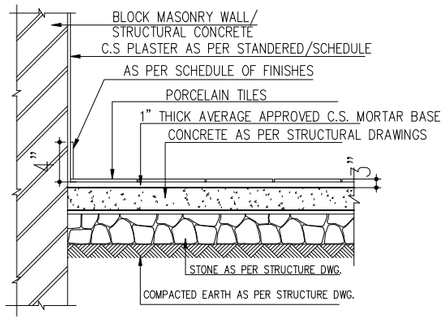
3/32"=1'–0" SHEET SIZE: A2



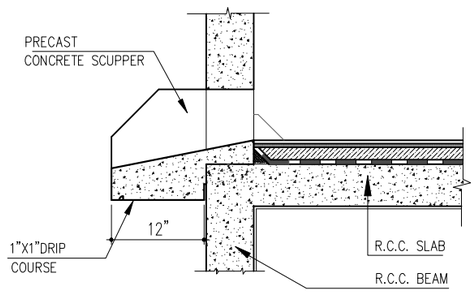
TYP. KERB STONE DETAIL WITH ROAD



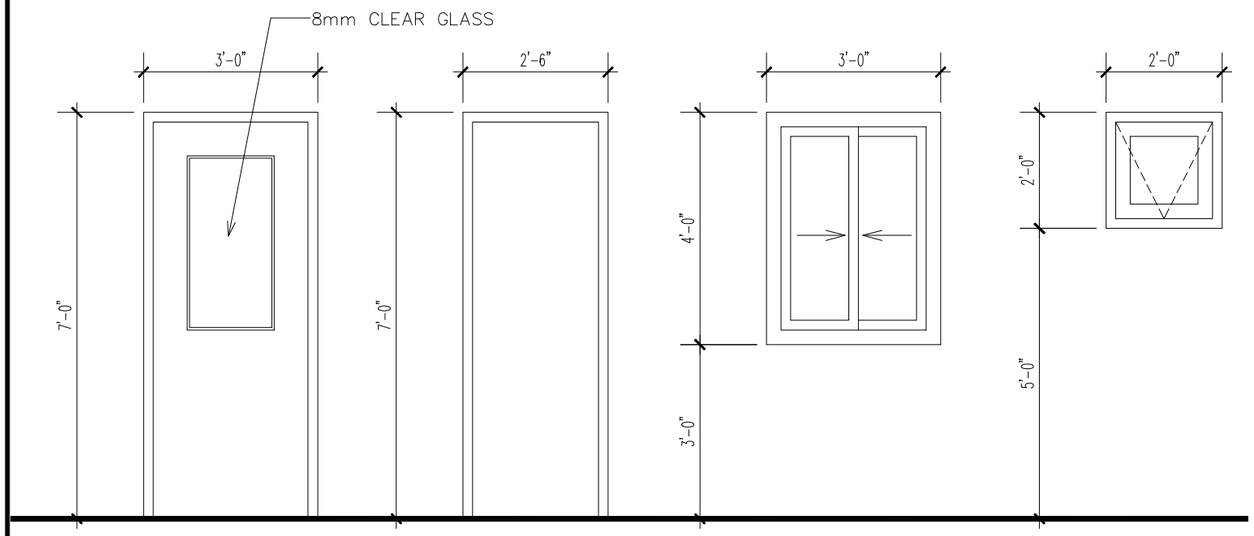
TYP. DETAIL OF WATER PROOFING & PARAPET

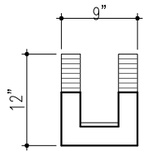


PORCELAIN / GRANITE TILES DETAIL
(FOR GROUND FLOOR)

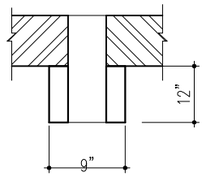


DETAIL OF PRECAST
RAIN WATER SPOUT

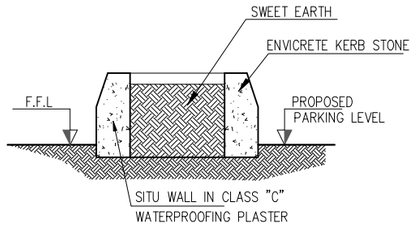




ELEV. OF PRECAST
RAIN WATER SPOUT



PLAN. OF PRECAST
RAIN WATER SPOUT



TYPICAL DETAIL OF PLANTER

SCHEDULE OF DOORS , WINDOWS & VENTILATORS

MASONRY OPENING			MATERIAL		FINISHES		HARDWARE								
TYPE	WIDTH	HEIGHT	FRAME	SHUTTER	FRAME	SHUTTER	HOLD FAST	HINGES	LOCKS	BOLTS TOWER	PUSH PLATE	KICK PLATE	DOOR CLOSER	STOPPER	REMARKS
D1	3'-0"	7'-0"	G.I FRAME	SOLID CORE LAMINATED	POLISH	POLISH	AS PER MANUFACTURE								OPENABLE FLUSH DOOR
D2	2'-6"	7'-0"	UPVC	UPVC	E.C	E.C	AS PER MANUFACTURE								OPENABLE FLUSH DOOR
W1	3'-0"	4'-0"	ALUMINUM	GLASS	POD		AS PER MANUFACTURE								SLIDING
V1	11'-6"	2'-0"	ALUMINUM	GLASS	POD		AS PER MANUFACTURE								TOP HUNG

CLIENT
PAKISTAN ENGINEERING COUNCIL

CONSULTANT
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
ARCHITECTURE & PLANNING DIVISION KARACHI.
4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi,
Tel: 99225430-34

REV.	DATE	DESCRIPTION	APPROVED
04			
03			
02			
01			

DRAWN	I.K
SUBMITTED	
RECOMMENDED	
CHD./VER.	KIRAN
APPROVED	

PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

SCHEDULE OF DOOR,WINDOWS & MISCELLANEOUS DETAILS

DATE: DECEMBER, 2025
DRAWING No.: **44010/08/TD/ B005**
SCALE: 3/16"=1'-0"
REV.: 0

G:\NESPAK PROJECTS (IMRAN)\KIRAN\PEC\DHA GATE HOUSE\PEC GATE HOUSE 18.03.2026.DWG
3/32"=1'-0" SHEET SIZE: A2

STRUCTURE

1. GENERAL

1.READ ALL DRAWINGS IN CONJUNCTION WITH ARCHITECTURAL, GEOTECHNICAL, PLUMBING, MECHANICAL, ELECTRICAL & ANY OTHER RELEVANT DRAWINGS.
2.NOTES GIVEN IN THIS DRAWING ARE APPLICABLE TO ALL DRAWINGS UNLESS MENTIONED OTHERWISE. NOTES WRITTEN ON A DRAWING, SHALL BE APPLICABLE TO THAT PARTICULAR DRAWING ONLY UNLESS OTHERWISE CROSS-REFERRED.
3.ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE SPECIFICATIONS OF THE CONTRACT DOCUMENTS. IN ABSENCE OF ANY SPECIFICATIONS , ALL MATERIALS & WORKMANSHIP SHALL CONFORM TO RELEVANT ACI/BRITISH CODES AND SHALL BE SUBJECTED TO APPROVAL OF THE ENGINEER.
4.THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE STRUCTURES DURING CONSTRUCTION. HE SHALL ALSO VERIFY ALL DIMENSIONS AND LEVELS BEFORE EXECUTION OF WORK. ANY DISCREPANCY, ERROR OR OMISSION, IF FOUND, SHALL BE BROUGHT TO THE NOTICE OF THE ENGINEER FOR CORRECTION AND APPROVAL.
5.THE CONTRACTOR SHALL CO-ORDINATE WITH VARIOUS SERVICES DRAWINGS FOR SIZES & LOCATION OF ALL STRUCTURAL MEMBERS, FLOORS,WALLS,OPENINGS, FLOOR FINISHES, PIPES ETC.
6.THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXECUTION OF DEWATERING SYSTEM WHERE SO REQUIRED DURING CONSTRUCTION.
7. ALL DIMENSIONS ARE IN FEET & INCHES WHEREAS LEVELS ARE IN METERS.
8. DO NOT SCALE THE DRAWINGS. DIMENSIONS, GIVEN ON THE DRAWING, SHALL GOVERN.
9.ALL FABRICATION, PAINTING, ERECTION AND QUALITY CONTROL IS TO BE DONE IN ACCORDANCE WITH THE LATEST APPLICABLE ACI/BRITISH SPECIFICATIONS.
10.BACKFILLING AROUND FOUNDATIONS AND WALLS SHALL BE WELL COMPACTED LAYERS NOT EXCEEDING 6 INCHES IN THICKNESS.
11.IT IS STRONGLY RECOMMENDED TO RECONFIRM THE SITE PLAN BEFORE START OF EXECUTION AT SITE.THE SITE SHOULD BE EXAMINED FOR CLEARANCE WITH RESPECT TO LOCAL/SEISMIC HAZARDS.
12.THE CONTRACTOR SHALL INFORM THE ENGINEER ABOUT ANTICIPATED CONSTRUCTION LOADS IN THE STRUCTURE AND OBTAIN ENGINEER'S APPROVAL THEREOF BEFORE COMMENCING THE WORK.
13.THE CONTRACTOR SHALL VERIFY LAYOUT, CONFIGURATION, ALL DIMENSIONS AND LEVELS PERTAINING TO EXISTING WORKS BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL ADOPT ADEQUATE AND APPROPRIATE MEASURES SO AS NOT TO DAMAGE THE EXISTING WORKS.
14.THE CONTRACTOR SHALL EXERCISE UTMOST CARE AND PRECAUTION DURING THE WORKS, AGAINST ANY MISHAPS OR ACCIDENTS, FOR WHICH THE CONTRACTOR SHALL BE WHOLLY AND SOLELY RESPONSIBLE. THE CONTRACTOR SHALL INDEMNIFY THE OWNER AGAINST ANY ACCIDENTS AND ANY LOSSES THEREFROM AND SHALL REPAIR AND RECTIFY THEM AT HIS OWN COST AND TIME.
15.ANY DEPARTURES/DEVIATIONS DESIRED FROM THE DESIGN OR SPECIFICATIONS, OR SOLUTIONS TO ANY PROBLEMS ENCOUNTERED, SHALL BE GOT APPROVED FROM THE ENGINEER PRIOR TO IMPLEMENTATION. UNAPPROVED DEPARTURES/DEVIATIONS MAY LEAD TO REJECTION/REPLACEMENT OF THE ENTIRE WORK AT THE CONTRACTOR'S COST.
16.THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS AND BAR BENDING SCHEDULES FOR ENGINEER'S APPROVAL AND OBTAIN HIS APPROVAL BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE ACCURACY OF SHOP DRAWINGS AND BAR BENDING SCHEDULES. THE ENGINEER'S APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY.

2. FOUNDATIONS

1.FOUNDATION IS DESIGNED FOR ASSUMED NET BEARING CAPACITY OF 0.75 T/SFT AND IS APPLICABLE FOR (B.C) OF 0.75 T/SFT AND ABOVE. THIS VALUE SHOULD BE VERIFIED BY THE ENGINEER & CONTRACTOR BEFORE PLACEMENT OF FOUNDATION. IF THE ACTUAL BEARING CAPACITY IS FOUND DIFFERENT, FOUNDATION DESIGN SHOULD BE REVIEWED BY THE ENGINEER.
2.FOUNDATION SHALL BE PLACED AT MINIMUM DEPTH OF 3'-0" BELOW TOP OF NSL OR FGL WHICH EVER IS LOWER OR AS PER GEOTECHNICAL RECOMMENDATIONS. TOTAL TOLERABLE SETTLEMENT FOR THE FOUNDATIONS WILL BE 1 INCHES.
3.AFTER EXCAVATION TO F.B.L. ALL FOUNDATIONS SHOULD BE PHYSICALLY EXAMINED BY ENGINEERING GEOLOGIST/GEOTECHNICAL ENGINEER FOR THE CONFIRMATION OF ORIGINAL SOIL/ROCK CONDITIONS.
4.UNDER ANY CIRCUMSTANCES, FOUNDATIONS SHOULD NOT BE LAID UPON ANY TYPES/FORMS OF NATURAL FILL OR SLOPE WASH DEPOSITS.
5.IF THE ORIGINAL SOIL COMPRISES COHESIVE(CLAY-RICH) NON-GRAVELLY AND/OR SLIGHT TO MODERATELY GRAVELLY SOIL(GRAVELS<35%) WITH ABUNDANCE OF FINER(COHESIVE) MATRIX AT F.B.L., SUCH SOILS SHOULD BE REPLACED BY 3FT THICK CUSHION OF E.G.F. OF GRADATION APPROVED BY THE ENGINEER. E.G.F. SHOULD BE PLACED IN THREE EQUAL LAYERS OF 1FT COMPACTED THICKNESS. COMPACTION SHOULD BE CONFIRMED BY IN-SITU F.D.T. PRIOR TO PLACEMENT OF THE NEXT LAYER AND SHOULD NOT BE LESS THAN 95% OF MODIFIED AASHTO DENSITY. RECOMMENDED Q(NET ALLOWABLE) FOR THE DESIGN OF FOUNDATIONS ON SUCH E.G.F. SHOULD BE 0.75 T/SFT.
6.DETAILED GEOTECHNICAL INVESTIGATIONS SHOULD BE CARRIED OUT IF BOUNDARY WALL IS CLOSE TO A SLOPE, SLOPE STABILITY STUDIES TO BE CARRIED OUT AND APPROPRIATE MEASURES TO BE ADOPTED EVALUATION TO BE MADE AS TO PRESENCE OF FILLS,LIQUIFIABLE SOILS ETC.
7.ALL FOUNDATIONS SHALL BE PLACED ON FIRM BEARING STRATA.IF ACCEPTABLE BEARING STRATA IS NOT FOUND AT INDICATED DEPTHS OF FOUNDATION, THE ENGINEER SHALL NOTIFY IN WRITING FOR HIS INSTRUCTIONS.
8.THE BED OF FOUNDATION SHOULD BE THOROUGHLY COMPACTED PRIOR TO LAYING FOUNDATION. ANY LOOSE,WET,SOFT OR OVER-MOIST SOIL, ORGANIC SOILS, PEAT/FAT CLAY SHOULD BE REMOVED AND REPLACED WITH WELL-COMPACTED ENGINEERED GRANULAR FILL OF GRADATION APPROVED BY THE ENGINEER AND COMPACTED TO 95% MODIFIED AASHTO DENSITY.
9.THE FOUNDATION BED SOIL SHOULD BE PROTECTED FROM INGRESS OF MOISTURE FROM ANY SOURCE BY PROVIDING ADEQUATE SURFACE DRAINAGE SYSTEM AND ENSURING LEAK PROOF JOINTING OF SEWERAGE AND WATER SUPPLY LINES. EXCESSIVE AND UNCONTROLLED WATERING FOR CURING AND COMPACTION OF BACKFILL MATERIAL SHOULD BE AVOIDED.
10.ANY SPRINGS/SEEPS ENCOUNTERED NEAR OR AT THE FOUNDATION LEVEL WITHIN THE BOUNDARY WALL FOOT PRINTS SHOULD BE ADDRESSED PROPERLY BY ADOPTING SUITABLE DE-WATERING MEASURES.
11.THE EXCAVATION LINES AND SLOPES ARE NOT SHOWN ON THE DRAWINGS. IT IS CONTRACTOR'S RESPONSIBILITY TO MAKE THE EXCAVATION ON STABLE SLOPE AND MAINTAIN THE STABILITY OF THE CUT SLOPES.
12.AS AND WHEN REQUIRED APPROPRIATE SLOPE PROTECTION SHOULD BE PROVIDED AROUND THE PROPOSED BOUNDARY WALL.
13.IF NEAR SLOPE,THE STRUCTURE SHOULD BE SET BACK BY A MINIMUM DISTANCE EQUAL TO 3 TIMES OF THE FOUNDATION WIDTH.
14.TO ENSURE UNIFORM ENGINEERING BEHAVIOR OF SUB-GRADE, LITHOLOGIC HOMOGENEITY OF SUCH SOILS SHOULD BE CAREFULLY EXAMINED. ANY LARGE SIZE ROCK FRAGMENTS SUCH AS ERRATICS, BOULDERS, LARGE COBBLES AND ANY OTHER ROCK FRAGMENTS HAVING DIMENSIONS EXCEEDING 6 IN. SHOULD BE REMOVED UNDERNEATH THE FOUNDATIONS AND ITS CLOSE (<1.5 FT) VICINITY.
15.NO FOOTING SHALL BE PLACED ON FILL. HOWEVER, AREAS WHERE FILLING BELOW THE FOOTINGS BECOMES INEVITABLE OR, OVER-EXCAVATION, IF ANY, SHALL BE FILLED WITH ENGINEERED GRANULAR FILL AS PER GEOTECHNICAL RECOMMENDATIONS OR CONCRETE CLASS 'E'. ALL THIS TO BE DONE WITH PRIOR APPROVAL OF THE ENGINEER.
16.EXISTING UNDERGROUND SERVICES, REQUIRED TO BE LEFT IN POSITION, SHALL BE CAREFULLY PROTECTED DURING EXCAVATION AND BACKFILLING OPERATIONS.
17. EXCAVATIONS ADJACENT TO EXISTING STRUCTURES AND/OR UNDERGROUND SERVICES SHALL BE MADE BY HAND.

3. REINFORCED CONCRETE

1.STRUCTURAL DESIGN IS BASED ON THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE OF AMERICAN CONCRETE INSTITUTE (ACI 318-18).
2. ALL STRUCTURAL CONCRETE SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE (ACI) REQUIREMENTS.
3.CONCRETE MIX TO BE DESIGNED ON THE BASIS OF ACI 211 OR EQUIVALENT. TRIAL STRENGTH RESULTS TO BE SUBMITTED BY THE CONTRACTOR FOR REVIEW AND APPROVAL BEFORE CONCRETING.
4. NO CONCRETING SHALL BE CARRIED OUT UNTIL PERMISSION IS GIVEN IN WRITING.
5.ALL CONCRETE SHALL BE TESTED IN ACCORDANCE WITH ASTM STANDARDS C31, C39, C172 & AS WRITTEN IN SPECIFICATIONS AND THE MINIMUM CYLINDER CRUSHING STRENGTH OF CONCRETE AT 28 DAYS SHALL BE AS FOLLOWS. TESTING OF CLASS D & E CONCRETE SHALL BE PERFORMED IF SO DIRECTED BY THE ENGINEER.

CLASS	MIN. CYLINDER CRUSHING STRENGTH AT 28 DAYS (psi).	NOMINAL MIX RATIO
A	4,000	(1 : 1 : 2)
B	3,000	(1 : 1½ : 3)
C	2,400	(1 : 2 : 4)
D	1,200	(1 : 3 : 6)
E	800	(1 : 4 : 8)

6.CLASS OF CONCRETE FOR DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE AS FOLLOWS UNLESS NOTED OTHER WISE:

COMPONENT	CONCRETE CLASS	NOMINAL MIX RATIO
FOUNDATION,COLUMNS & WALLS	CLASS 'B'	(1 : 1½ : 3)
SLABS & BEAMS	CLASS 'B'	(1 : 1½ : 3)
PCC STEPS	CLASS 'D'	(1 : 3 : 6)
LEAN / BLINDING CONCRETE	CLASS 'E'	(1 : 4 : 8)

7. ORDINARY PORTLAND CEMENT SHALL BE USED FOR ALL CONCRETE WORKS.
8.AN INTEGRAL WATER PROOFING AGENT SHALL BE USED IN CONCRETE THAT IS CONSTANTLY OR INTERMITTENTLY IN CONTACT WITH WATER AS PER MANUFACTURER'S RECOMMENDATIONS (GENCON GENPRUF RMC OR PENETRON ADMIX OR EQUIVALENT).
9.WATER CEMENT RATIO FOR WATERTIGHT STRUCTURAL CONCRETE SHALL NOT EXCEED 0.45 AND 0.5 FOR ALL OTHER STRUCTURAL CONCRETE.
10. MINIMUM CEMENT CONTENT FOR STRUCTURAL CONCRETE SHALL NOT BE LESS THAN 356 Kg./cum. OF CONCRETE.
11. ALL DETAILING SHALL BE DONE AS PER ACI STANDARDS ACI-315, ACI-318 & ACI-350R.

4. SHORING AND BRACING

1.SHORE & BRACE ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION, TO THE EXTENT NECESSARY TO ENSURE COMPLETE SAFETY, STRENGTH & SERVICEABILITY OF ALL STRUCTURAL ELEMENTS UNDER ALL CONDITIONS OF LOADS WHICH MAY OCCUR DURING CONSTRUCTION. SUCH SHORING & BRACING IS THE CONTRACTOR'S SOLE RESPONSIBILITY AND IS NOT SHOWN ON STRUCTURAL DRAWINGS OR SPECIFIED IN THE PROJECT.
2.THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND STABILITY OF THE SLOPES AND SHALL PROVIDE SHORING AND BRACING DURING EXCAVATION AND CONSTRUCTION, WHEREVER AND WHENEVER REQUIRED.
3. SEQUENCE OF REMOVAL OF FORMWORK SHALL BE APPROVED BY THE ENGINEER.
4. AT LEAST ONE LOWER FLOOR SHALL REMAIN PROPPED UNTIL THE UPPER FLOOR IS CAST AND CURED.

5. REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM-A615 GRADE 60 HAVING A MINIMUM YIELD STRENGTH OF 60,000 PSI.
2. THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED THE SPECIFIED STRENGTH BY MORE THAN 18,000 PSI (RETESTS SHALL NOT EXCEED THIS VALUE BY MORE THAN AN ADDITIONAL 3000 PSI)
3. THE RATIO OF THE ACTUAL ULTIMATE TENSILE STRENGTH TO THE ACTUAL TENSILE YIELD STRENGTH IS NOT LESS THAN 1.25
4. CLEAR COVER TO REINFORCEMENT SHALL BE: (inches)
5.

STRUCTURAL ELEMENT	COVER (INCHES)
FOOTINGS	2"
BEAMS	1½"
COLUMNS	1½"
SLABS	3/4"
BASEMENT WALLS	2" – EARTHSIDE FACE 3/4" – INNER FACE

6. DEVELOPMENT & SPLICE LENGTHS FOR FOUNDATIONS, BEAMS & SLABS (FOR fy=60 ksi and fc'= 3 ksi)

BAR DIA	#3	#4	#5	#6	#7	#8
DEVELOPMENT LENGTH ld (Inches) (BOTTOM BARS)	17	23	28	34	48	55
SPLICE LENGTH (Inches) (BOTTOM BARS)	22	30	37	44	63	72
DEVELOPMENT LENGTH ld (Inches) (TOP BARS)	14	28	36	43	63	72
SPLICE LENGTH (Inches) (TOP BARS)	18	37	46	55	82	94

7. DEVELOPMENT & SPLICE LENGTHS FOR COLUMNS (FOR fy=60 ksi and fc'= 3 ksi)

BAR DIA	#3	#4	#5	#6	#7	#8
DEVELOPMENT LENGTH ld (Inches)	17	23	28	34	48	55
SPLICE LENGTH (Inches)	22	30	37	44	63	72

5. REINFORCING STEEL (CONTINUED)

- THE LOCATION OF LAPS SHOWN ARE INDICATED IN TYPICAL ELEVATIONS OF BEAMS & COLUMNS, AND MAY BE ELIMINATED.
- LAPS (IF REQUIRED.) SHALL BE PROVIDED AT LOCATION SHOWN ON THE TYPICAL ELEVATIONS USING MAXIMUM AVAILABLE LENGTH.
- SPLICE LENGTH = 1.3xld
- WHERE TWO DIFFERENT DIAMETER BARS SPLICING WITH EACH OTHER, SPLICE LENGTH OF LARGER BAR DIAMETER SHALL BE PROVIDED.
- LAP SPLICE ARE NOT TO BE USED:
  -- WITHIN JOINTS
  -- WITHIN A DISTANCE OF TWICE THE MEMBER DEPTH FROM FACE OF THE JOINT.
- CURTAILMENT LENGTH SHOULD BE EXTEND UPTO L/16,12db OR d, (WHICHEVER GREATER) BEYOND L/3, WHERE:
  L-GREATER CLEAR SPAN, db-DIAMETER OF BAR,d-EFFECTIVE DEPTH
- THE FIRST HOOP SHALL BE LOCATED NOT MORE THAN 2" FROM THE FACE OF THE SUPPORTING MEMBER.

7. ALL REINFORCING STEEL SHALL BE ACCURATELY LOCATED IN THE FORMS AND HELD FIRMLY IN PLACE BEFORE & DURING THE PLACEMENT OF CONCRETE, BY MEANS OF WIRE AND SUPPORTS ADEQUATE TO PREVENT DISPLACEMENT DURING THE COURSE OF CONSTRUCTION.
8. LINTELS ARE EXTENDED AT 9 (INCHES) FROM BOTH SIDES OF OPENING.
9. PROVIDE 135° HOOK IN ADJACENT STIRRUPS ON ALTERNATE SIDES.

6. CONCRETE CONSTRUCTION

1.ALL STRUCTURAL SURFACES, AGAINST WHICH EARTH IS TO BE FILLED, SHALL BE COATED WITH TWO COATS OF HOT BITUMEN OF 10/20 GRADE AT THE RATE OF 0.2 lbs/ft /coat.
2.PROVIDE POLYTHENE SHEET OVER TWO COATS OF HOT BITUMEN AT TOP OF PLINTH BEAM/DPC FOR EXTERIOR WALLS.
3.BEFORE CASTING OF ANY STRUCTURAL MEMBER, THE CONTRACTOR SHALL ENSURE THAT ALL EMBEDDED ITEMS FOR ELECTRICAL, MECHANICAL, HVAC, PLUMBING, STRUCTURAL STEEL AND OTHER WORKS ARE PROPERLY LOCATED AND FIRMLY SECURED IN PLACE.
4.DURING CONSTRUCTION, STACKING OF CONSTRUCTION MATERIALS, BLOCKS, etc. SHOULD BE AVOIDED ON SLAB PANELS.
5.UNLESS OTHERWISE NOTED IN PLANS OR SPECIFICATIONS, CAMBER ALL R.C.C. BEAMS AT LEAST ⅜" FOR EVERY 13'-0" OF CLEAR SPAN EXCEPT CANTILEVERS WHICH SHALL BE 2" FOR EVERY 10'-0" OF CLEAR SPAN OR AS APPROVED BY ENGINEER. ALL CAMBERING WORK SHOULD BE DONE WITH PRIOR APPROVAL OF ENGINEER.
6.UNLESS OTHERWISE NOTED IN PLANS OR SPECIFICATIONS, CAMBER ALL R.C.C. SLABS AT LEAST ⅜" PER 10'-0" OF SHORTER SPAN AND ⅜" FOR EVERY 6'-6" OF SLABS CANTILEVER SPAN OR AS APPROVED BY ENGINEER. ALL CAMBERING WORK SHOULD BE DONE WITH PRIOR APPROVAL OF ENGINEER.

7. BRICK WORK

1. ALL BRICK WORK SHALL CONFORM TO SPECIFICATIONS GIVEN IN THE CONTRACT DOCUMENT.
2.ALL BRICK SHALL BE SOUND, HARD, WELL BURNT AND OF UNIFORM SIZE,COLOUR AND TEXTURE. DIMENSIONAL VARIATION IN SIZES SHALL NOT EXCEED 1/8". BRICKS SHOULD BE IN ACCORDANCE WITH SPECIFICATIONS AND SHOULD CONFIRM TO ASTM C62.
3.ALL BRICK WORK SHALL BE ERECTED PLUMB AND TRUE TO LINE AND LEVEL. THE MAXIMUM VARIATION IN ANY STOREY HEIGHT OR ANY LENGTH OF WALL SHALL BE 1/8" IN 10'-0".
4.MORTAR USED IN MASONRY CONSTRUCTION SHALL HAVE AN ULTIMATE COMPRESSIVE STRENGTH OF NOT LESS THAN 12 MPa (1800Psi) AND SHALL CONFORM TO ASTM C270.
5.COMPRESSIVE STRENGTH OF BRICK MASONRY AVERAGE OF 5 UNITS AT 28 DAYS SHALL NOT BE LESS THAN AS SPECIFIED IN SPECIFICATION AND SHALL CONFORM TO RELEVANT ASTM STANDARD.
6.ALL DESIGN, DETAILING, MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH RELEVANT ACI, ASTM, AND UBC CODES AND STANDARDS.
7.BRICK SHALL BE LAID "FROG" UPWARD WITH MORTAR JOINT AND IN ENGLISH FLEMISH BOND OR AS DIRECTED BY THE ENGINEER.
8. BRICKS SHOULD BE SOAKED WITH WATER PROPERLY BEFORE USE.
9. VERTICAL JOINTS SHOULD BE STAGGERED.
10. ALL MASONRY WALLS SHALL BE ANCHORED TO STRUCTURAL FRAME WORK AS INDICATED ON THE DRAWINGS
11. WIRE MESH SHALL BE INSTALLED BETWEEN ALL CONCRETE & BRICK MASONRY JOINTS AS PER SPECIFICATIONS.

8. CONSTRUCTION JOINTS

1.JOINTS, NOT SHOWN ON THE DRAWING, SHALL BE SO MADE AND LOCATED AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHALL NEED PRIOR APPROVAL OF THE ENGINEER. THEY SHALL BE LOCATED NEAR THE MIDDLE OF THE SPANS OF SLAB & BEAMS. JOINTS IN WALLS & COLUMNS SHALL BE AT THE UNDER-SIDE OF FLOORS, SLABS OR BEAMS AND AT THE TOP OF FOOTINGS OR FLOOR SLABS.
2.JOINTS SHALL BE PERPENDICULAR TO MAIN REINFORCEMENT. ALL REINFORCING STEEL SHALL BE CONTINUED ACROSS THE JOINTS.
3.JOINTS IN BASE SLAB & WALLS AND ROOF SLAB, IN ADDITION TO THOSE SHOWN ON THE DRAWINGS SHALL BE BORNE BY THE CONTRACTOR. BEAMS & BRACKETS SHALL BE PLACED AT THE SAME TIME AS SLABS.

9. ELECTRICAL CONDUITS

1.CONDUITS, FOR ELECTRICAL WORKS, SHALL BE PLACED WITHIN THE REINFORCED CONCRETE. THEY SHALL BE PLACED WITHIN THE MIDDLE THIRD OF THE SECTION IN BEAMS AND WITHIN THE MIDDLE HALF OF THE THICKNESS IN SLABS.SPACING BETWEEN PARALLEL CONDUITS SHALL NOT BE LESS THAN 6 INCHES.

10. SEISMIC & LOADING PARAMETERS

1. THE FOLLOWING ARE SEISMIC PARAMETERS ASSUMED IN THE STRUCTURAL DESIGN (BCP-SP-2007)

SEISMIC ZONE FACTOR	=	ZONE 2B
WITH MAXIMUM PGA VALUE	=	0.16g to 0.24g
SEISMIC ZONE FACTOR	=	0.2
IMPORTANCE FACTOR (I)	=	1.00
RW IN BOTH HORIZONTAL DIRECTIONS (RW)	=	5.5 (FOR IMRF)
SOIL PROFILE TYPE (STYP)	=	SD
CT VALUE	=	0.030

10. SEISMIC & LOADING PARAMETERS (CONTINUED)

2. THE FOLLOWING ARE LOADING PARAMETERS ASSUMED IN THE STRUCTURAL DESIGN (BCP-SP-2007)
WALL LOAD ON BEAMS
9" THICK BRICK WALLS PRESENT AS PER ARCHI. = 1000 LBS/FT
3. NO OTHER LOADS THAN MENTIONED ABOVE INCLUDING ACCIDENTAL HAVE BEEN CONSIDERED IN DESIGN.
4. BOUNDARY WALL FRAME STRUCTURE HAS BEEN DESIGNED FOR 10FT HEIGHT AS PER ARCHITECTURAL DESIGN WITH NO PROVISION OF ADDITIONAL HEIGHT.

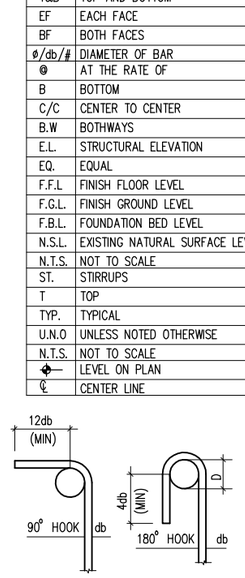
LEGEND

MS	MILD STEEL
PVC	POLYVINYL CHLORIDE
C.G.I	CORRUGATED GALVANIZED IRON
G.I	GALVANIZED IRON
SQ	SQUARE
C.Jt	CONSTRUCTION JOINT
T&B	TOP AND BOTTOM
EF	EACH FACE
BF	BOTH FACES
ø/db/#	DIAMETER OF BAR
@	AT THE RATE OF
B	BOTTOM
C/C	CENTER TO CENTER
B.W	BOTHWAYS
E.L.	STRUCTURAL ELEVATION
EQ.	EQUAL
F.F.L	FINISH FLOOR LEVEL
F.G.L.	FINISH GROUND LEVEL
F.B.L.	FOUNDATION BED LEVEL
N.S.L.	EXISTING NATURAL SURFACE LEVEL
N.T.S.	NOT TO SCALE
ST.	STIRRUPS
T	TOP
TYP.	TYPICAL
U.N.O	UNLESS NOTED OTHERWISE
N.T.S.	NOT TO SCALE
⊕	LEVEL ON PLAN
℄	CENTER LINE

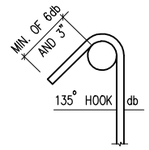
HOOK LENGTH FOR MAIN BARS		
BAR DIA	4db	12db
#3	2 ½"	4 ½"
#4	2 ½"	6"
#5	2 ½"	7 ½"
#6	3"	9"

HOOK LENGTH FOR STIRRUPS/TIES	
BAR DIA	6db
#3	3"
#4	3"
#5	3 ¾"
#6	4 ½"

MINIMUM DIAMETERS OF BEND 'D' FOR STANDARD HOOKS	
BAR DIA.	MIN. DIA.
#3 THR. #8	6db
#9 THR. #11	8db
#14 THR. #18	10db

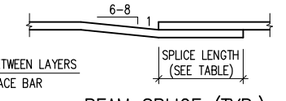


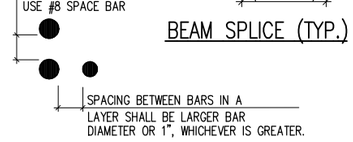
MAIN BARS HOOKS DETAIL



STIRRUPS/TIES HOOKS DETAIL

COLUMN SPLICE (TYP.)





BEAM SPLICE (TYP.)

BAR SPACING IN BEAM

VERTICAL BAR SPACING IN COLUMN

CLIENT

PAKISTAN ENGINEERING COUNCIL

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

ISLAMABAD OFFICE, ISLAMABAD
3RD FLOOR, NESPAK HOUSE, SECTOR G-5/2, ISLAMABAD Tel. 051-9221910-13

REV.	DATE	DESCRIPTION	APPROVED	APPROVED
04				DRAWN
03				SUBMITTED
02				RECOMMENDED
01				CHD./VER.

PROJECT

ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

PERMANENT BOUNDARY WALL (RCC)
GENERAL NOTES

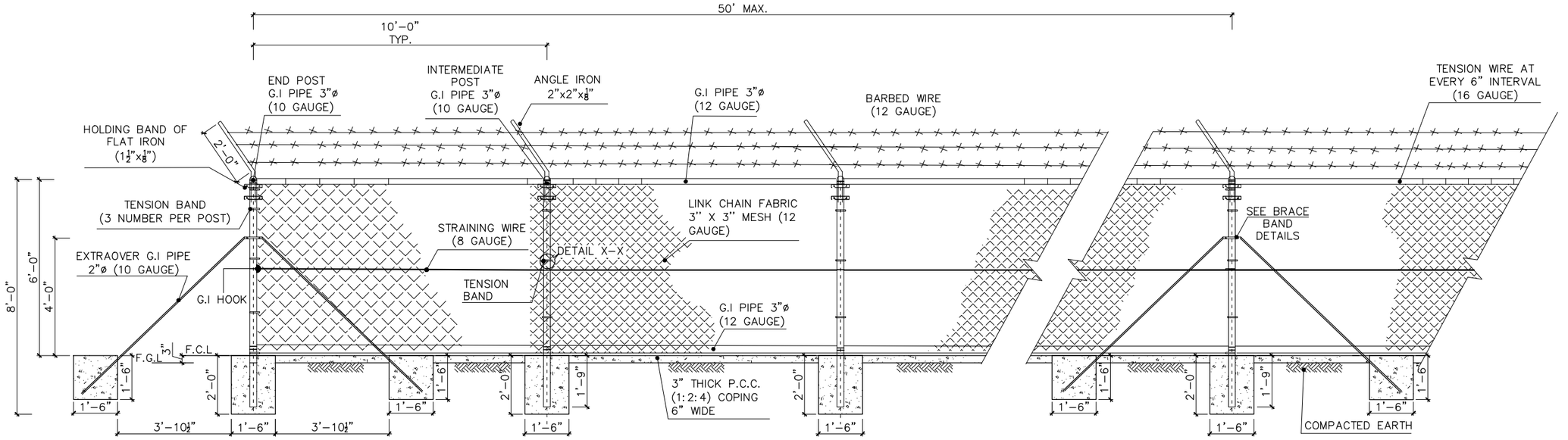
SCALE

DATE: MARCH, 2026

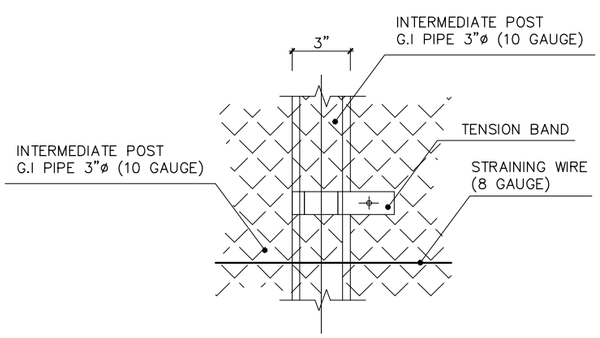
DRAWING No.: **44010/328/TD/01G01**

REV.: 0

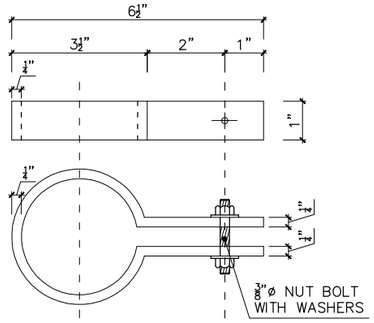
G:\NESPAK PROJECTS (IMRAN)\KIRAN\PEC\STRUCTURE DRAWINGS\PEC-GATE & BOUNDARY WALL\RCC BOUNDARY WALL - STRUCTURE DRAWINGS 11-03-26.DWG



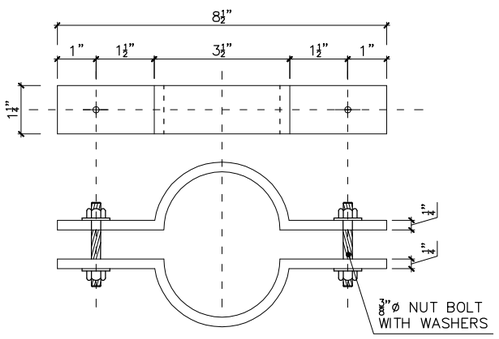
TYPICAL ELEVATION OF CHAIN LINK FENCE BOUNDARY WALL



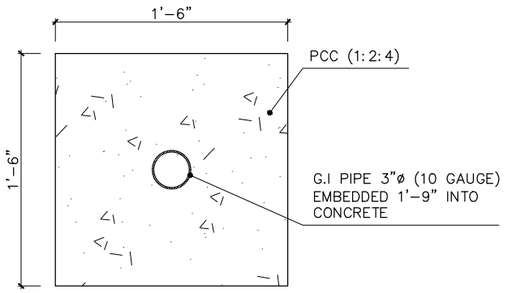
DETAIL X–X



TYP. DETAIL OF TENSION BAND



TYP. DETAIL OF BRACE BAND



PLAN DETAIL OF CONCRETE PEDESTAL FOR G.I. PIPE

NOTES:

1. READ THIS DRAWING IN CONJUNCTION WITH ALL THE RELEVANT PROJECT DWG.
2. GALVANIZED IRON HOOK TO BE PLACED AT EVERY INTERVAL OF 30 FEET FOR TENSIONING/STRAINING WIRE.
3. SLOPES FOR PROPER DRAINAGE OF STORM WATER SHALL BE PROVIDED.
4. WHERE F.G.L GETS LOWER THAN P.C.C COPING, A 6" SOLID BLOCK MASONRY WALL OVER P.C.C.(1:3:6) SHALL BE PROVIDED UNDER PLINTH BEAM AND EMBEDDED AT LEAST 12 INCHES INTO GROUND.
5. LEVEL DIFFERENCES THROUGHOUT THE LENGTH OF CHAIN LINK FENCE SHALL BE ADJUSTED AT SITE AS PER PROVIDED DETAIL.
6. ALL P.C.C. SHALL BE 1:2:4 WITH 2500 PSI CYLINDRICAL STRENGTH AS PER ACI CODE.

CLIENT

PAKISTAN ENGINEERING COUNCIL

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

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REV.	DATE	DESCRIPTION	APPROVED	APPROVED
04				DRAWN
03				SUBMITTED
02				RECOMMENDED
01				CHD./VER.

PROJECT

ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

CHAIN LINK FENCE BOUNDARY WALL
TYPICAL ELEVATION & DETAILS

SCALE

DATE: MARCH, 2026

DRAWING No.: **44010/328/TD/02G01**

REV.: 0

G:\NESPAK PROJECTS (IMRAN)\KIRAN\PEC\STRUCTURE DRAWINGS\PEC-GATE & BOUNDARY WALL\CHAIN LINK BOUNDARY WALL - STRUCTURE DRAWINGS 12-03-26.DWG

1. GENERAL

1.READ ALL DRAWINGS IN CONJUNCTION WITH ARCHITECTURAL, GEOTECHNICAL, PLUMBING, MECHANICAL, ELECTRICAL & ANY OTHER RELEVANT DRAWINGS.
2.NOTES GIVEN IN THIS DRAWING ARE APPLICABLE TO ALL DRAWINGS UNLESS MENTIONED OTHERWISE. NOTES WRITTEN ON A DRAWING, SHALL BE APPLICABLE TO THAT PARTICULAR DRAWING ONLY UNLESS OTHERWISE CROSS-REFERRED.
3.ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE SPECIFICATIONS OF THE CONTRACT DOCUMENTS. IN ABSENCE OF ANY SPECIFICATIONS , ALL MATERIALS & WORKMANSHIP SHALL CONFORM TO RELEVANT ACI/BRITISH CODES AND SHALL BE SUBJECTED TO APPROVAL OF THE ENGINEER.
4.THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE STRUCTURES DURING CONSTRUCTION. HE SHALL ALSO VERIFY ALL DIMENSIONS AND LEVELS BEFORE EXECUTION OF WORK. ANY DISCREPANCY, ERROR OR OMISSION, IF FOUND, SHALL BE BROUGHT TO THE NOTICE OF THE ENGINEER FOR CORRECTION AND APPROVAL.
5.THE CONTRACTOR SHALL CO-ORDINATE WITH VARIOUS SERVICES DRAWINGS FOR SIZES & LOCATION OF ALL STRUCTURAL MEMBERS, FLOORS,WALLS,OPENINGS, FLOOR FINISHES, PIPES ETC.
6.THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXECUTION OF DEWATERING SYSTEM WHERE SO REQUIRED DURING CONSTRUCTION.
7. ALL DIMENSIONS ARE IN FEET & INCHES WHEREAS LEVELS ARE IN METERS.
8. DO NOT SCALE THE DRAWINGS. DIMENSIONS, GIVEN ON THE DRAWING, SHALL GOVERN.
9.ALL FABRICATION, PAINTING, ERECTION AND QUALITY CONTROL IS TO BE DONE IN ACCORDANCE WITH THE LATEST APPLICABLE ACI/BRITISH SPECIFICATIONS.
10.BACKFILLING AROUND FOUNDATIONS AND WALLS SHALL BE WELL COMPACTED LAYERS NOT EXCEEDING 6 INCHES IN THICKNESS.
11.IT IS STRONGLY RECOMMENDED TO RECONFIRM THE SITE PLAN BEFORE START OF EXECUTION AT SITE.THE SITE SHOULD BE EXAMINED FOR CLEARANCE WITH RESPECT TO LOCAL/SEISMIC HAZARDS.
12.THE CONTRACTOR SHALL INFORM THE ENGINEER ABOUT ANTICIPATED CONSTRUCTION LOADS IN THE STRUCTURE AND OBTAIN ENGINEER'S APPROVAL THEREOF BEFORE COMMENCING THE WORK.
13.THE CONTRACTOR SHALL VERIFY LAYOUT, CONFIGURATION, ALL DIMENSIONS AND LEVELS PERTAINING TO EXISTING WORKS BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL ADOPT ADEQUATE AND APPROPRIATE MEASURES SO AS NOT TO DAMAGE THE EXISTING WORKS.
14.THE CONTRACTOR SHALL EXERCISE UTMOST CARE AND PRECAUTION DURING THE WORKS, AGAINST ANY MISHAPS OR ACCIDENTS, FOR WHICH THE CONTRACTOR SHALL BE WHOLLY AND SOLELY RESPONSIBLE. THE CONTRACTOR SHALL INDEMNIFY THE OWNER AGAINST ANY ACCIDENTS AND ANY LOSSES THEREFROM AND SHALL REPAIR AND RECTIFY THEM AT HIS OWN COST AND TIME.
15.ANY DEPARTURES/DEVIATIONS DESIRED FROM THE DESIGN OR SPECIFICATIONS, OR SOLUTIONS TO ANY PROBLEMS ENCOUNTERED, SHALL BE GOT APPROVED FROM THE ENGINEER PRIOR TO IMPLEMENTATION. UNAPPROVED DEPARTURES/DEVIATIONS MAY LEAD TO REJECTION/REPLACEMENT OF THE ENTIRE WORK AT THE CONTRACTOR'S COST.
16.THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS AND BAR BENDING SCHEDULES FOR ENGINEER'S APPROVAL AND OBTAIN HIS APPROVAL BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE ACCURACY OF SHOP DRAWINGS AND BAR BENDING SCHEDULES. THE ENGINEER'S APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY.

2. FOUNDATIONS

1.FOUNDATION IS DESIGNED FOR ASSUMED NET BEARING CAPACITY OF 0.75 T/SFT AND IS APPLICABLE FOR (B.C) OF 0.75 T/SFT AND ABOVE. THIS VALUE SHOULD BE VERIFIED BY THE ENGINEER & CONTRACTOR BEFORE PLACEMENT OF FOUNDATION. IF THE ACTUAL BEARING CAPACITY IS FOUND DIFFERENT, FOUNDATION DESIGN SHOULD BE REVIEWED BY THE ENGINEER.
2.FOUNDATION SHALL BE PLACED AT MINIMUM DEPTH OF 5'-0" BELOW TOP OF NSL OR FGL WHICH EVER IS LOWER OR AS PER GEOTECHNICAL RECOMMENDATIONS. TOTAL TOLERABLE SETTLEMENT FOR THE FOUNDATIONS WILL BE 1 INCHES.
3.AFTER EXCAVATION TO F.B.L. ALL FOUNDATIONS SHOULD BE PHYSICALLY EXAMINED BY ENGINEERING GEOLOGIST/GEOTECHNICAL ENGINEER FOR THE CONFIRMATION OF ORIGINAL SOIL/ROCK CONDITIONS.
4.UNDER ANY CIRCUMSTANCES, FOUNDATIONS SHOULD NOT BE LAID UPON ANY TYPES/FORMS OF NATURAL FILL OR SLOPE WASH DEPOSITS.
5.IF THE ORIGINAL SOIL COMPRISES COHESIVE(CLAY-RICH) NON-GRAVELLY AND/OR SLIGHT TO MODERATELY GRAVELLY SOIL(GRAVELS<35%) WITH ABUNDANCE OF FINER(COHESIVE) MATRIX AT F.B.L., SUCH SOILS SHOULD BE REPLACED BY 3FT THICK CUSHION OF E.G.F. OF GRADATION APPROVED BY THE ENGINEER. E.G.F. SHOULD BE PLACED IN THREE EQUAL LAYERS OF 1FT COMPACTED THICKNESS. COMPACTION SHOULD BE CONFIRMED BY IN-SITU F.D.T. PRIOR TO PLACEMENT OF THE NEXT LAYER AND SHOULD NOT BE LESS THAN 95% OF MODIFIED AASHTO DENSITY. RECOMMENDED Q(NET ALLOWABLE) FOR THE DESIGN OF FOUNDATIONS ON SUCH E.G.F. SHOULD BE 0.75 T/SFT.
6.DETAILED GEOTECHNICAL INVESTIGATIONS SHOULD BE CARRIED OUT IF BOUNDARY WALL IS CLOSE TO A SLOPE, SLOPE STABILITY STUDIES TO BE CARRIED OUT AND APPROPRIATE MEASURES TO BE ADOPTED EVALUATION TO BE MADE AS TO PRESENCE OF FILLS,LIQUIFIABLE SOILS ETC.
7.ALL FOUNDATIONS SHALL BE PLACED ON FIRM BEARING STRATA.IF ACCEPTABLE BEARING STRATA IS NOT FOUND AT INDICATED DEPTHS OF FOUNDATION, THE ENGINEER SHALL NOTIFY IN WRITING FOR HIS INSTRUCTIONS.
8.THE BED OF FOUNDATION SHOULD BE THOROUGHLY COMPACTED PRIOR TO LAYING FOUNDATION. ANY LOOSE,WET,SOFT OR OVER-MOIST SOIL, ORGANIC SOILS, PEAT/FAT CLAY SHOULD BE REMOVED AND REPLACED WITH WELL-COMPACTED ENGINEERED GRANULAR FILL OF GRADATION APPROVED BY THE ENGINEER AND COMPACTED TO 95% MODIFIED AASHTO DENSITY.
9.THE FOUNDATION BED SOIL SHOULD BE PROTECTED FROM INGRESS OF MOISTURE FROM ANY SOURCE BY PROVIDING ADEQUATE SURFACE DRAINAGE SYSTEM AND ENSURING LEAK PROOF JOINTING OF SEWERAGE AND WATER SUPPLY LINES. EXCESSIVE AND UNCONTROLLED WATERING FOR CURING AND COMPACTION OF BACKFILL MATERIAL SHOULD BE AVOIDED.
10.ANY SPRINGS/SEEPS ENCOUNTERED NEAR OR AT THE FOUNDATION LEVEL WITHIN THE BOUNDARY WALL FOOT PRINTS SHOULD BE ADDRESSED PROPERLY BY ADOPTING SUITABLE DE-WATERING MEASURES.
11.THE EXCAVATION LINES AND SLOPES ARE NOT SHOWN ON THE DRAWINGS. IT IS CONTRACTOR'S RESPONSIBILITY TO MAKE THE EXCAVATION ON STABLE SLOPE AND MAINTAIN THE STABILITY OF THE CUT SLOPES.
12.AS AND WHEN REQUIRED APPROPRIATE SLOPE PROTECTION SHOULD BE PROVIDED AROUND THE PROPOSED BOUNDARY WALL.
13.IF NEAR SLOPE,THE STRUCTURE SHOULD BE SET BACK BY A MINIMUM DISTANCE EQUAL TO 3 TIMES OF THE FOUNDATION WIDTH.
14.TO ENSURE UNIFORM ENGINEERING BEHAVIOR OF SUB-GRADE, LITHOLOGIC HOMOGENEITY OF SUCH SOILS SHOULD BE CAREFULLY EXAMINED. ANY LARGE SIZE ROCK FRAGMENTS SUCH AS ERRATICS, BOULDERS, LARGE COBBLES AND ANY OTHER ROCK FRAGMENTS HAVING DIMENSIONS EXCEEDING 6 IN. SHOULD BE REMOVED UNDERNEATH THE FOUNDATIONS AND ITS CLOSE (<1.5 FT) VICINITY.
15.NO FOOTING SHALL BE PLACED ON FILL. HOWEVER, AREAS WHERE FILLING BELOW THE FOOTINGS BECOMES INEVITABLE OR, OVER-EXCAVATION, IF ANY, SHALL BE FILLED WITH ENGINEERED GRANULAR FILL AS PER GEOTECHNICAL RECOMMENDATIONS OR CONCRETE CLASS 'E'. ALL THIS TO BE DONE WITH PRIOR APPROVAL OF THE ENGINEER.
16.EXISTING UNDERGROUND SERVICES, REQUIRED TO BE LEFT IN POSITION, SHALL BE CAREFULLY PROTECTED DURING EXCAVATION AND BACKFILLING OPERATIONS.
17. EXCAVATIONS ADJACENT TO EXISTING STRUCTURES AND/OR UNDERGROUND SERVICES SHALL BE MADE BY HAND.

3. REINFORCED CONCRETE

1.STRUCTURAL DESIGN IS BASED ON THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE OF AMERICAN CONCRETE INSTITUTE (ACI 318-18).
2. ALL STRUCTURAL CONCRETE SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE (ACI) REQUIREMENTS.
3.CONCRETE MIX TO BE DESIGNED ON THE BASIS OF ACI 211 OR EQUIVALENT. TRIAL STRENGTH RESULTS TO BE SUBMITTED BY THE CONTRACTOR FOR REVIEW AND APPROVAL BEFORE CONCRETING.
4. NO CONCRETING SHALL BE CARRIED OUT UNTIL PERMISSION IS GIVEN IN WRITING.
5.ALL CONCRETE SHALL BE TESTED IN ACCORDANCE WITH ASTM STANDARDS C31, C39, C172 & AS WRITTEN IN SPECIFICATIONS AND THE MINIMUM CYLINDER CRUSHING STRENGTH OF CONCRETE AT 28 DAYS SHALL BE AS FOLLOWS. TESTING OF CLASS D & E CONCRETE SHALL BE PERFORMED IF SO DIRECTED BY THE ENGINEER.

CLASS	MIN. CYLINDER CRUSHING STRENGTH AT 28 DAYS (psi).	NOMINAL MIX RATIO
A	4,000	(1 : 1 : 2)
B	3,000	(1 : 1½ : 3)
C	2,400	(1 : 2 : 4)
D	1,200	(1 : 3 : 6)
E	800	(1 : 4 : 8)

6.CLASS OF CONCRETE FOR DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE AS FOLLOWS UNLESS NOTED OTHER WISE:

COMPONENT	CONCRETE CLASS	NOMINAL MIX RATIO
FOUNDATION,COLUMNS & WALLS	CLASS 'B'	(1 : 1½ : 3)
SLABS & BEAMS	CLASS 'B'	(1 : 1½ : 3)
PCC STEPS	CLASS 'D'	(1 : 3 : 6)
LEAN / BLINDING CONCRETE	CLASS 'E'	(1 : 4 : 8)

7. ORDINARY PORTLAND CEMENT SHALL BE USED FOR ALL CONCRETE WORKS.
8.AN INTEGRAL WATER PROOFING AGENT SHALL BE USED IN CONCRETE THAT IS CONSTANTLY OR INTERMITTENTLY IN CONTACT WITH WATER AS PER MANUFACTURER'S RECOMMENDATIONS (GENCON GENPRUF RMC OR PENETRON ADMIX OR EQUIVALENT).
9.WATER CEMENT RATIO FOR WATERTIGHT STRUCTURAL CONCRETE SHALL NOT EXCEED 0.45 AND 0.5 FOR ALL OTHER STRUCTURAL CONCRETE.
10. MINIMUM CEMENT CONTENT FOR STRUCTURAL CONCRETE SHALL NOT BE LESS THAN 356 Kg./cum. OF CONCRETE.
11. ALL DETAILING SHALL BE DONE AS PER ACI STANDARDS ACI-315, ACI-318 & ACI-350R.

4. SHORING AND BRACING

1.SHORE & BRACE ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION, TO THE EXTENT NECESSARY TO ENSURE COMPLETE SAFETY, STRENGTH & SERVICEABILITY OF ALL STRUCTURAL ELEMENTS UNDER ALL CONDITIONS OF LOADS WHICH MAY OCCUR DURING CONSTRUCTION. SUCH SHORING & BRACING IS THE CONTRACTOR'S SOLE RESPONSIBILITY AND IS NOT SHOWN ON STRUCTURAL DRAWINGS OR SPECIFIED IN THE PROJECT.
2.THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND STABILITY OF THE SLOPES AND SHALL PROVIDE SHORING AND BRACING DURING EXCAVATION AND CONSTRUCTION, WHEREVER AND WHENEVER REQUIRED.
3. SEQUENCE OF REMOVAL OF FORMWORK SHALL BE APPROVED BY THE ENGINEER.
4. AT LEAST ONE LOWER FLOOR SHALL REMAIN PROPPED UNTIL THE UPPER FLOOR IS CAST AND CURED.

5. REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM-A615 GRADE 60 HAVING A MINIMUM YIELD STRENGTH OF 60,000 PSI.
2. THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED THE SPECIFIED STRENGTH BY MORE THAN 18,000 PSI (RETESTS SHALL NOT EXCEED THIS VALUE BY MORE THAN AN ADDITIONAL 3000 PSI)
3. THE RATIO OF THE ACTUAL ULTIMATE TENSILE STRENGTH TO THE ACTUAL TENSILE YIELD STRENGTH IS NOT LESS THAN 1.25
4. CLEAR COVER TO REINFORCEMENT SHALL BE: (inches)
5.

STRUCTURAL ELEMENT	COVER (INCHES)
FOOTINGS	2"
BEAMS	1½"
COLUMNS	1½"
SLABS	3/4"
BASEMENT WALLS	2" – EARTHSIDE FACE 3/4" – INNER FACE

6. DEVELOPMENT & SPLICE LENGTHS FOR FOUNDATIONS, BEAMS & SLABS (FOR fy=60 ksi and fc'= 3 ksi)

BAR DIA	#3	#4	#5	#6	#7	#8
DEVELOPMENT LENGTH ld (Inches) (BOTTOM BARS)	17	23	28	34	48	55
SPLICE LENGTH (Inches) (BOTTOM BARS)	22	30	37	44	63	72
DEVELOPMENT LENGTH ld (Inches) (TOP BARS)	14	28	36	43	63	72
SPLICE LENGTH (Inches) (TOP BARS)	18	37	46	55	82	94

7. DEVELOPMENT & SPLICE LENGTHS FOR COLUMNS
(FOR fy=60 ksi and fc'= 3 ksi)

BAR DIA	#3	#4	#5	#6	#7	#8
DEVELOPMENT LENGTH ld (Inches)	17	23	28	34	48	55
SPLICE LENGTH (Inches)	22	30	37	44	63	72

5. REINFORCING STEEL (CONTINUED)

- THE LOCATION OF LAPS SHOWN ARE INDICATED IN TYPICAL ELEVATIONS OF BEAMS & COLUMNS, AND MAY BE ELIMINATED.
- LAPS (IF REQUIRED.) SHALL BE PROVIDED AT LOCATION SHOWN ON THE TYPICAL ELEVATIONS USING MAXIMUM AVAILABLE LENGTH.
- SPLICE LENGTH = 1.3xld
- WHERE TWO DIFFERENT DIAMETER BARS SPLICING WITH EACH OTHER, SPLICE LENGTH OF LARGER BAR DIAMETER SHALL BE PROVIDED.
- LAP SPLICE ARE NOT TO BE USED:
  -- WITHIN JOINTS
  -- WITHIN A DISTANCE OF TWICE THE MEMBER DEPTH FROM FACE OF THE JOINT.
- CURTAILMENT LENGTH SHOULD BE EXTEND UPTO L/16,12db OR d, (WHICHEVER GREATER) BEYOND L/3, WHERE:
  L-GREATER CLEAR SPAN, db-DIAMETER OF BAR,d-EFFECTIVE DEPTH
- THE FIRST HOOP SHALL BE LOCATED NOT MORE THAN 2" FROM THE FACE OF THE SUPPORTING MEMBER.

7. ALL REINFORCING STEEL SHALL BE ACCURATELY LOCATED IN THE FORMS AND HELD FIRMLY IN PLACE BEFORE & DURING THE PLACEMENT OF CONCRETE, BY MEANS OF WIRE AND SUPPORTS ADEQUATE TO PREVENT DISPLACEMENT DURING THE COURSE OF CONSTRUCTION.
8. LINTELS ARE EXTENDED AT 9 (INCHES) FROM BOTH SIDES OF OPENING.
9. PROVIDE 135° HOOK IN ADJACENT STIRRUPS ON ALTERNATE SIDES.

6. CONCRETE CONSTRUCTION

1.ALL STRUCTURAL SURFACES, AGAINST WHICH EARTH IS TO BE FILLED, SHALL BE COATED WITH TWO COATS OF HOT BITUMEN OF 10/20 GRADE AT THE RATE OF 0.2 lbs/ft /coat.
2.PROVIDE POLYTHENE SHEET OVER TWO COATS OF HOT BITUMEN AT TOP OF PLINTH BEAM/DPC FOR EXTERIOR WALLS.
3.BEFORE CASTING OF ANY STRUCTURAL MEMBER, THE CONTRACTOR SHALL ENSURE THAT ALL EMBEDDED ITEMS FOR ELECTRICAL, MECHANICAL, HVAC, PLUMBING, STRUCTURAL STEEL AND OTHER WORKS ARE PROPERLY LOCATED AND FIRMLY SECURED IN PLACE.
4.DURING CONSTRUCTION, STACKING OF CONSTRUCTION MATERIALS, BLOCKS, etc. SHOULD BE AVOIDED ON SLAB PANELS.
5.UNLESS OTHERWISE NOTED IN PLANS OR SPECIFICATIONS, CAMBER ALL R.C.C. BEAMS AT LEAST ⅜" FOR EVERY 13'-0" OF CLEAR SPAN EXCEPT CANTILEVERS WHICH SHALL BE 2" FOR EVERY 10'-0" OF CLEAR SPAN OR AS APPROVED BY ENGINEER. ALL CAMBERING WORK SHOULD BE DONE WITH PRIOR APPROVAL OF ENGINEER.
6.UNLESS OTHERWISE NOTED IN PLANS OR SPECIFICATIONS, CAMBER ALL R.C.C. SLABS AT LEAST 5/16" PER 10'-0" OF SHORTER SPAN AND 3/16" FOR EVERY 6'-6" OF SLABS CANTILEVER SPAN OR AS APPROVED BY ENGINEER. ALL CAMBERING WORK SHOULD BE DONE WITH PRIOR APPROVAL OF ENGINEER.

7. SOLID BLOCK MASONRY WORK

1. ALL BLOCK WORK SHALL CONFORM TO SPECIFICATIONS GIVEN IN THE CONTRACT DOCUMENT.
2.ALL BLOCK SHALL BE SOUND, HARD, WELL FORMED AND OF UNIFORM SIZE, COLOUR AND TEXTURE. DIMENSIONAL VARIATION IN SIZES SHALL NOT EXCEED 1/8".
3.ALL BLOCK WORK SHALL BE ERECTED PLUMB AND TRUE TO LINE AND LEVEL. THE MAXIMUM VARIATION IN ANY STOREY HEIGHT OR ANY LENGTH OF WALL SHALL BE 1/8" IN 10'-0".
4.MORTAR USED IN MASONRY CONSTRUCTION SHALL HAVE AN CEMENT TO SAND RATIO OF NOT LESS THAN 1:5 AND SHALL CONFORM TO ASTM C270, COMPRESSIVE STRENGTH OF SOLID BLOCK MASONRY AVERAGE OF 5 UNITS AT 28 DAYS SHALL NOT BE LESS THAN AS SPECIFIED IN SPECIFICATIONS AND SHALL CONFORM TO ASTM C129.
5.ALL DESIGN, DETAILING, MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH RELEVANT ACI, ASTM, AND UBC CODES AND STANDARDS.
6. BEARING OF LINTELS SHALL BE 8" MINIMUM AT BOTH ENDS. (IF LINTEL BAND NOT PRESENT).
7. BLOCK SHOULD BE SOAKED WITH WATER PROPERLY BEFORE USE.
8. STAGGER VERTICAL JOINTS.
9. DON'T BUILD HIGHER THAN 4 FEET PER DAY.
10.COVER THE SURFACE OF MASONRY WITH HAISEN CLOTH AND CURE IT WITH WATER AT LEAST FOR ONE WEEK.
11. ALL MASONRY WALLS SHALL BE ANCHORED TO STRUCTURAL FRAME WORK AS INDICATED ON THE DRAWINGS.

8. CONSTRUCTION JOINTS

1.JOINTS, NOT SHOWN ON THE DRAWING, SHALL BE SO MADE AND LOCATED AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHALL NEED PRIOR APPROVAL OF THE ENGINEER. THEY SHALL BE LOCATED NEAR THE MIDDLE OF THE SPANS OF SLAB & BEAMS. JOINTS IN WALLS & COLUMNS SHALL BE AT THE UNDER-SIDE OF FLOORS, SLABS OR BEAMS AND AT THE TOP OF FOOTINGS OR FLOOR SLABS.
2.JOINTS SHALL BE PERPENDICULAR TO MAIN REINFORCEMENT. ALL REINFORCING STEEL SHALL BE CONTINUED ACROSS THE JOINTS.
3.JOINTS IN BASE SLAB & WALLS AND ROOF SLAB, IN ADDITION TO THOSE SHOWN ON THE DRAWINGS SHALL BE BORNE BY THE CONTRACTOR. BEAMS & BRACKETS SHALL BE PLACED AT THE SAME TIME AS SLABS.

9. ELECTRICAL CONDUITS

1.CONDUITS, FOR ELECTRICAL WORKS, SHALL BE PLACED WITHIN THE REINFORCED CONCRETE. THEY SHALL BE PLACED WITHIN THE MIDDLE THIRD OF THE SECTION IN BEAMS AND WITHIN THE MIDDLE HALF OF THE THICKNESS IN SLABS.SPACING BETWEEN PARALLEL CONDUITS SHALL NOT BE LESS THAN 6 INCHES.

10. SEISMIC & LOADING PARAMETERS

1. THE FOLLOWING ARE SEISMIC PARAMETERS ASSUMED IN THE STRUCTURAL DESIGN (BCP-SP-2007)

SEISMIC ZONE FACTOR	=	ZONE 2B
WITH MAXIMUM PGA VALUE	=	0.16g to 0.24g
SEISMIC ZONE FACTOR	=	0.2
IMPORTANCE FACTOR (I)	=	1.00
RW IN BOTH HORIZONTAL DIRECTIONS (RW)	=	5.5 (FOR IMRF)
SOIL PROFILE TYPE (STYP)	=	SD
CT VALUE	=	0.030

10. SEISMIC & LOADING PARAMETERS (CONTINUED)

2. THE FOLLOWING ARE LOADING PARAMETERS ASSUMED IN THE STRUCTURAL DESIGN (BCP-SP-2007)
WALL LOAD ON BEAMS
6" THICK BLOCK WALLS PRESENT AS PER ARCHI. (8 FEET HIGH) = 560 LBS/FT
3. NO OTHER LOADS THAN MENTIONED ABOVE INCLUDING ACCIDENTAL HAVE BEEN CONSIDERED IN DESIGN.
4. BOUNDARY WALL FRAME STRUCTURE HAS BEEN DESIGNED FOR 10FT HEIGHT AS PER ARCHITECTURAL DESIGN WITH NO PROVISION OF ADDITIONAL HEIGHT.

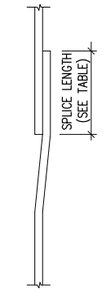
LEGEND

MS	MILD STEEL
PVC	POLYVINYL CHLORIDE
C.G.I	CORRUGATED GALVANIZED IRON
G.I	GALVANIZED IRON
SQ	SQUARE
C.Jt	CONSTRUCTION JOINT
T&B	TOP AND BOTTOM
EF	EACH FACE
BF	BOTH FACES
ø/db/#	DIAMETER OF BAR
@	AT THE RATE OF
B	BOTTOM
C/C	CENTER TO CENTER
B.W	BOTHWAYS
E.L.	STRUCTURAL ELEVATION
EQ.	EQUAL
F.F.L	FINISH FLOOR LEVEL
F.G.L.	FINISH GROUND LEVEL
F.B.L.	FOUNDATION BED LEVEL
N.S.L.	EXISTING NATURAL SURFACE LEVEL
N.T.S.	NOT TO SCALE
ST.	STIRRUPS
T	TOP
TYP.	TYPICAL
U.N.O	UNLESS NOTED OTHERWISE
N.T.S.	NOT TO SCALE
⊕	LEVEL ON PLAN
℄	CENTER LINE

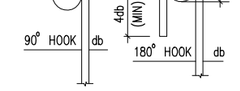
HOOK LENGTH FOR MAIN BARS		
BAR DIA	4db	12db
#3	2 ½"	4 ½"
#4	2 ½"	6"
#5	2 ½"	7 ½"
#6	3"	9"

HOOK LENGTH FOR STIRRUPS/TIES	
BAR DIA	6db
#3	3"
#4	3"
#5	3 ¾"
#6	4 ½"

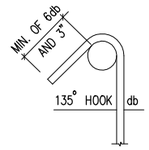
MINIMUM DIAMETERS OF BEND 'D' FOR STANDARD HOOKS	
BAR DIA.	MIN. DIA.
#3 THR. #8	6db
#9 THR. #11	8db
#14 THR. #18	10db



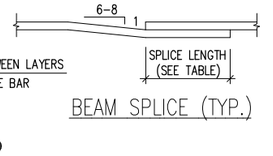
COLUMN SPLICE (TYP.)



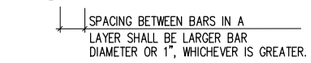
MAIN BARS HOOKS DETAIL



STIRRUPS/TIES HOOKS DETAIL



BEAM SPLICE (TYP.)



BAR SPACING IN BEAM

VERTICAL BAR SPACING IN COLUMN

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CONSULTANT
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REV.	DATE	DESCRIPTION	APPROVED	APPROVED
04				DRAWN
03				SUBMITTED
02				RECOMMENDED
01				CHD./VER.

PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

GATE HOUSE - 1
GENERAL NOTES

SCALE

DATE: MARCH, 2026
DRAWING No.: **44010/328/TD/03G01**
REV.: 0

G:\NESPAK PROJECTS (IMRAN)\KIRAN\PEC\STRUCTURE DRAWINGS\PEC-GATE & BOUNDARY WALL\GATE HOUSE 1 - STRUCTURE DRAWINGS 30-03-26.DWG

1. GENERAL

1.READ ALL DRAWINGS IN CONJUNCTION WITH ARCHITECTURAL, GEOTECHNICAL, PLUMBING, MECHANICAL, ELECTRICAL & ANY OTHER RELEVANT DRAWINGS.
2.NOTES GIVEN IN THIS DRAWING ARE APPLICABLE TO ALL DRAWINGS UNLESS MENTIONED OTHERWISE. NOTES WRITTEN ON A DRAWING, SHALL BE APPLICABLE TO THAT PARTICULAR DRAWING ONLY UNLESS OTHERWISE CROSS-REFERRED.
3.ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE SPECIFICATIONS OF THE CONTRACT DOCUMENTS. IN ABSENCE OF ANY SPECIFICATIONS , ALL MATERIALS & WORKMANSHIP SHALL CONFORM TO RELEVANT ACI/BRITISH CODES AND SHALL BE SUBJECTED TO APPROVAL OF THE ENGINEER.
4.THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE STRUCTURES DURING CONSTRUCTION. HE SHALL ALSO VERIFY ALL DIMENSIONS AND LEVELS BEFORE EXECUTION OF WORK. ANY DISCREPANCY, ERROR OR OMISSION, IF FOUND, SHALL BE BROUGHT TO THE NOTICE OF THE ENGINEER FOR CORRECTION AND APPROVAL.
5.THE CONTRACTOR SHALL CO-ORDINATE WITH VARIOUS SERVICES DRAWINGS FOR SIZES & LOCATION OF ALL STRUCTURAL MEMBERS, FLOORS,WALLS,OPENINGS, FLOOR FINISHES, PIPES ETC.
6.THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXECUTION OF DEWATERING SYSTEM WHERE SO REQUIRED DURING CONSTRUCTION.
7. ALL DIMENSIONS ARE IN FEET & INCHES WHEREAS LEVELS ARE IN METERS.
8. DO NOT SCALE THE DRAWINGS. DIMENSIONS, GIVEN ON THE DRAWING, SHALL GOVERN.
9.ALL FABRICATION, PAINTING, ERECTION AND QUALITY CONTROL IS TO BE DONE IN ACCORDANCE WITH THE LATEST APPLICABLE ACI/BRITISH SPECIFICATIONS.
10.BACKFILLING AROUND FOUNDATIONS AND WALLS SHALL BE WELL COMPACTED LAYERS NOT EXCEEDING 6 INCHES IN THICKNESS.
11.IT IS STRONGLY RECOMMENDED TO RECONFIRM THE SITE PLAN BEFORE START OF EXECUTION AT SITE.THE SITE SHOULD BE EXAMINED FOR CLEARANCE WITH RESPECT TO LOCAL/SEISMIC HAZARDS.
12.THE CONTRACTOR SHALL INFORM THE ENGINEER ABOUT ANTICIPATED CONSTRUCTION LOADS IN THE STRUCTURE AND OBTAIN ENGINEER'S APPROVAL THEREOF BEFORE COMMENCING THE WORK.
13.THE CONTRACTOR SHALL VERIFY LAYOUT, CONFIGURATION, ALL DIMENSIONS AND LEVELS PERTAINING TO EXISTING WORKS BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL ADOPT ADEQUATE AND APPROPRIATE MEASURES SO AS NOT TO DAMAGE THE EXISTING WORKS.
14.THE CONTRACTOR SHALL EXERCISE UTMOST CARE AND PRECAUTION DURING THE WORKS, AGAINST ANY MISHAPS OR ACCIDENTS, FOR WHICH THE CONTRACTOR SHALL BE WHOLLY AND SOLELY RESPONSIBLE. THE CONTRACTOR SHALL INDEMNIFY THE OWNER AGAINST ANY ACCIDENTS AND ANY LOSSES THEREFROM AND SHALL REPAIR AND RECTIFY THEM AT HIS OWN COST AND TIME.
15.ANY DEPARTURES/DEVIATIONS DESIRED FROM THE DESIGN OR SPECIFICATIONS, OR SOLUTIONS TO ANY PROBLEMS ENCOUNTERED, SHALL BE GOT APPROVED FROM THE ENGINEER PRIOR TO IMPLEMENTATION. UNAPPROVED DEPARTURES/DEVIATIONS MAY LEAD TO REJECTION/REPLACEMENT OF THE ENTIRE WORK AT THE CONTRACTOR'S COST.
16.THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS AND BAR BENDING SCHEDULES FOR ENGINEER'S APPROVAL AND OBTAIN HIS APPROVAL BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE ACCURACY OF SHOP DRAWINGS AND BAR BENDING SCHEDULES. THE ENGINEER'S APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY.

2. FOUNDATIONS

1.FOUNDATION IS DESIGNED FOR ASSUMED NET BEARING CAPACITY OF 0.75 T/SFT AND IS APPLICABLE FOR (B.C) OF 0.75 T/SFT AND ABOVE. THIS VALUE SHOULD BE VERIFIED BY THE ENGINEER & CONTRACTOR BEFORE PLACEMENT OF FOUNDATION. IF THE ACTUAL BEARING CAPACITY IS FOUND DIFFERENT, FOUNDATION DESIGN SHOULD BE REVIEWED BY THE ENGINEER.
2.FOUNDATION SHALL BE PLACED AT MINIMUM DEPTH OF 5'-0" BELOW TOP OF NSL OR FGL WHICH EVER IS LOWER OR AS PER GEOTECHNICAL RECOMMENDATIONS. TOTAL TOLERABLE SETTLEMENT FOR THE FOUNDATIONS WILL BE 1 INCHES.
3.AFTER EXCAVATION TO F.B.L. ALL FOUNDATIONS SHOULD BE PHYSICALLY EXAMINED BY ENGINEERING GEOLOGIST/GEOTECHNICAL ENGINEER FOR THE CONFIRMATION OF ORIGINAL SOIL/ROCK CONDITIONS.
4.UNDER ANY CIRCUMSTANCES, FOUNDATIONS SHOULD NOT BE LAID UPON ANY TYPES/FORMS OF NATURAL FILL OR SLOPE WASH DEPOSITS.
5.IF THE ORIGINAL SOIL COMPRISES COHESIVE(CLAY-RICH) NON-GRAVELLY AND/OR SLIGHT TO MODERATELY GRAVELLY SOIL(GRAVELS<35%) WITH ABUNDANCE OF FINER(COHESIVE) MATRIX AT F.B.L., SUCH SOILS SHOULD BE REPLACED BY 3FT THICK CUSHION OF E.G.F. OF GRADATION APPROVED BY THE ENGINEER. E.G.F. SHOULD BE PLACED IN THREE EQUAL LAYERS OF 1FT COMPACTED THICKNESS. COMPACTION SHOULD BE CONFIRMED BY IN-SITU F.D.T. PRIOR TO PLACEMENT OF THE NEXT LAYER AND SHOULD NOT BE LESS THAN 95% OF MODIFIED AASHTO DENSITY. RECOMMENDED Q(NET ALLOWABLE) FOR THE DESIGN OF FOUNDATIONS ON SUCH E.G.F. SHOULD BE 0.75 T/SFT.
6.DETAILED GEOTECHNICAL INVESTIGATIONS SHOULD BE CARRIED OUT IF BOUNDARY WALL IS CLOSE TO A SLOPE, SLOPE STABILITY STUDIES TO BE CARRIED OUT AND APPROPRIATE MEASURES TO BE ADOPTED EVALUATION TO BE MADE AS TO PRESENCE OF FILLS,LIQUIFIABLE SOILS ETC.
7.ALL FOUNDATIONS SHALL BE PLACED ON FIRM BEARING STRATA.IF ACCEPTABLE BEARING STRATA IS NOT FOUND AT INDICATED DEPTHS OF FOUNDATION, THE ENGINEER SHALL NOTIFY IN WRITING FOR HIS INSTRUCTIONS.
8.THE BED OF FOUNDATION SHOULD BE THOROUGHLY COMPACTED PRIOR TO LAYING FOUNDATION. ANY LOOSE,WET,SOFT OR OVER-MOIST SOIL, ORGANIC SOILS, PEAT/FAT CLAY SHOULD BE REMOVED AND REPLACED WITH WELL-COMPACTED ENGINEERED GRANULAR FILL OF GRADATION APPROVED BY THE ENGINEER AND COMPACTED TO 95% MODIFIED AASHTO DENSITY.
9.THE FOUNDATION BED SOIL SHOULD BE PROTECTED FROM INGRESS OF MOISTURE FROM ANY SOURCE BY PROVIDING ADEQUATE SURFACE DRAINAGE SYSTEM AND ENSURING LEAK PROOF JOINTING OF SEWERAGE AND WATER SUPPLY LINES. EXCESSIVE AND UNCONTROLLED WATERING FOR CURING AND COMPACTION OF BACKFILL MATERIAL SHOULD BE AVOIDED.
10.ANY SPRINGS/SEEPS ENCOUNTERED NEAR OR AT THE FOUNDATION LEVEL WITHIN THE BOUNDARY WALL FOOT PRINTS SHOULD BE ADDRESSED PROPERLY BY ADOPTING SUITABLE DE-WATERING MEASURES.
11.THE EXCAVATION LINES AND SLOPES ARE NOT SHOWN ON THE DRAWINGS. IT IS CONTRACTOR'S RESPONSIBILITY TO MAKE THE EXCAVATION ON STABLE SLOPE AND MAINTAIN THE STABILITY OF THE CUT SLOPES.
12.AS AND WHEN REQUIRED APPROPRIATE SLOPE PROTECTION SHOULD BE PROVIDED AROUND THE PROPOSED BOUNDARY WALL.
13.IF NEAR SLOPE,THE STRUCTURE SHOULD BE SET BACK BY A MINIMUM DISTANCE EQUAL TO 3 TIMES OF THE FOUNDATION WIDTH.
14.TO ENSURE UNIFORM ENGINEERING BEHAVIOR OF SUB-GRADE, LITHOLOGIC HOMOGENEITY OF SUCH SOILS SHOULD BE CAREFULLY EXAMINED. ANY LARGE SIZE ROCK FRAGMENTS SUCH AS ERRATICS, BOULDERS, LARGE COBBLES AND ANY OTHER ROCK FRAGMENTS HAVING DIMENSIONS EXCEEDING 6 IN. SHOULD BE REMOVED UNDERNEATH THE FOUNDATIONS AND ITS CLOSE (<1.5 FT) VICINITY.
15.NO FOOTING SHALL BE PLACED ON FILL. HOWEVER, AREAS WHERE FILLING BELOW THE FOOTINGS BECOMES INEVITABLE OR, OVER-EXCAVATION, IF ANY, SHALL BE FILLED WITH ENGINEERED GRANULAR FILL AS PER GEOTECHNICAL RECOMMENDATIONS OR CONCRETE CLASS 'E'. ALL THIS TO BE DONE WITH PRIOR APPROVAL OF THE ENGINEER.
16.EXISTING UNDERGROUND SERVICES, REQUIRED TO BE LEFT IN POSITION, SHALL BE CAREFULLY PROTECTED DURING EXCAVATION AND BACKFILLING OPERATIONS.
17. EXCAVATIONS ADJACENT TO EXISTING STRUCTURES AND/OR UNDERGROUND SERVICES SHALL BE MADE BY HAND.

3. REINFORCED CONCRETE

1.STRUCTURAL DESIGN IS BASED ON THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE OF AMERICAN CONCRETE INSTITUTE (ACI 318-18).
2. ALL STRUCTURAL CONCRETE SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE (ACI) REQUIREMENTS.
3.CONCRETE MIX TO BE DESIGNED ON THE BASIS OF ACI 211 OR EQUIVALENT. TRIAL STRENGTH RESULTS TO BE SUBMITTED BY THE CONTRACTOR FOR REVIEW AND APPROVAL BEFORE CONCRETING.
4. NO CONCRETING SHALL BE CARRIED OUT UNTIL PERMISSION IS GIVEN IN WRITING.
5.ALL CONCRETE SHALL BE TESTED IN ACCORDANCE WITH ASTM STANDARDS C31, C39, C172 & AS WRITTEN IN SPECIFICATIONS AND THE MINIMUM CYLINDER CRUSHING STRENGTH OF CONCRETE AT 28 DAYS SHALL BE AS FOLLOWS. TESTING OF CLASS D & E CONCRETE SHALL BE PERFORMED IF SO DIRECTED BY THE ENGINEER.

CLASS	MIN. CYLINDER CRUSHING STRENGTH AT 28 DAYS (psi).	NOMINAL MIX RATIO
A	4,000	(1 : 1 : 2)
B	3,000	(1 : 1½ : 3)
C	2,400	(1 : 2 : 4)
D	1,200	(1 : 3 : 6)
E	800	(1 : 4 : 8)

6.CLASS OF CONCRETE FOR DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE AS FOLLOWS UNLESS NOTED OTHER WISE:

COMPONENT	CONCRETE CLASS	NOMINAL MIX RATIO
FOUNDATION,COLUMNS & WALLS	CLASS 'B'	(1 : 1½ : 3)
SLABS & BEAMS	CLASS 'B'	(1 : 1½ : 3)
PCC STEPS	CLASS 'D'	(1 : 3 : 6)
LEAN / BLINDING CONCRETE	CLASS 'E'	(1 : 4 : 8)

7. ORDINARY PORTLAND CEMENT SHALL BE USED FOR ALL CONCRETE WORKS.
8.AN INTEGRAL WATER PROOFING AGENT SHALL BE USED IN CONCRETE THAT IS CONSTANTLY OR INTERMITTENTLY IN CONTACT WITH WATER AS PER MANUFACTURER'S RECOMMENDATIONS (GENCON GENPRUF RMC OR PENETRON ADMIX OR EQUIVALENT).
9.WATER CEMENT RATIO FOR WATERTIGHT STRUCTURAL CONCRETE SHALL NOT EXCEED 0.45 AND 0.5 FOR ALL OTHER STRUCTURAL CONCRETE.
10. MINIMUM CEMENT CONTENT FOR STRUCTURAL CONCRETE SHALL NOT BE LESS THAN 356 Kg./cum. OF CONCRETE.
11. ALL DETAILING SHALL BE DONE AS PER ACI STANDARDS ACI-315, ACI-318 & ACI-350R.

4. SHORING AND BRACING

1.SHORE & BRACE ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION, TO THE EXTENT NECESSARY TO ENSURE COMPLETE SAFETY, STRENGTH & SERVICEABILITY OF ALL STRUCTURAL ELEMENTS UNDER ALL CONDITIONS OF LOADS WHICH MAY OCCUR DURING CONSTRUCTION. SUCH SHORING & BRACING IS THE CONTRACTOR'S SOLE RESPONSIBILITY AND IS NOT SHOWN ON STRUCTURAL DRAWINGS OR SPECIFIED IN THE PROJECT.
2.THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND STABILITY OF THE SLOPES AND SHALL PROVIDE SHORING AND BRACING DURING EXCAVATION AND CONSTRUCTION, WHEREVER AND WHENEVER REQUIRED.
3. SEQUENCE OF REMOVAL OF FORMWORK SHALL BE APPROVED BY THE ENGINEER.
4. AT LEAST ONE LOWER FLOOR SHALL REMAIN PROPPED UNTIL THE UPPER FLOOR IS CAST AND CURED.

5. REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM-A615 GRADE 60 HAVING A MINIMUM YIELD STRENGTH OF 60,000 PSI.
2. THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED THE SPECIFIED STRENGTH BY MORE THAN 18,000 PSI (RETESTS SHALL NOT EXCEED THIS VALUE BY MORE THAN AN ADDITIONAL 3000 PSI)
3. THE RATIO OF THE ACTUAL ULTIMATE TENSILE STRENGTH TO THE ACTUAL TENSILE YIELD STRENGTH IS NOT LESS THAN 1.25
4. CLEAR COVER TO REINFORCEMENT SHALL BE: (inches)
5.

STRUCTURAL ELEMENT	COVER (INCHES)
FOOTINGS	2"
BEAMS	1½"
COLUMNS	1½"
SLABS	3/4"
BASEMENT WALLS	2" – EARTHSIDE FACE 3/4" – INNER FACE

6. DEVELOPMENT & SPLICE LENGTHS FOR FOUNDATIONS, BEAMS & SLABS (FOR fy=60 ksi and fc'= 3 ksi)

BAR DIA	#3	#4	#5	#6	#7	#8
DEVELOPMENT LENGTH ld (Inches) (BOTTOM BARS)	17	23	28	34	48	55
SPLICE LENGTH (Inches) (BOTTOM BARS)	22	30	37	44	63	72
DEVELOPMENT LENGTH ld (Inches) (TOP BARS)	14	28	36	43	63	72
SPLICE LENGTH (Inches) (TOP BARS)	18	37	46	55	82	94

7. DEVELOPMENT & SPLICE LENGTHS FOR COLUMNS
(FOR fy=60 ksi and fc'= 3 ksi)

BAR DIA	#3	#4	#5	#6	#7	#8
DEVELOPMENT LENGTH ld (Inches)	17	23	28	34	48	55
SPLICE LENGTH (Inches)	22	30	37	44	63	72

5. REINFORCING STEEL (CONTINUED)

- THE LOCATION OF LAPS SHOWN ARE INDICATED IN TYPICAL ELEVATIONS OF BEAMS & COLUMNS, AND MAY BE ELIMINATED.
- LAPS (IF REQUIRED.) SHALL BE PROVIDED AT LOCATION SHOWN ON THE TYPICAL ELEVATIONS USING MAXIMUM AVAILABLE LENGTH.
- SPLICE LENGTH = 1.3xld
- WHERE TWO DIFFERENT DIAMETER BARS SPLICING WITH EACH OTHER, SPLICE LENGTH OF LARGER BAR DIAMETER SHALL BE PROVIDED.
- LAP SPLICE ARE NOT TO BE USED:
  -- WITHIN JOINTS
  -- WITHIN A DISTANCE OF TWICE THE MEMBER DEPTH FROM FACE OF THE JOINT.
- CURTAILMENT LENGTH SHOULD BE EXTEND UPTO L/16,12db OR d, (WHICHEVER GREATER) BEYOND L/3, WHERE:
  L-GREATER CLEAR SPAN, db-DIAMETER OF BAR,d-EFFECTIVE DEPTH
- THE FIRST HOOP SHALL BE LOCATED NOT MORE THAN 2" FROM THE FACE OF THE SUPPORTING MEMBER.

7. ALL REINFORCING STEEL SHALL BE ACCURATELY LOCATED IN THE FORMS AND HELD FIRMLY IN PLACE BEFORE & DURING THE PLACEMENT OF CONCRETE, BY MEANS OF WIRE AND SUPPORTS ADEQUATE TO PREVENT DISPLACEMENT DURING THE COURSE OF CONSTRUCTION.
8. LINTELS ARE EXTENDED AT 9 (INCHES) FROM BOTH SIDES OF OPENING.
9. PROVIDE 135° HOOK IN ADJACENT STIRRUPS ON ALTERNATE SIDES.

6. CONCRETE CONSTRUCTION

1.ALL STRUCTURAL SURFACES, AGAINST WHICH EARTH IS TO BE FILLED, SHALL BE COATED WITH TWO COATS OF HOT BITUMEN OF 10/20 GRADE AT THE RATE OF 0.2 lbs/ft /coat.
2.PROVIDE POLYTHENE SHEET OVER TWO COATS OF HOT BITUMEN AT TOP OF PLINTH BEAM/DPC FOR EXTERIOR WALLS.
3.BEFORE CASTING OF ANY STRUCTURAL MEMBER, THE CONTRACTOR SHALL ENSURE THAT ALL EMBEDDED ITEMS FOR ELECTRICAL, MECHANICAL, HVAC, PLUMBING, STRUCTURAL STEEL AND OTHER WORKS ARE PROPERLY LOCATED AND FIRMLY SECURED IN PLACE.
4.DURING CONSTRUCTION, STACKING OF CONSTRUCTION MATERIALS, BLOCKS, etc. SHOULD BE AVOIDED ON SLAB PANELS.
5.UNLESS OTHERWISE NOTED IN PLANS OR SPECIFICATIONS, CAMBER ALL R.C.C. BEAMS AT LEAST ⅜" FOR EVERY 13'-0" OF CLEAR SPAN EXCEPT CANTILEVERS WHICH SHALL BE 2" FOR EVERY 10'-0" OF CLEAR SPAN OR AS APPROVED BY ENGINEER. ALL CAMBERING WORK SHOULD BE DONE WITH PRIOR APPROVAL OF ENGINEER.
6.UNLESS OTHERWISE NOTED IN PLANS OR SPECIFICATIONS, CAMBER ALL R.C.C. SLABS AT LEAST ⅜" PER 10'-0" OF SHORTER SPAN AND ⅜" FOR EVERY 6'-6" OF SLABS CANTILEVER SPAN OR AS APPROVED BY ENGINEER. ALL CAMBERING WORK SHOULD BE DONE WITH PRIOR APPROVAL OF ENGINEER.

7. SOLID BLOCK MASONRY WORK

1. ALL BLOCK WORK SHALL CONFORM TO SPECIFICATIONS GIVEN IN THE CONTRACT DOCUMENT.
2.ALL BLOCK SHALL BE SOUND, HARD, WELL FORMED AND OF UNIFORM SIZE, COLOUR AND TEXTURE. DIMENSIONAL VARIATION IN SIZES SHALL NOT EXCEED 1/8".
3.ALL BLOCK WORK SHALL BE ERECTED PLUMB AND TRUE TO LINE AND LEVEL. THE MAXIMUM VARIATION IN ANY STOREY HEIGHT OR ANY LENGTH OF WALL SHALL BE 1/8" IN 10'-0".
4.MORTAR USED IN MASONRY CONSTRUCTION SHALL HAVE AN CEMENT TO SAND RATIO OF NOT LESS THAN 1:5 AND SHALL CONFORM TO ASTM C270, COMPRESSIVE STRENGTH OF SOLID BLOCK MASONRY AVERAGE OF 5 UNITS AT 28 DAYS SHALL NOT BE LESS THAN AS SPECIFIED IN SPECIFICATIONS AND SHALL CONFORM TO ASTM C129.
5.ALL DESIGN, DETAILING, MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH RELEVANT ACI, ASTM, AND UBC CODES AND STANDARDS.
6. BEARING OF LINTELS SHALL BE 8" MINIMUM AT BOTH ENDS. (IF LINTEL BAND NOT PRESENT).
7. BLOCK SHOULD BE SOAKED WITH WATER PROPERLY BEFORE USE.
8. STAGGER VERTICAL JOINTS.
9. DON'T BUILD HIGHER THAN 4 FEET PER DAY.
10.COVER THE SURFACE OF MASONRY WITH HAISEN CLOTH AND CURE IT WITH WATER AT LEAST FOR ONE WEEK.
11. ALL MASONRY WALLS SHALL BE ANCHORED TO STRUCTURAL FRAME WORK AS INDICATED ON THE DRAWINGS.

8. CONSTRUCTION JOINTS

1.JOINTS, NOT SHOWN ON THE DRAWING, SHALL BE SO MADE AND LOCATED AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHALL NEED PRIOR APPROVAL OF THE ENGINEER. THEY SHALL BE LOCATED NEAR THE MIDDLE OF THE SPANS OF SLAB & BEAMS. JOINTS IN WALLS & COLUMNS SHALL BE AT THE UNDER-SIDE OF FLOORS, SLABS OR BEAMS AND AT THE TOP OF FOOTINGS OR FLOOR SLABS.
2.JOINTS SHALL BE PERPENDICULAR TO MAIN REINFORCEMENT. ALL REINFORCING STEEL SHALL BE CONTINUED ACROSS THE JOINTS.
3.JOINTS IN BASE SLAB & WALLS AND ROOF SLAB, IN ADDITION TO THOSE SHOWN ON THE DRAWINGS SHALL BE BORNE BY THE CONTRACTOR. BEAMS & BRACKETS SHALL BE PLACED AT THE SAME TIME AS SLABS.

9. ELECTRICAL CONDUITS

1.CONDUITS, FOR ELECTRICAL WORKS, SHALL BE PLACED WITHIN THE REINFORCED CONCRETE. THEY SHALL BE PLACED WITHIN THE MIDDLE THIRD OF THE SECTION IN BEAMS AND WITHIN THE MIDDLE HALF OF THE THICKNESS IN SLABS.SPACING BETWEEN PARALLEL CONDUITS SHALL NOT BE LESS THAN 6 INCHES.

10. SEISMIC & LOADING PARAMETERS

1. THE FOLLOWING ARE SEISMIC PARAMETERS ASSUMED IN THE STRUCTURAL DESIGN (BCP-SP-2007)

SEISMIC ZONE FACTOR	=	ZONE 2B
WITH MAXIMUM PGA VALUE	=	0.16g to 0.24g
SEISMIC ZONE FACTOR	=	0.2
IMPORTANCE FACTOR (I)	=	1.00
RW IN BOTH HORIZONTAL DIRECTIONS (RW)	=	5.5 (FOR IMRF)
SOIL PROFILE TYPE (STYP)	=	SD
CT VALUE	=	0.030

10. SEISMIC & LOADING PARAMETERS (CONTINUED)

2. THE FOLLOWING ARE LOADING PARAMETERS ASSUMED IN THE STRUCTURAL DESIGN (BCP-SP-2007)
WALL LOAD ON BEAMS
6" THICK BLOCK WALLS PRESENT AS PER ARCHI. (8 FEET HIGH) = 560 LBS/FT
3. NO OTHER LOADS THAN MENTIONED ABOVE INCLUDING ACCIDENTAL HAVE BEEN CONSIDERED IN DESIGN.
4. BOUNDARY WALL FRAME STRUCTURE HAS BEEN DESIGNED FOR 10FT HEIGHT AS PER ARCHITECTURAL DESIGN WITH NO PROVISION OF ADDITIONAL HEIGHT.

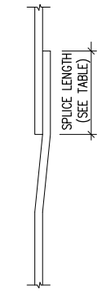
LEGEND

MS	MILD STEEL
PVC	POLYVINYL CHLORIDE
C.G.I	CORRUGATED GALVANIZED IRON
G.I	GALVANIZED IRON
SQ	SQUARE
C.Jt	CONSTRUCTION JOINT
T&B	TOP AND BOTTOM
EF	EACH FACE
BF	BOTH FACES
ø/db/#	DIAMETER OF BAR
@	AT THE RATE OF
B	BOTTOM
C/C	CENTER TO CENTER
B.W	BOTHWAYS
E.L.	STRUCTURAL ELEVATION
EQ.	EQUAL
F.F.L	FINISH FLOOR LEVEL
F.G.L.	FINISH GROUND LEVEL
F.B.L.	FOUNDATION BED LEVEL
N.S.L.	EXISTING NATURAL SURFACE LEVEL
N.T.S.	NOT TO SCALE
ST.	STIRRUPS
T	TOP
TYP.	TYPICAL
U.N.O	UNLESS NOTED OTHERWISE
N.T.S.	NOT TO SCALE
⊕	LEVEL ON PLAN
℄	CENTER LINE

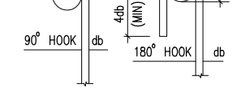
HOOK LENGTH FOR MAIN BARS		
BAR DIA	4db	12db
#3	2 ½"	4 ½"
#4	2 ½"	6"
#5	2 ½"	7 ½"
#6	3"	9"

HOOK LENGTH FOR STIRRUPS/TIES	
BAR DIA	6db
#3	3"
#4	3"
#5	3 ¾"
#6	4 ½"

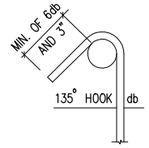
MINIMUM DIAMETERS OF BEND 'D' FOR STANDARD HOOKS	
BAR DIA.	MIN. DIA.
#3 THR. #8	6db
#9 THR. #11	8db
#14 THR. #18	10db



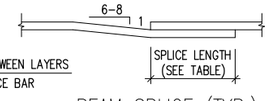
COLUMN SPLICE (TYP.)



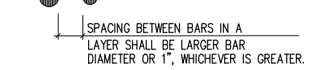
MAIN BARS HOOKS DETAIL



STIRRUPS/TIES HOOKS DETAIL



BEAM SPLICE (TYP.)



BAR SPACING IN BEAM

VERTICAL BAR SPACING IN COLUMN

CLIENT
PAKISTAN ENGINEERING COUNCIL

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ELECTRICAL

PAKISTAN ENGINEERING COUNCIL

CONSULTANCY SERVICES FOR DESIGN AND CONSTRUCTION SUPERVISION OF ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

GATE HOUSE

LIST OF ELECTRICAL & COMMUNICATION DRAWINGS

S/NO	DRAWING NO.	DESCRIPTION
1.	5043/08/TD/E000	LIST OF ELECTRICAL & COMMUNICATION DRAWINGS
2.	5043/08/TD/E001	ELECTRICAL LEGEND AND GENERAL NOTES
3.	5043/08/TD/E002	GATE HOUSE - 1 ELECTRICAL PANELS, RACEWAYS & EARTHING LAYOUT
4.	5043/08/TD/E003	GATE HOUSE - 1 GROUND FLOOR LIGHTING LAYOUT
5.	5043/08/TD/E004	GATE HOUSE - 1 FRONT ELEVATION LIGHTING LAYOUT
6.	5043/08/TD/E005	GATE HOUSE - 1 GROUND FLOOR POWER LAYOUT
7.	5043/08/TD/E006	GATE HOUSE - 2 & 3 ELECTRICAL PANELS, RACEWAYS & EARTHING LAYOUT
8.	5043/08/TD/E007	GATE HOUSE - 2 & 3 GROUND FLOOR LIGHTING LAYOUT
9.	5043/08/TD/E008	GATE HOUSE - 2 & 3 FRONT ELEVATION LIGHTING LAYOUT
10.	5043/08/TD/E009	GATE HOUSE - 2 & 3 GROUND FLOOR POWER LAYOUT
11.	5043/08/TD/E0010	SINGLE LINE DIAGRAM & DB's DETAIL

S/NO	DRAWING NO.	DESCRIPTION
12.	5043/08/TD/T001	COMMUNICATION LEGEND AND GENERAL NOTES
13.	5043/08/TD/T002	GATE HOUSE - 1 COMMUNICATION PANELS, RACEWAYS & EARTHING LAYOUT
14.	5043/08/TD/T003	GATE HOUSE - 1 GROUND FLOOR TELEPHONE, DATA & CCTV LAYOUT
15.	5043/08/TD/T004	GATE HOUSE - 2 & 3 COMMUNICATION PANELS, RACEWAYS & EARTHING LAYOUT
16.	5043/08/TD/T005	GATE HOUSE - 2 & 3 GROUND FLOOR TELEPHONE, DATA & CCTV LAYOUT
17.	5043/08/TD/T006	COMMUNICATION RISER DIAGRAM

BIDDING DRAWING

CLIENT
PAKISTAN ENGINEERING COUNCIL

CONSULTANT
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
ARCHITECTURE & PLANNING DIVISION KARACHI.
4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi,
Tel: 99225430-34

REV.	DATE	DESCRIPTION	APPROVED
03			
02			
01			
00	APRIL, 2026	ISSUED FOR BIDDING	

DRAWN	TM
SUBMITTED	SA
RECOMMENDED	SA
CHD./VER.	AMS
APPROVED	AMS

PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.
LIST OF ELECTRICAL & COMMUNICATION DRAWINGS

DATE. APRIL, 2026

DRAWING No. **5043/08/TD/E000**

SCALE N.T.S

REV. 0

Z:\GATE HOUSE\PEC GATE HOUSE 18.03.2026_TM 15-04-2026.DWG
3/32"=1'-0" SHEET SIZE: A2

LEGEND

S.#	SYMBOL	DESCRIPTION
1		415 VOLTS, 50Hz 3 PHASE DIESEL GENERATOR.
2	MCO	MANUAL CHANGE OVER (MCO)
3		MAIN PANEL BOARD (MPB) OR SUB MAIN PANEL BOARD (SMPB)
4		DISTRIBUTION BOARD (DB) 'LDB' – LIGHTING DISTRIBUTION BOARD, 'PDB' – POWER DISTRIBUTION BOARD 'E' – INDICATES FOR POWER SUPPLY FROM EMERGENCY SOURCE 'U' – INDICATES FOR POWER SUPPLY FROM UPS SOURCE
5		UNINTERRUPTED POWER SUPPLY (UPS)
6	Adj.	TRIPLE POLE, 500 VOLTS, MOULDED CASE CIRCUIT BREAKER (RUPTURING CAPACITY INDICATED ON THE DRAWINGS) Adj.–INDICATES ADJUSTABLE TYPE
7		SINGLE POLE, 250 VOLTS, MINIATURE CIRCUIT BREAKER (RUPTURING CAPACITY INDICATED ON THE DRAWINGS)
8		DOUBLE POLE, 250 VOLTS, MINIATURE CIRCUIT BREAKER (RUPTURING CAPACITY INDICATED ON THE DRAWINGS)
9		TRIPLE POLE, 500 VOLTS, MINIATURE CIRCUIT BREAKER (RUPTURING CAPACITY AND RATING INDICATED ON THE DRAWINGS)
10	VSS	VSS – VOLTMETER SELECTOR SWITCH (7–POSITION)
11	V	AC VOLTMETER (MEASURING RANGE INDICATED ON DRAWING)
12	ASS	AMMETER SELECTOR SWITCH (4–POSITION)
13	A	AC AMMETER (MEASURING RANGE INDICATED ON DRAWING)
14	M A	AUTO–OFF–MANUAL SELECTOR SWITCH
15	1P/R1	ON–OFF PUSH BUTTON 1P/R1 INDICATES 1 NO. PUSH BUTTON FED FROM CIRCUIT NO. 1 OF RED PHASE
16		PHASE INDICATION LAMPS R – RED Y – YELLOW B – BLUE
17	3S/2D/R1	10A LIGHT CONTROL GANG SWITCH WITH DIMMER, '3S' INDICATES 3 Nos. SWITCH, '2DM' INDICATES 2 Nos. FAN DIMMER + 2 Nos. SWITCHES & 'R1' INDICATES CIRCUIT NO.1 FROM 'RED' PHASE
18		10A LIGHT CONTROL 2 WAY SWITCH, '2ST' INDICATES FOR 2 Nos. TWO WAY SWITCH, & 'R1' INDICATES CIRCUIT NO.1 FROM 'RED' PHASE
19		13 AMPS, 250 VOLTS, 3 PIN UNIVERSAL, SWITCH SOCKET OUTLET TV – INDICATES "TELEVISION", 'WIFI' – INDICATES "WIFI DEVICE" MW – INDICATES "MICRO WAVE"
20		13 AMPS, 250 VOLTS, 3 PIN UNIVERSAL, SWITCH SOCKET OUTLET (SUPPLIED FROM UPS) TV – INDICATES "TELEVISION", 'WIFI' – INDICATES "WIFI DEVICE"
21		13 AMPS, 250 VOLTS, 3 PIN DUPLEX UNIVERSAL, SWITCH OUTLET (SUPPLIED FROM UPS)
22		13 AMPS, 250 VOLTS, SPUR OUTLET (SUPPLIED FROM UPS) DC – INDICATES "DOOR CONTROLLER" CCTV–INDICATES "CLOSED CIRCUIT TELEVISION" WAP – INDICATED " WIRELESS ACCESS POINT"
23	FB/TB	1 NO. 13 AMPS, 250 VOLTS, 3 PIN UNIVERSAL, SWITCH SOCKET OUTLET (SUPPLIED FROM NORMAL) 1 NO. 13 AMPS, 250 VOLTS, 3 PIN UNIVERSAL, SWITCH SOCKET OUTLET (SUPPLIED FROM UPS) IN FLOOR BOX/ TECHNOLOGY BOX
24	FB/TB	1 NO. 13 AMPS, 250 VOLTS, 3 PIN UNIVERSAL, SWITCH SOCKET OUTLET (SUPPLIED FROM NORMAL) 1 NO. DUPLEX 13 AMPS, 250 VOLTS, 3 PIN UNIVERSAL, SWITCH SOCKET OUTLET (SUPPLIED FROM UPS) IN FLOOR BOX/ TECHNOLOGY BOX
25		15 AMPS, 250 VOLTS, 2 PIN+EARTH, SCHUKO SOCKET OUTLET
26		15 AMPS, 250 VOLTS, 3 PIN, SWITCH SOCKET OUTLET WP – INDICATES "WATER PUMPS" PC – INDICATES "PHOTOCOPY MACHINE"
27		20 AMPS, 250 VOLTS, DP SWITCH WITH NEON INDICATION EWH – INDICATES "ELECTRIC WATER HEATER" HD – INDICATES "HAND DRYER"
28		**13A SHAVER SOCKET**
29		**INDUSTRIAL SOCKET SINGLE PHASE, 3 PIN, L+N+E**
30		**INDUSTRIAL SOCKET THREE PHASE, 5 PIN, L+N+E**
31	E	EARTH CABLE/EARTHING LEAD/EARTH CONTINUITY CONDUCTOR (ECC) FOR EARTHING SYSTEM
32	ECP	EARTH CONNECTING POINT (ECP)
33		ROD TYPE EARTH ELECTRODE
34		PLATE TYPE EARTH ELECTRODE
35	FB	FLOOR BOX
36	MH	RCC MAINHOLE

LIGHT FIXTURES SCHEDULE

S.#	LEGEND	DESCRIPTION	REMARKS
1	BL1	LED DECORATIVE POST TOP TYPE BOLLARD LIGHT FIXTURE, DIE CAST ALUMINIUM HOUSING, 800 LUMENS, 09 WATT OR LESS, 3000K COLOR TEMPERATURE, CRI INDEX 80, BUILT–IN LED OUTPUT DRIVER, COMPLETE IP65 INGRESS PROTECTION 2 TO 3 FT HEIGHT, IP–65, INCLUDING MOUNTING BRACKETS, BUILT–IN LED DRIVER, CIVIL WORKS & FOUNDATION, COMPLETE IN ALL RESPECT.	SURFACE/RECESSED MOUNTED
2	BT1	SURFACE / SUSPENDED LED BATTEN LIGHT FIXTURE (600 MM LENGTH) 600 LUMENS LIGHT OUTPUT, 7 W OR BETTER SYSTEM WATTAGE, 4000K COLOR TEMPERATURE OR AS APPROVED BY ENGINEER, CRI INDEX 80, LED OUTPUT DRIVER (PF 0.9), IP20 INGRESS PROTECTION, BUILT–IN HEAT SINK, MOUNTING FRAME SHALL BE FROM ORIGINAL EQUIPMENT MANUFACTURER, LIFE TIME 25,000 OR MORE HOURS.	SURFACE OR SUSPENDED INSTALLATION
3	DL1	SURFACE MOUNTED LED DOWNLIGHT FIXTURE 225 MM OR LESS DIA, DIE CAST ALUMINUM HOUSING, HEAT SINK, 2000 LUMENS OUTPUT, 20 WATT, 4000K COLOR TEMP, CRI INDEX 80, LED DRIVER (PF 0.9), IP20 INGRESS PROTECTION, LIFE TIME 50,000 HOURS.	SURFACE/RECESSED MOUNTED
4	FL1	LED FLOOD LIGHT FIXTURE (ASYMMETRICAL/SYMMETRICAL) WITH DIE–CAST ALUMINIUM POWDER COATED HOUSING, ELECTROPLATED ALUMINIUM REFLECTOR, 5000 LUMENS LIGHT OUTPUT, 50W OR BETTER SYSTEM WATTAGE, 60 TO 100 DEGREE BEAM ANGLE, 4000K COLOR TEMPERATURE, CRI INDEX 80, BUILT–IN LED OUTPUT DRIVER, IP65 INGRESS PROTECTION, IK07 IMPACT PROTECTION, 4KV SURGE PROTECTOR.	WALL MOUNTED AT SUITABLE HEIGHT
5	SP1	SURFACE MOUNTED OUTDOOR LED ADJUSTABLE SPOT LIGHT FIXTUE 100 MM OR LESS DIA, 800 LUMENS LIGHT OUTPUT, 10 W OR LESS, 24/36 DEG BEAM, 3000K, CRI 80, LED OUTPUT DRIVER (PF 0.9), IP66 INGRESS PROTECTION, LIFE TIME 50,000 HOURS.	SURFACE MOUNTED
6	ST1	RECESSED LED OUTDOOR LINEAR LIGHT (IP67) SEAMLESS WITH ALUMINIUM PROFILE, 20MM WIDTH 20 MM DEPTH, LED LIGHT 25 WATT/MTR, GOOD QUALITY UV RESISTANT POLYCARBONATE DIFFUSER, 3000K, INCLUDING ALL ACCESSORIES, COMPLETE IN ALL RESPECT.	COVE MOUNTED
7	EB2	WALL MOUNTED, NON–MAINTAINED TYPE DOUBLE HEAD EMERGENCY LIGHT FIXTURE, 6.5 W, WITH NI–CD BATTERY BACKUP UNIT FOR 3 HOURS STANDBY OPERATION, OVER CHARGE & DISCHARGE PROTECTION, 3 NO. INDICATION LIGHT FOR POWER, CHARGING & FAULT, TEST BUTTON, IP65 INGRESS PROTECTION, TUV OR UL CERTIFIED.	WALL MOUNTED
8		CEILING FAN	SUSPENDED AT 9'–0" FROM FFL
9	EX12"	EXHAUST FAN	RECESSED IN WALL

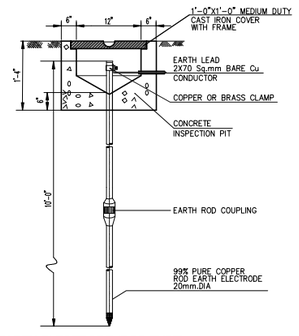
GENERAL NOTES

1. FOLLOWING NOTES SHALL IN GENERAL APPLY TO ALL ELECTRICAL DRAWINGS. THE INSTRUCTIONS IN THESE NOTES SHALL BE FOLLOWED UNLESS STATED OTHERWISE.
2. THESE NOTES SHALL BE APPLICABLE TO THE ENTIRE ELECTRICAL WORKS. IF THE SITE CONDITIONS NECESSITATE ANY ALTERATIONS OR DEVIATIONS THE DIRECTIONS OF THE ENGINEER SHALL BE OBSERVED AS FINAL INSTRUCTIONS.
3. ALL ELECTRICAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH BOQ, TECHNICAL SPECIFICATIONS, ARCHITECTURAL, STRUCTURAL, PLUMBING AND HVAC DRAWINGS & ALL OTHER RELEVANT DETAILS.
4. DIMENSIONS/MEASUREMENTS GIVEN IN LAYOUT AND DETAILED DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE TO CALCULATE THE ACTUAL DIMENSIONS/ MEASUREMENTS ACCORDING TO STRUCTURAL AND ARCHITECTURAL DRAWINGS.
5. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH ALL RELEVANT DETAILS TO THE ENGINEER FOR APPROVAL ACCORDING TO THE GENERAL CONDITIONS OF CONTRACT WELL IN TIME BEFORE COMMENCEMENT OF THAT WORK.
6. PROPER CO–ORDINATION OF ELECTRICAL WORKS WITH OTHER SERVICES SHALL BE CARRIED OUT AT SITE.
7. ALL NON – CURRENT CARRYING PARTS i.e. OUTER CASINGS OF EQUIPMENT SUCH AS HT & LT PANELS, DISTRIBUTIONS BOARDS, CABLE TRAYS, AUXILIARY CONSTRUCTIONS FOR EQUIPMENT ETC. SHALL BE CONNECTED TO THE GROUNDING/ EARTHING SYSTEM AT REQUIRED NUMBER OF POINTS WITH SPECIFIED SIZES OF CONDUCTORS. WATER PIPES ALONG ELECTRICAL LINE SHALL BE BONDED TO THE EARTHING SYSTEM WITH 10 Sq.mm. SINGLE CORE, COPPER CONDUCTOR PVC CABLE.
8. ELECTRICAL POINTS FOR EQUIPMENT SHALL BE INSTALLED IN CO–ORDINATION WITH THE RELEVANT EQUIPMENT DRAWINGS OF OTHER SERVICES SUCH AS COMMUNICATION SYSTEMS, HVAC, PLUMBING ETC. THE LOCATION ON ELECTRICAL DRAWINGS IS ONLY INDICATIVE.
9. ARRANGEMENT OF ELECTRICAL EQUIPMENTS ON ELECTRICAL DRAWINGS ARE TENTATIVE. EXACT ARRANGEMENT OF EQUIPMENTS SHALL BE MADE IN VIEW OF ITS PHYSICAL DIMENSIONS AND EASE OF MAINTENANCE.
10. LOADS ON ALL PHASES SHALL BE BALANCED AT THE TESTING/ COMMISSIONING STAGE.
11. CONDUIT/DUCT RUN UNDER FLOOR SHALL HAVE A MINIMUM COVER OF 2" FROM TOP OF CONDUIT/DUCT TO FINISH FLOOR LEVEL.
12. RUN GREEN–YELLOW OR GREEN SINGLE CORE PVC INSULATED COPPER CONDUCTOR CABLE OF SPECIFIED SIZES AS EARTH CONTINUITY CONDUCTOR (ECC) ALL ALONG LIGHT AND POWER WIRING. WHEREVER THE SIZE IS NOT SPECIFIED THE FOLLOWING CRITERIA SHALL BE OBSERVED TO DETERMINE MINIMUM CROSS SECTIONAL AREA OF EARTH CONTINUITY CONDUCTOR (ECC) IN RELATION TO THE AREA OF ITS PHASE CONDUCTORS. RUN SEPARATE ECC FOR EACH CIRCUIT.
    - ECC & PHASE CONDUCTOR OF SAME SIZE FOR UPTO AND INCLUDING 16 Sqmm CABLES.
    - 16 Sqmm ECC FOR PHASE CONDUCTOR OF 16 Sqmm, 25 Sqmm & 35 Sqmm CABLES.
    - FOR CABLES OF 50 Sqmm AND ABOVE SIZES, ECC IS HALF SIZE OF PHASE CONDUCTOR.
    - MAXIMUM SIZE OF ECC IS 70 Sqmm (IF NOT MENTIONED OTHERWISE).
13. ALL WIRING TO LIGHT AND SOCKET CIRCUITS & FOR CONTROLS SHALL BE CARRIED OUT WITH SINGLE CORE PVC INSULATED COPPER CONDUCTOR CABLE OF SPECIFIED VOLTAGE GRADE IN SURFACE GI CONDUIT OF SPECIFIED SIZE. UNLESS SPECIFICALLY STATED ON DRAWINGS/BOQ.
14. LIGHT CONTROL SWITCH BOARD SHALL BE INSTALLED 6" AWAY FROM THE SIDE OF DOOR IN ROOMS.
15. BEFORE DETERMINING THE CUT LENGTHS OF CABLE,THE ACTUAL MEASUREMENT AT SITE SHALL BE MADE WITH PROVISION FOR SLACK AT LT PANELS/ DISTRIBUTION BOARDS AND SPARE LENGTH FOR LOOPS AS REQUIRED.
16. ALL UNDERGROUND PIPES AFTER INSTALLATION SHALL BE PLUGGED AND SEALED AT BOTH ENDS AND JOINTS TO AVOID INGRESS OF WATER INTO PIPES.
17. APPROPRIATE SIZE CLASS 'D' PVC PIPES SHALL BE LAID ALL ALONG THE CROSSINGS OF CABLES UNDER ROADS OR PAVED AREAS.
18. THE No. OF SINGLE CORE CABLES IN ANY CONDUIT SHALL BE DETERMINED SUCH THAT THE RATIO OF CABLE AREA INCLUDING PROTECTIVE EARTH CONDUCTOR TO CONDUIT AREA IS NOT MORE THAN 0.4:1.0. WHERE DIFFERENT SIZES OF CABLES RUN IN SAME CONDUIT.THE SIZE SHALL BE BASED ON ACTUAL CABLE AREA. WHEREVER CONDUIT SIZE IS NOT SPECIFIED, 25mm. DIA CONDUIT SHALL BE INSTALLED PROVIDED IT MEETS THE ABOVE CRITERIA.THE FOLLOWING TABLE IS GIVEN AS GENERAL GUIDELINE.

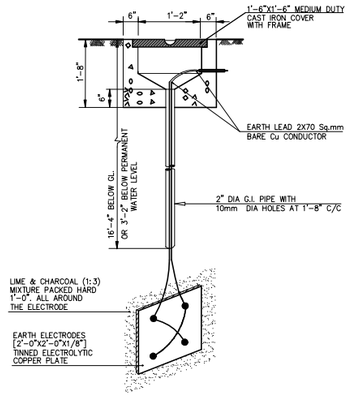
S.NO	NOMINAL CONDUCTOR SIZE(SQMM)	NO. & DIA OF WIRES	NOMINAL OVERALL DIA	20 MM DIA (3/4" DIA)	25 MM DIA (1" DIA)	32 MM DIA (1¼ " DIA)
1	1.5	1/1.38	3.1	10	18	30
2	2.5	1/1.78	3.5	8	14	23
3	2.5	7/0.67	3.8	7	12	20
4	4	7/0.85	4.3	5	9	15
5	6	7/1.04	4.9	4	7	12
6	10	7/1.35	6.2	2	4	7
7	16	7/1.70	7.3	–	3	5
8	25	7/2.14	9.0	–	2	3
9	35	19/1.53	10.3	–	–	2

19. EACH CIRCUIT NORMAL OR EMERGENCY SHALL BE LAID IN A SEPARATE CONDUITS OF APPROPRIATE SIZE AS MENTIONED IN ABOVE TABLE.
20. ALL WIRING FOR CONTROLS SHALL BE CARRIED OUT WITH MULTI CORE PVC CABLES OF SPECIFIED REQUIRED VOLTAGE GRADE AND SIZES.
21. THE WIRING SHALL BE CONTINUOUS LOOPING–IN AND LOOPING –OUT TYPE AND NO JOINT IN WIRES SHALL BE ALLOWED.
22. THE WIRING SYSTEM SHALL BE CARRIED OUT ONLY AFTER THE CONDUIT SYSTEM IS COMPLETELY INSTALLED AND ALL OUTLET BOXES, ETC. ARE FIXED IN POSITION. ALL ROUGH EDGES OF CONDUITS / ACCESSORIES SHALL BE SMOOTH BEFORE WIRING.
23. MOUNTING HEIGHTS OF ELECTRICAL FITTINGS WHEN MEASURED FROM FINISHED FLOOR LEVEL (F.F.L.) TO THE BOTTOM OF FITTINGS SHALL BE AS UNDER, UNLESS OTHERWISE SHOWN OR INSTRUCTED.

DISTRIBUTION BOARD/ISOLATED POWER PANEL	1200mm
ON/OFF PUSH BUTTON	1200mm
LIGHT CONTROL SWITCH (ONE WAY/TWO WAY)	1200mm
15A/16A/20A/GROUNDING JACK MODULES	250mm / REFER ARCH. DRAWINGS.
OUTLETS	
EXHAUST FAN	REFER ARCH DWG.
TELECOM OUTLET	250 mm
TELECOM OUTLET FOR WIRELESS ACCESS POINT	2400 mm
TV OUTLET	250 mm



EARTH ELECTRODE (ROD TYPE)
N.T.S.



EARTH ELECTRODE (PLATE TYPE)
N.T.S.

BIDDING DRAWING

03				DRAWN	TM
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00	APRIL, 2026	ISSUED FOR BIDDING		CHD./VER.	AMS
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CLIENT
PAKISTAN ENGINEERING COUNCIL

CONSULTANT
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
ARCHITECTURE & PLANNING DIVISION KARACHI.
4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi,
Tel: 99225430–34

PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.
ELECTRICAL LEGEND AND GENERAL NOTES

SCALE
N.T.S

DATE.
APRIL, 2026

DRAWING No.
5043/08/TD/ E001

REV.
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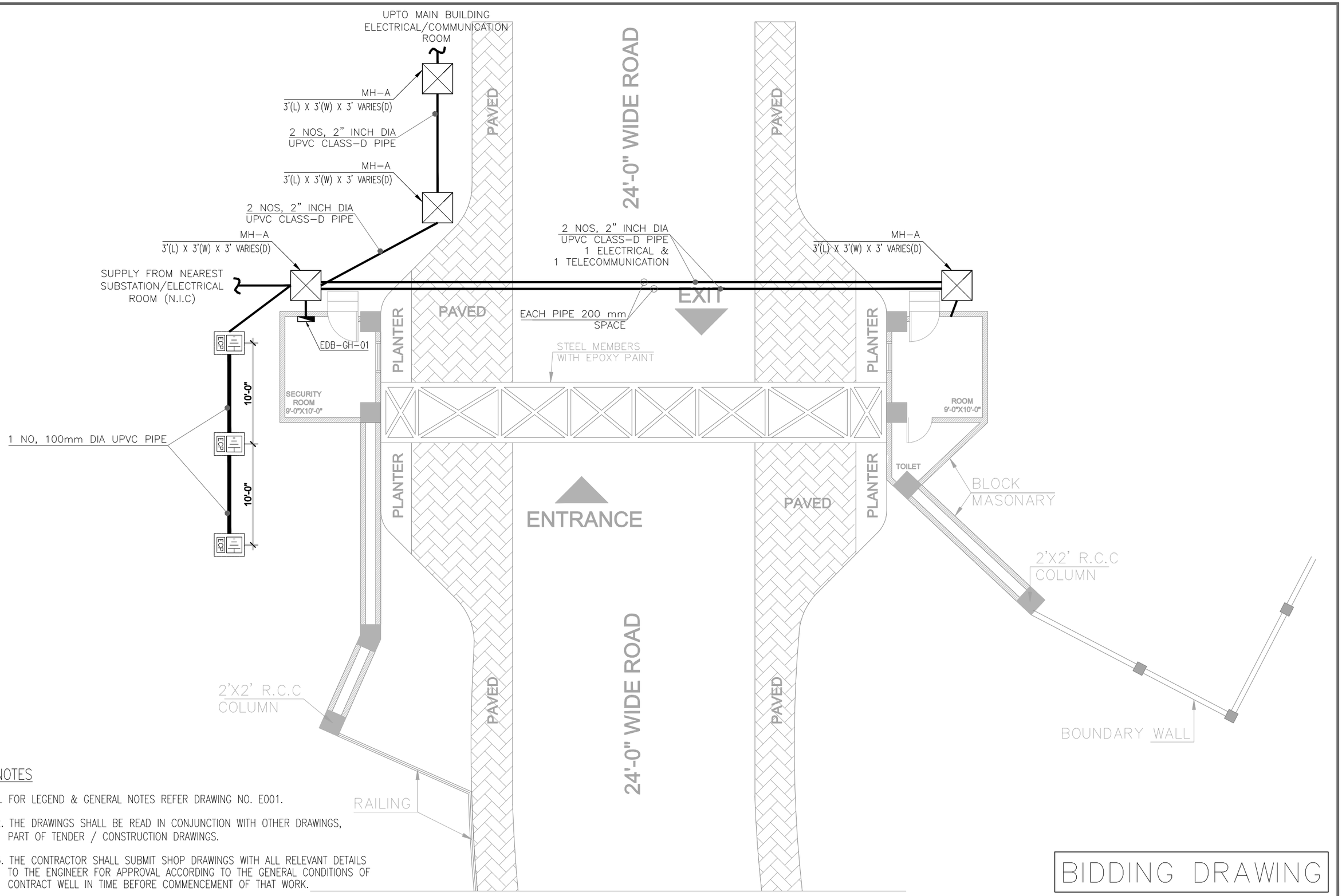
Z:\GATE HOUSE\PEC GATE HOUSE 18.03.2026_TM 15–04–2026.DWG
3/32"=1'–0" SHEET SIZE: A2



NOTES

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2. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER DRAWINGS, PART OF TENDER / CONSTRUCTION DRAWINGS.
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BIDDING DRAWING

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				APPROVED	AMS

PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.
GATE HOUSE - 1
ELECTRICAL PANELS, RACEWAYS & EARTHING LAYOUT

SCALE: N.T.S

DATE: APRIL, 2026

DRAWING No.: **5043/08/TD/ E002**

REV.: 0

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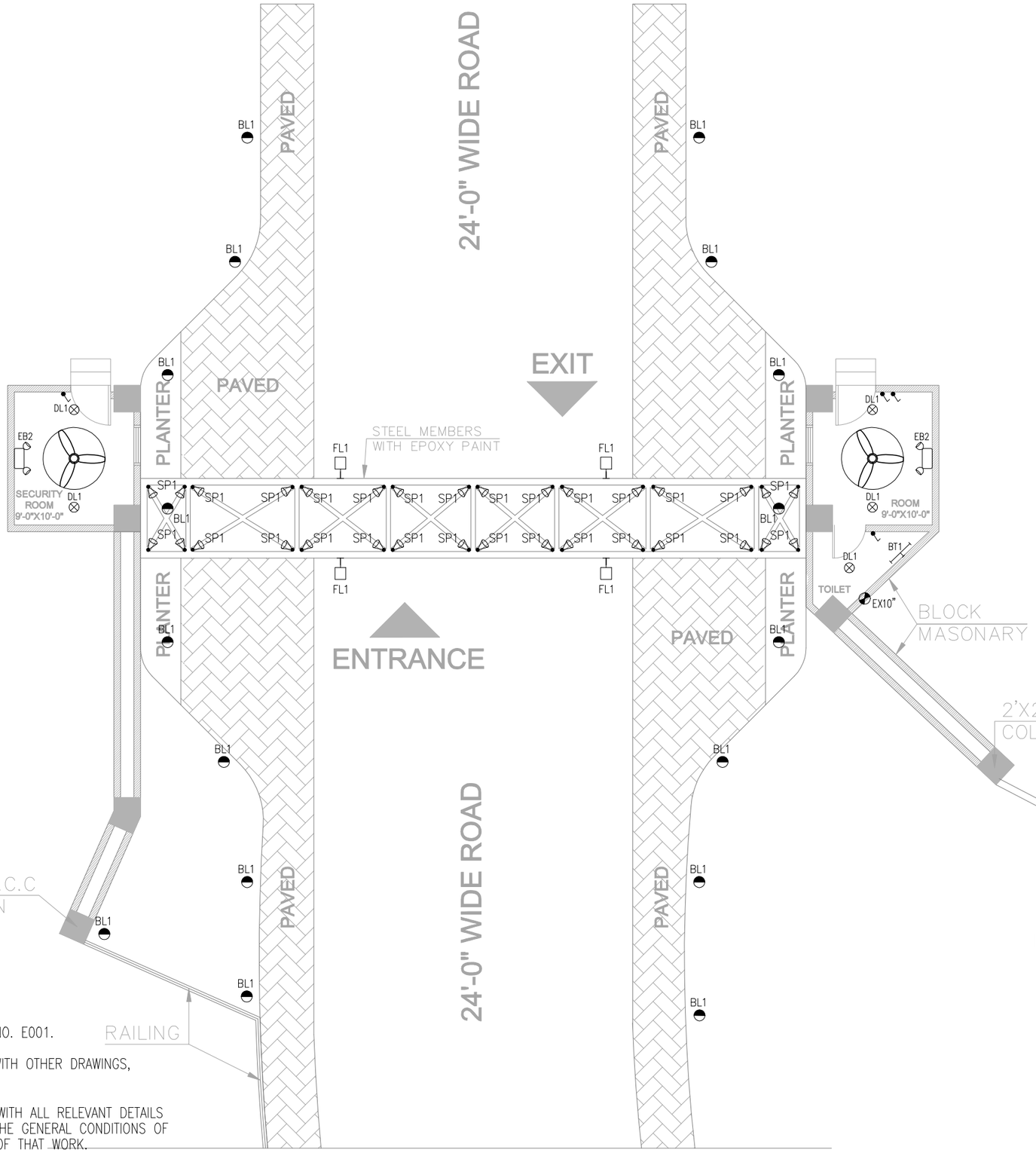

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BIDDING DRAWING

CLIENT	CONSULTANT			PROJECT	TITLE.
PAKISTAN ENGINEERING COUNCIL	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ARCHITECTURE & PLANNING DIVISION KARACHI. 4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi, Tel: 99225430-34			ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I	GATE HOUSE - 1 GROUND FLOOR LIGHTING LAYOUT

REV.	DATE	DESCRIPTION	APPROVED		
03				DRAWN	TM
02				SUBMITTED	SA
01				RECOMMENDED	SA
00	APRIL, 2026	ISSUED FOR BIDDING		CHD./VER.	AMS
				APPROVED	AMS

SCALE	DATE	DRAWING No.	REV.
N.T.S	APRIL, 2026	5043/08/TD/ E003	0

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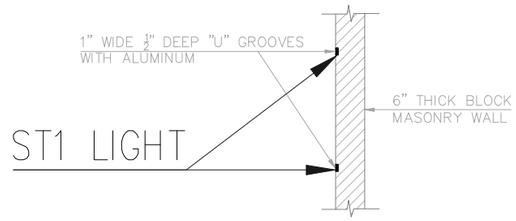
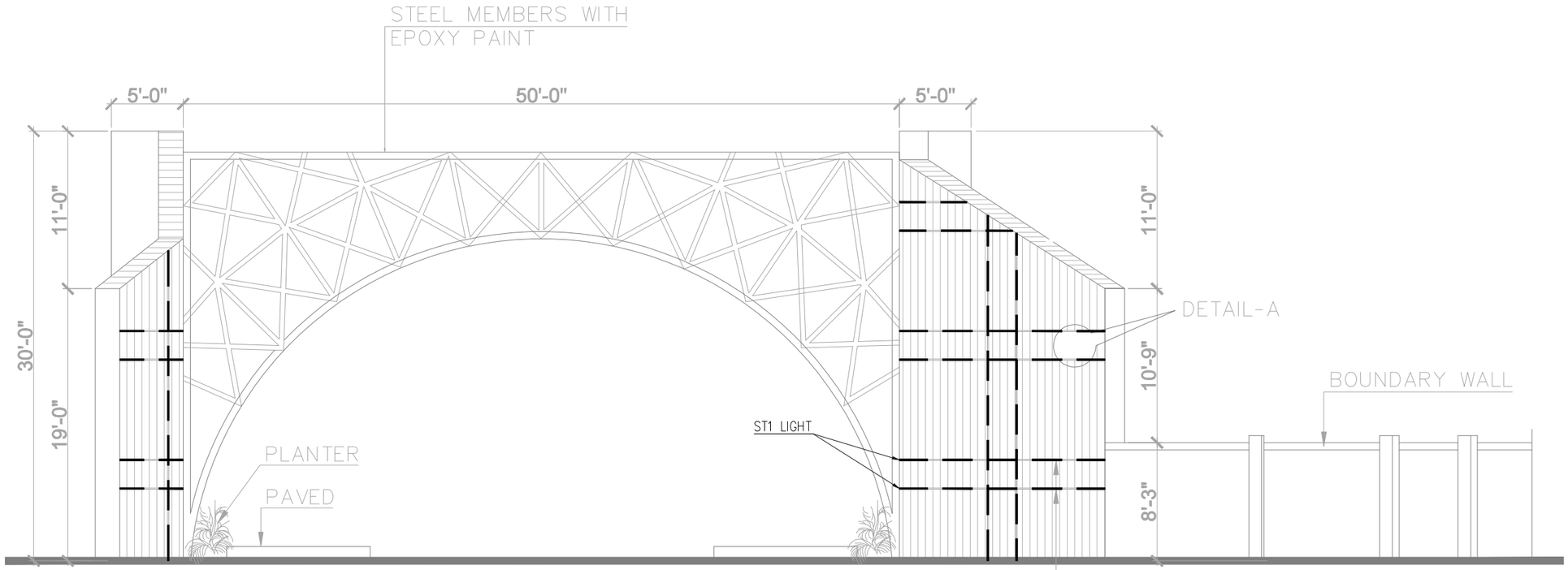


DETAIL-A



GATE HOUSE 1 FRONT ELEVATION

NOTES

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BIDDING DRAWING

CLIENT: PAKISTAN ENGINEERING COUNCIL	CONSULTANT: NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ARCHITECTURE & PLANNING DIVISION KARACHI. 4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi, Tel: 99225430-34	PROJECT: ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I	TITLE: GATE HOUSE - 1 FRONT ELEVATION LIGHTING LAYOUT	SCALE: N.T.S	
			DATE: APRIL, 2026	DRAWING No.: 5043/08/TD/ E004	REV.: 0

REV.	DATE	DESCRIPTION	APPROVED		
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02				SUBMITTED	SA
01				RECOMMENDED	SA
00	APRIL, 2026	ISSUED FOR BIDDING		CHD./VER.	AMS
				APPROVED	AMS

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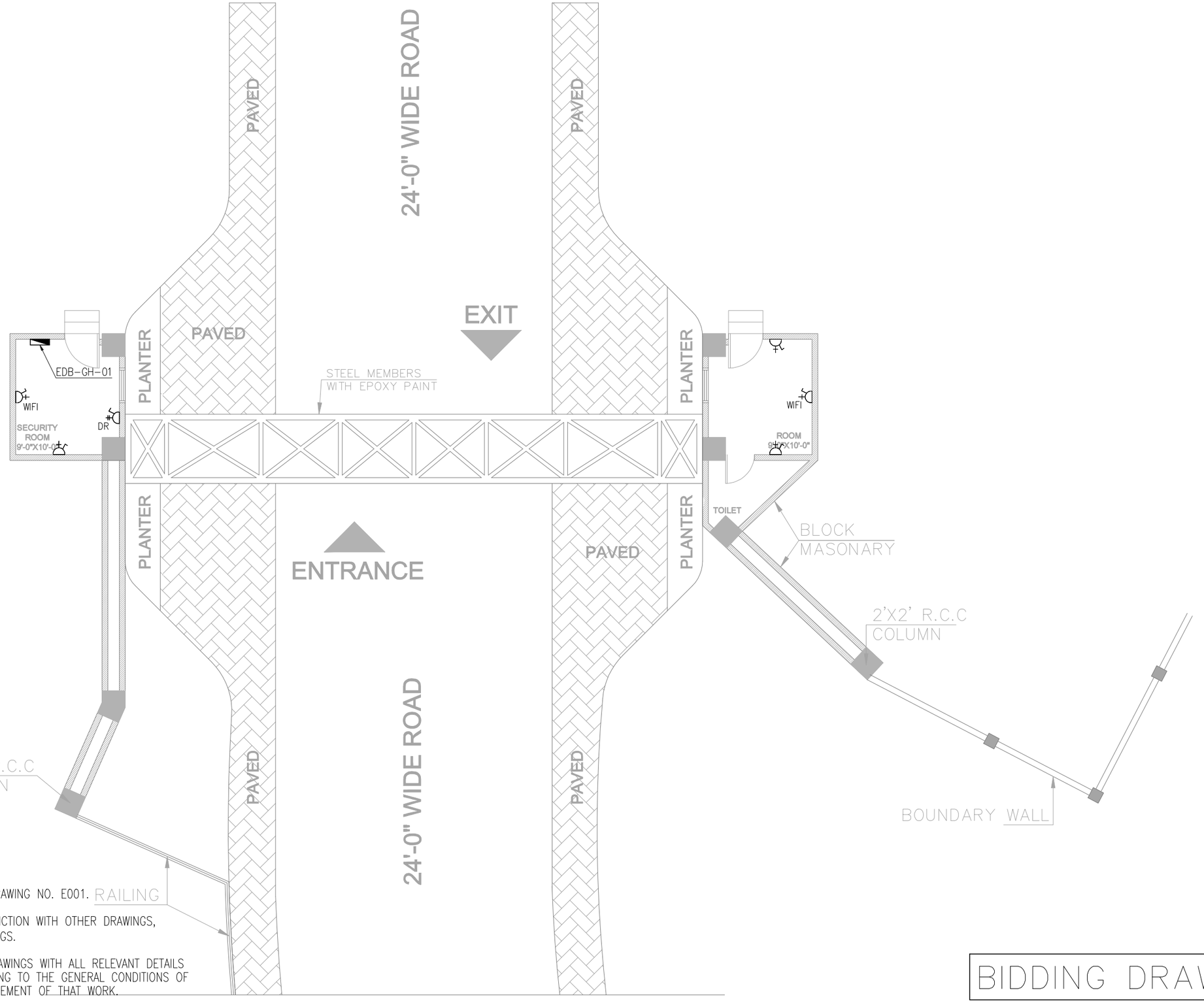

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ARCHITECTURE & PLANNING DIVISION KARACHI.
4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi,
Tel: 99225430-34

REV.	DATE	DESCRIPTION	APPROVED
03			
02			
01			
00	APRIL, 2026	ISSUED FOR BIDDING	

DRAWN	TM
SUBMITTED	SA
RECOMMENDED	SA
CHD./VER.	AMS
APPROVED	AMS

PROJECT

ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.

GATE HOUSE - 1
GROUND FLOOR POWER LAYOUT

SCALE: N.T.S

DATE: APRIL, 2026

DRAWING No.: **5043/08/TD/E005**

REV.: 0

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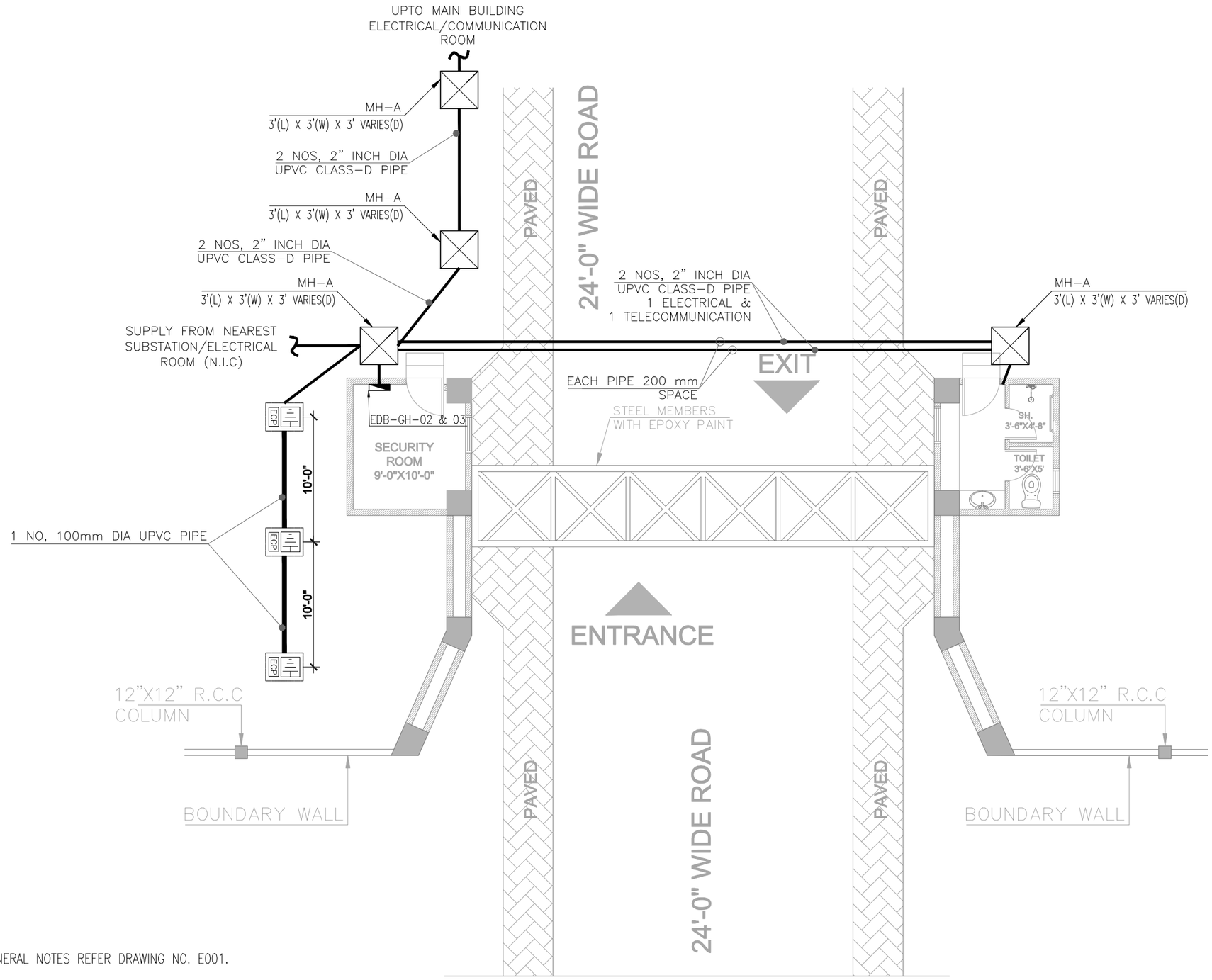

NOTES

1. FOR LEGEND & GENERAL NOTES REFER DRAWING NO. E001.
2. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER DRAWINGS, PART OF TENDER / CONSTRUCTION DRAWINGS.
3. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH ALL RELEVANT DETAILS TO THE ENGINEER FOR APPROVAL ACCORDING TO THE GENERAL CONDITIONS OF CONTRACT WELL IN TIME BEFORE COMMENCEMENT OF THAT WORK.

GATE HOUSE-2 & 3 GROUND FLOOR

BIDDING DRAWING

CLIENT
PAKISTAN ENGINEERING COUNCIL

CONSULTANT
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
ARCHITECTURE & PLANNING DIVISION KARACHI.
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PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.
GATE HOUSE - 2 & 3 ELECTRICAL PANELS, RACEWAYS & EARTHING LAYOUT

SCALE: N.T.S

DATE: APRIL, 2026

DRAWING No.: **5043/08/TD/ E006**

REV.: 0

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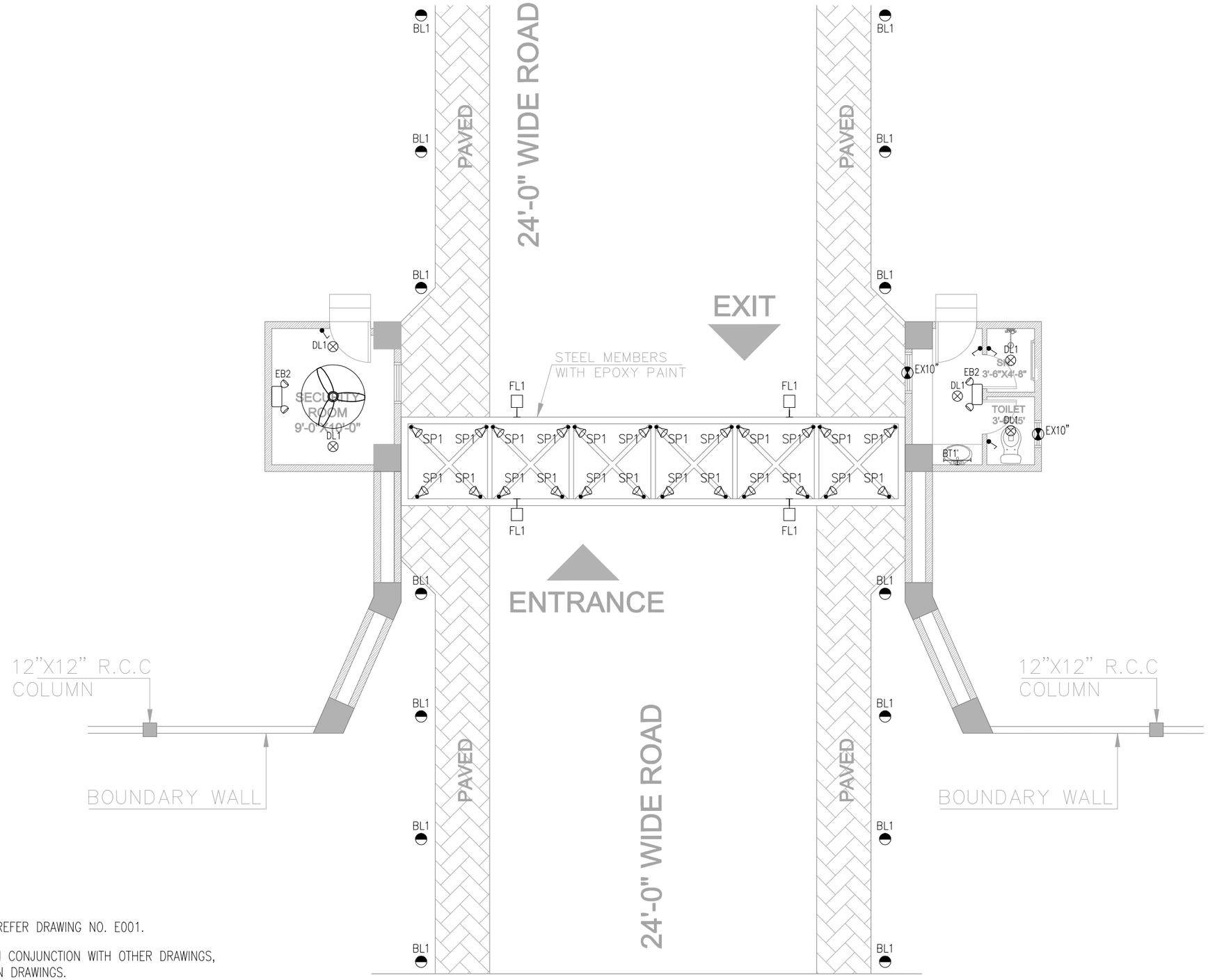

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GATE HOUSE-2 & 3

BIDDING DRAWING

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PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.
GATE HOUSE - 2 & 3
GROUND FLOOR LIGHTING LAYOUT

SCALE: N.T.S

DATE.: APRIL, 2026

DRAWING No.: **5043/08/TD/ E007**

REV.: 0

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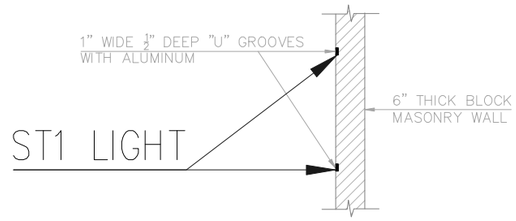
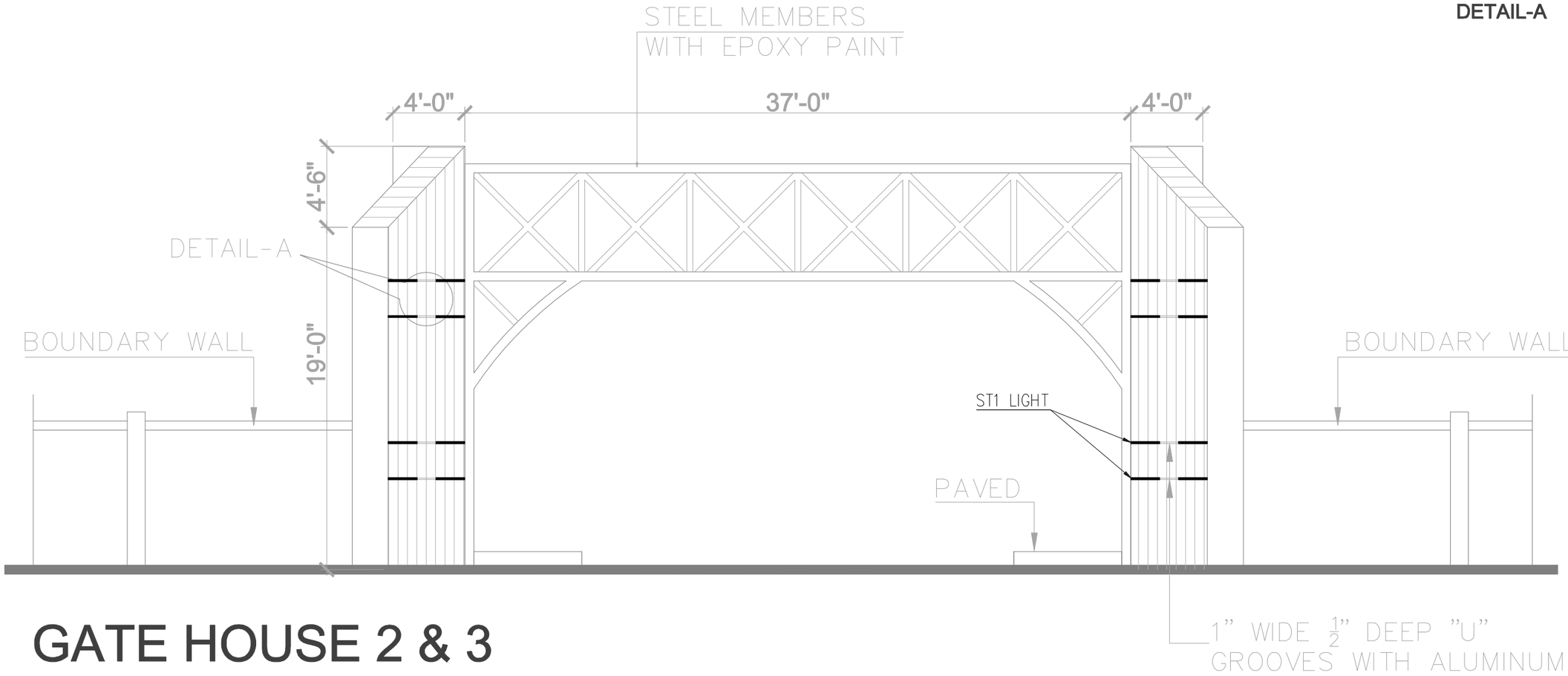


DETAIL-A



GATE HOUSE 2 & 3
FRONT ELEVATION

NOTES

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BIDDING DRAWING

CLIENT: **PAKISTAN ENGINEERING COUNCIL**	CONSULTANT: **NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.** ARCHITECTURE & PLANNING DIVISION KARACHI. 4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi, Tel: 99225430-34	PROJECT: **ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I**	TITLE: **GATE HOUSE - 2 & 3 FRONT ELEVATION LIGHTING LAYOUT**	SCALE: N.T.S	
			DATE: APRIL, 2026	DRAWING No.: **5043/08/TD/ E008**	REV.: 0

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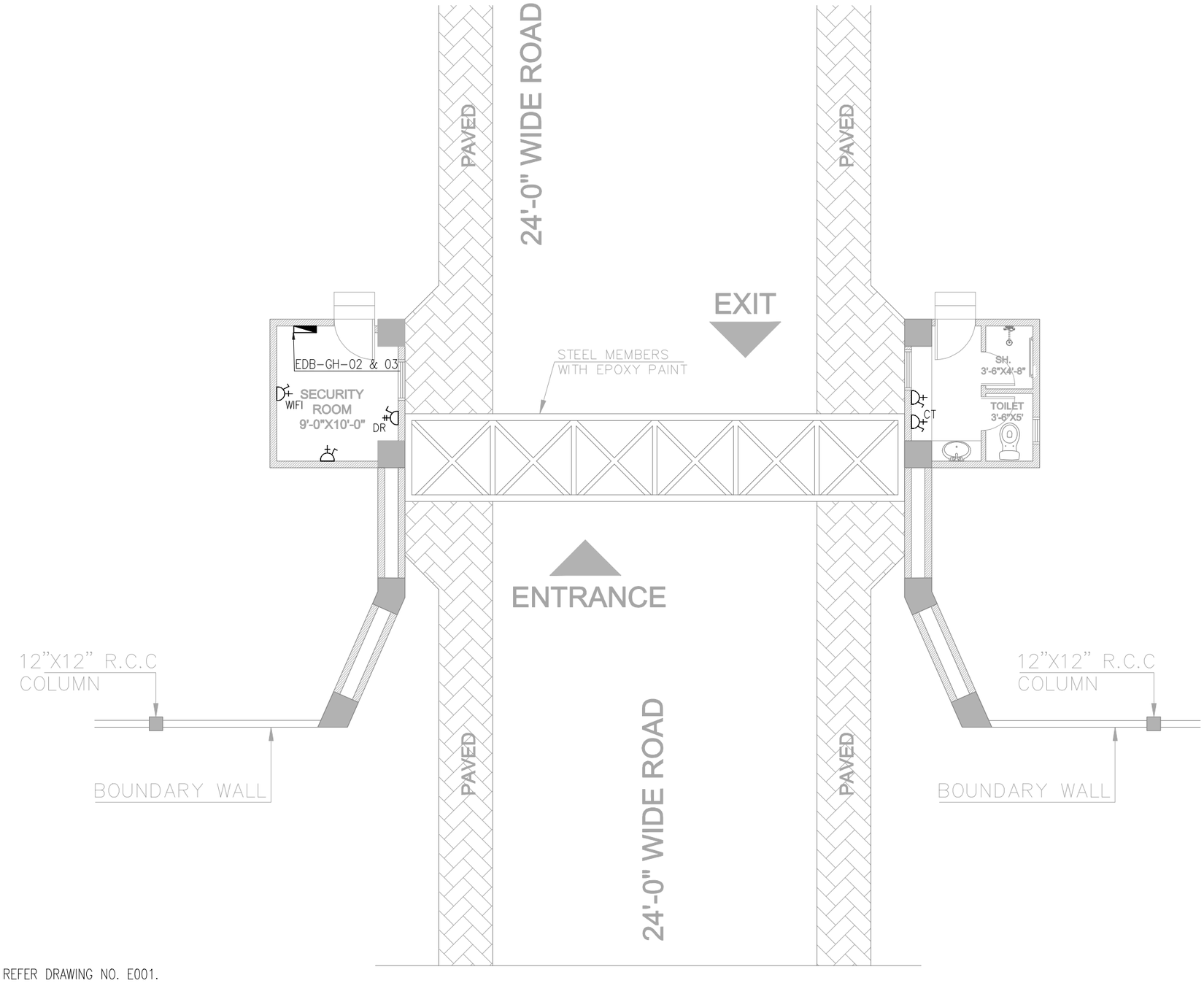

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GATE HOUSE-2 & 3
GROUND FLOOR

BIDDING DRAWING

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REV.	DATE	DESCRIPTION	APPROVED	APPROVED	AMS

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PAKISTAN ENGINEERING COUNCIL

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PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.
GATE HOUSE - 2 & 3
GROUND FLOOR POWER LAYOUT

SCALE: N.T.S

DATE.: APRIL, 2026

DRAWING No.: **5043/08/TD/ E009**

REV.: 0

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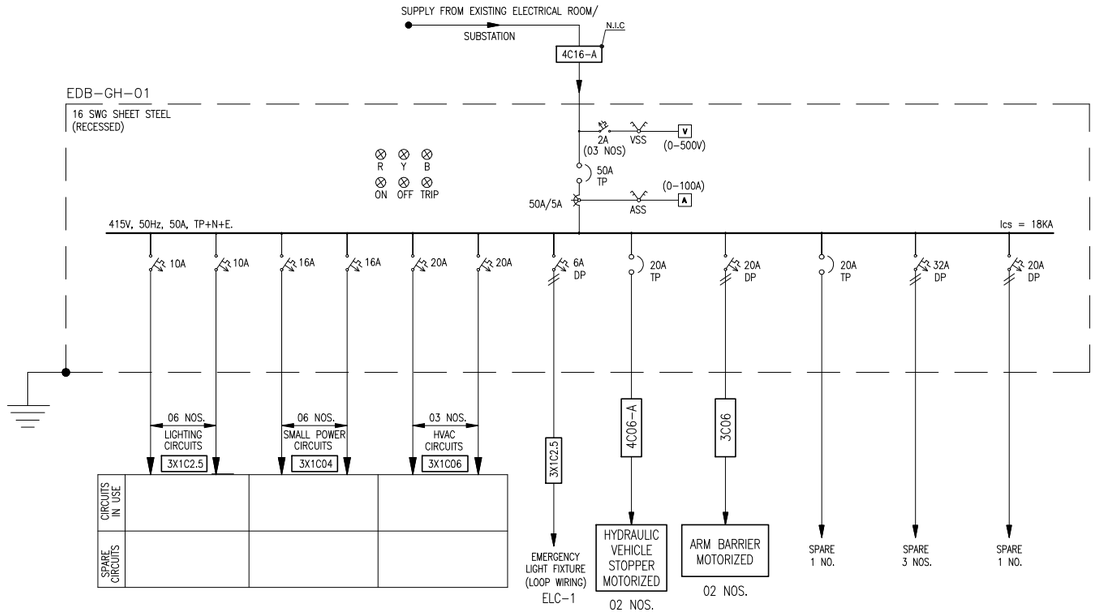

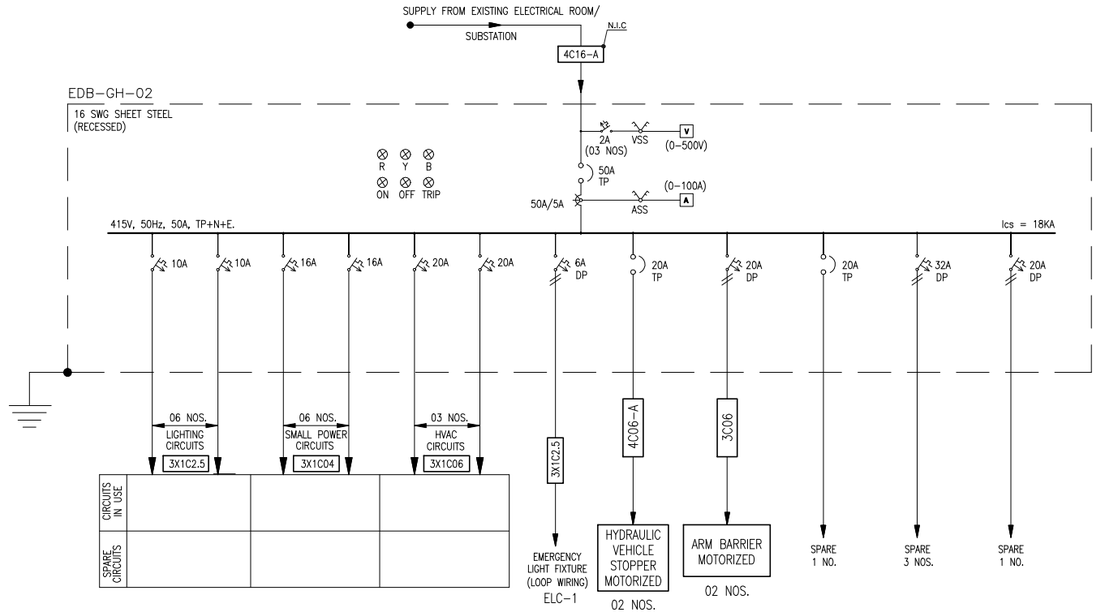

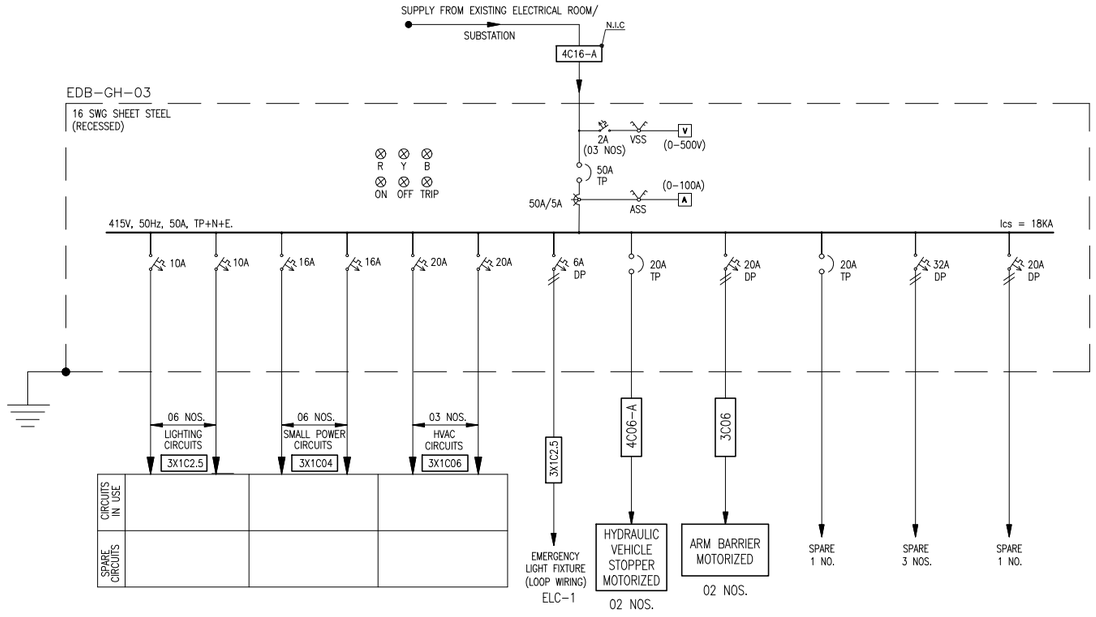

BIDDING DRAWING

* N.I.C = NOT IN CONTRACT

CABLE SCHEDULE

SYMBOL	DESCRIPTION
4C16-A	4 CORE 16 mm² CU/PVC/PVC 0.6/1KV CABLE + 1 CORE 16 mm² CU/PVC AS ECC
4C10-A	4 CORE 10 mm² CU/PVC/PVC 0.6/1KV CABLE + 1 CORE 10 mm² CU/PVC AS ECC
4C06-A	4 CORE 06 mm² CU/PVC/PVC 0.6/1KV CABLE + 1 CORE 06 mm² CU/PVC AS ECC
3C06	3 CORE 06 mm² CU/PVC/PVC 0.6/1KV CABLE
3X1C06	3 NOS. 1 CORE 06 mm² CU/PVC 300/500 V WIRING AS LIVE+NETUTRAL+ECC
3X1C04	3 NOS. 1 CORE 04 mm² CU/PVC 300/500 V WIRING AS LIVE+NETUTRAL+ECC
3X1C2.5	3 NOS. 1 CORE 2.5 mm² CU/PVC 300/500 V WIRING AS LIVE+NETUTRAL+ECC

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PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.
SINGLE LINE DIAGRAM & DB's DETAIL

SCALE
N.T.S

DATE.
APRIL, 2026

DRAWING No.
5043/08/TD/ E010

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COMMUNICATION

GENERAL NOTES:

1- CO-ORDINATE AT SITE WITH OTHER SERVICES FOR EXACT LOCATION AND POSITION OF CONDUITS AND COMMUNICATION EQUIPMENT/DEVICES.

2- ALL COMMUNICATION DRAWINGS SHALL BE READ IN CONJUNCTION WITH SPECIFICATIONS, BOQ, ARCHITECTURE, ELECTRICAL, STRUCTURE, HVAC, PLUMBING DRAWINGS AND ALL OTHER RELEVANT DETAILS.

3- DIMENSIONS/MEASUREMENTS GIVEN IN LAYOUTS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE TO CALCULATE ACTUAL DIMENSIONS/MEASUREMENTS ACCORDING TO STRUCTURE AND ARCHITECTURE DRAWINGS.

4- THE ROUTES OF EXTERNAL CABLE AND PIPES SHALL BE FOLLOWED AS SHOWN ON THE DRAWING, ANY CHANGE IN ROUTES REQUIRED DUE TO SITE CONDITIONS SHALL BE MADE IN CO-ORDINATION WITH OTHER SERVICES, AFTER OBTAINING ENGINEER'S APPROVAL

5- WHERE CABLES ENTER BUILDINGS, THESE SHALL BE LAID IN PROTECTIVE PIPES. HAND HOLE SHALL BE PROVIDED OUTSIDE THE BUILDING.

6- ALL UNDERGROUND PIPES SHALL BE LAID MINIMUM 1.5 FEET BELOW THE TOP OF PAVEMENT THE DEPTH MAY BE INCREASED / DECREASED DUE TO THE SITE CONDITIONS AFTER OBTAINING ENGINEERS APPROVAL

7- ALL UNDERGROUND PIPES, MAN HOLES & HANDHOLES SHALL BE PROPERLY SEALED WATER TIGHT AT ENDS/JOINTS AFTER INSTALLATION.

8- SPARE PIPES SHALL HAVE THEIR ENDS PROPERLY PLUGGED WITH CAP AND MADE WATER TIGHT. BOTH ENDS OF PIPES SHALL BE MARKED BY PIPE END MARKERS FOR IDENTIFICATION.

9- CABLE MARKERS SHALL BE PROVIDED AT 30 METER INTERVALS ALONG STRAIGHT RUNS OF CABLE DUCT / ROUTE AND AT EACH BEND.

10- ALL ROUTING OF PIPES, PIPE DUCTS & CONNECTION DETAILS SHALL BE CARRIED OUT WITH THE APPROVAL OF THE ENGINEER.

11- MANUFACTURER'S RECOMMENDATION SHALL BE FOLLOWED FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF ALL COMMUNICATION SYSTEMS.

12- THE CONTRACTOR SHALL TAKE THE RESPONSIBILITIES OF GENERAL INTEGRATOR FOR ALL THE SUB-SYSTEMS AND EQUIPMENT WITHIN THE SCOPE OF WORK INCLUDING INTERFACES WITH OTHER SYSTEMS.

13- ALL COMMUNICATION SYSTEMS SHALL BE FED FROM UNINTERRUPTED POWER SUPPLY (UPS).

14- CONDUIT SHALL BE SIZED ACCORDING TO CLAUSE 4.4.2.4 OF EIA/TIA 569 STANDARD AS GIVEN BELOW.

CONDUIT TRADE SIZE		CONDUIT SIZING MAX.NUMBER OF CABLES BASED UPON ALLOWABLE FILL								
		CABLE OUTSIDE DIAMETER,mm (in)								
		3.3	4.6	5.6	6.1	7.4	7.9	9.4	13.5	15.8	17.8
mm.	inch	(.13)	(.18)	(.22)	(.24)	(.29)	(.31)	(.37)	(.53)	(.62)	(.70)
21	(3/4)	6	5	4	3	2	2	1	0	0	0
27	(1)	8	8	7	6	3	3	2	1	0	0
35	(1 1/4)	16	14	12	10	6	4	3	1	1	1
41	(1 1/2)	20	18	16	15	7	6	4	2	1	1
53	(2)	30	26	22	20	14	12	7	4	3	2
63	(2 1/2)	45	40	36	30	17	14	12	6	3	3
78	(3)	70	60	50	40	20	20	17	7	6	6
91	(3 1/2)	—	—	—	—	—	—	22	12	7	6
103	(4)	—	—	—	—	—	—	30	14	12	7

15- EN 50174-2 RECOMMENDATIONS SHALL BE FOLLOWED FOR SEPARATION DISTANCE BETWEEN POWER AND VOICE/LAN NETWORK CABLES IN GIVEN BELOW TABLE.

TYPE OF INSTALLATION	MINIMUM SEPERATION DISTANCE (mm.)		
	WITHOUT METALLIC DIVIDER	WITH METALLIC DIVIDER	WITH STEEL DIVIDER
UNSCREENED POWER CABLE AND UNSCREENED COMMUNICATION CABLE	200	100	50
UNSCREENED POWER CABLE AND SCREENED COMMUNICATION CABLE	50	20	5

16- MOUNTING HEIGHT OF FOLLOWING DEVICES SHALL BE INSTALLED AT THE INDICATED HEIGHT FROM FINISHED FLOOR LEVEL (F.F.L) TO THE BOTTOM OF DEVICE UNLESS OTHERWISE MENTIONED OR INSTRUCTED:

- TELECOMMUNICATION OUTLET FOR TELEPHONE/DATA------ 10 INCH/AS PER SITE
- TELECOMMUNICATION OUTLET FOR WIFI---------- 87 INCH/AS PER SITE
- TELECOMMUNICATION OUTLET FOR ACCESS DOOR---------- 87 INCH/AS PER SITE
- FLOOR DISTRIBUTOR---------- 56 INCH
- BUILDING DISTRIBUTOR---------- FLOOR STANDING/56 INCH
- MAIN DISTRIBUTION FRAME---------- 56 INCH
- ADDRESSABLE FIRE ALARM CONTROL PANEL---------- 56 INCH
- ADDRESSABLE CONTROL/MONITOR MODULE---------- 87 INCH/AS PER SITE
- ADDRESSABLE MANUAL CALL POINT ---------- 56 INCH
- ADDRESSABLE SOUNDER---------- 87 INCH
- IP CAMERA---------- 95 INCH / AS PER SITE
- MICRO PHONE SOCKET OUTLET---------- 10 INCH
- HORN SPEAKER---------- 95 INCH / AS PER SITE
- DOOR CONTROLLER ---------- 87 INCH / ABOVE DOOR
- CARD READER/EXIT PUSH BUTTON---------- 56 INCH
- TV OUTLET---------- 56 INCH

17- COLOUR, SHAPE & MOUNTING HEIGHT OF FACE PLATE OF TELECOM SOCKET OUTLETS SHALL MATCH WITH ELECTRICAL SOCKET OUTLET

18- DETECTORS SHALL BE INSTALLED 1 FEET AWAY FROM ANY PART OF ANY LIGHT FIXTURE AND 3 FEET AWAY FROM DIFFUSER OF HVAC SYSTEM.

19- WHERE MANUAL CALL POINT AND SOUNDER ARE SHOWN SIDE, BY SIDE THEY SHALL BE INSTALLED IN SAME VERTICAL LINE.

20- CONTRACTOR SHALL SUBMIT CO-ORDINATION DRAWING SHOWING MOUNTING DETAIL AND HEIGHT OF EACH COMMUNICATION FIXTURE IN PROPER CO-ORDINATION WITH LIGHTS, FANS ETC. AND OTHER RELEVANT ITEMS.

21- AT LEAST 30 DAYS OF RECORDING CAPACITY SHALL BE PROVIDED FOR ALL CCTV CAMERAS WITH 25% EXPANSION CAPACITY.

22- ALL COMMUNICATION RACKS SHALL BE FED FROM UNINTERRUPTED POWER SUPPLY (UPS) TO AVERT ANY INTERRUPTION IN SECURITY SYSTEM.

23- CONTRACTOR SHALL SUBMIT SOUND PRESSURE LEVEL (SPL) CALCULATION OF SPEAKERS ON THE LAYOUT DRAWINGS FOR REVIEW AND APPROVAL OF ENGINEER.

24- CONTRACTOR SHALL CO-ORDINATE WITH THE CLIENT FOR EXACT LOCATION OF ACCESS CONTROL SYSTEM AT ENTRANCE OF THE BASEMENT.

25- CONTRACTOR SHALL SUBMIT CO-ORDINATION SHOP DRAWING OF COMMUNICATION LAYOUT WITH POWER LAYOUT BEFORE EXECUTION OF WORKS.

26- CONTRACTOR SHALL CO-ORDINATE WITH HVAC LAYOUT FOR PLACEMENT OF RACKS IN COMMUNICATION EQUIPMENT ROOM.

27- CONTRACTOR TO PROPOSE/SHOW CABLE TRAY IN SHOP DRAWING AS PER NEED IN EACH FLOOR.

LEGEND:

STRUCTURED CABLING NETWORK

- V1 — ONE GANG ONE PORT RJ45 CAT7 S/FTP TELECOMMUNICATION OUTLET FOR TELEPHONE, FLUSHED IN WALL/SURFACE MOUNTED
- V2 — TWO GANG TWO PORT RJ45 CAT7 S/FTP TELECOMMUNICATION OUTLET FOR TELEPHONE, FLUSHED IN WALL/SURFACE MOUNTED
- ST1 — ONE GANG ONE PORT RJ45 CAT7 S/FTP TELECOMMUNICATION OUTLET FOR STENO, FLUSHED IN WALL/SURFACE MOUNTED
- D1 — ONE GANG ONE PORT RJ45 CAT7 S/FTP TELECOMMUNICATION OUTLET FOR DATA, FLUSHED IN WALL/SURFACE MOUNTED
- D2 — TWO GANG TWO PORT RJ45 CAT7 S/FTP TELECOMMUNICATION OUTLET FOR DATA, INSTALLED IN WALL/SURFACE MOUNTED
- D/V2 — TWO GANG TWO PORT RJ45 CAT 7 S/FTP TELECOMMUNICATION OUTLET ONE FOR DATA & ONE FOR VOICE INSTALLED IN WALL/SURFACE MOUNTED
- V1 / D1 FB/TB — TELECOMMUNICATION OUTLET FOR DATA & TELEPHONE, INSTALLED IN FLOOR BOX/ TECHNOLOGY BOX
- D1 WIFI — ONE GANG ONE PORT RJ45 CAT7 S/FTP TELECOMMUNICATION OUTLET FOR WIFI, FLUSHED IN WALL/SURFACE MOUNTED
- D1 TV — ONE PORT RJ45 CAT7 S/FTP TELECOMMUNICATION OUTLET FOR IPTV, INSTALLED IN WALL/SURFACE MOUNTED
- DR / 42U — DATA RACK (AS SPECIFIED IN DRAWING & BOQ)
- MDF — MAIN DISTRIBUTION FRAME (MDF)
- IDF — INTERMEDIATE DISTRIBUTION FRAME (IDF)
- TJB — TELEPHONE JUNCTION BOX

ADDRESSABLE FIRE ALARM SYSTEM

- SH — INTELLIGENT ADDRESSABLE LOOP POWERED OPTICAL SMOKE & HEAT DETECTOR WITH BASE & BUILT-IN ISOLATOR.
- HD — INTELLIGENT ADDRESSABLE LOOP POWERED OPTICAL HEAT DETECTOR WITH BASE & BUILT-IN ISOLATOR.
- SD — INTELLIGENT ADDRESSABLE LOOP POWERED OPTICAL SMOKE DETECTOR WITH BASE & BUILT-IN ISOLATOR.
- UC SH — INTELLIGENT ADDRESSABLE LOOP POWERED SMOKE & HEAT DETECTOR WITH BASE & BUILT-IN ISOLATOR, ABOVE/UNDER FALSE CEILING/RAISED FLOOR.
- UC HD — INTELLIGENT ADDRESSABLE LOOP POWERED HEAT DTECTOR WITH BASE & BUILT-IN ISOLATOR, ABOVE/UNDER FALSE CEILING/RAISED FLOOR.
- M — ADDRESSABLE LOOP POWERED MANUAL CALL POINT WITH BASE & BUILT-IN ISOLATOR.
- ADDRESSABLE LOOP POWERED AUDIO VISUAL SOUNDER WITH BASE BUILT-IN ISOLATOR.
- MM — ADDRESSABLE LOOP POWERED MONITOR/INPUT MODULE
- CM — ADDRESSABLE LOOP POWERED CONTROL/OUTPUT MODULE
- FACP — INTELLIGENT ADDRESSABLE FIRE ALARM CONTROL PANEL WITH BACKUP BATTERIES, BATTERIES CHARGER & NETWORK CARD COMPLETE IN ALL RESPECT
- FARP — INTELLIGENT ADDRESSABLE FIRE ALARM REPEATOR PANES-L

CLOSED CIRCUIT TELEVISION SYSTEM (CCTV):

- IP COLOR CAMERA, DOME TYPE, CEILING MOUNTED
- IP COLOR CAMERA, BULLET TYPE, WALL MOUNTED
- IP65 — IP FIXED COLOR CAMERA, BULLET TYPE, WALL MOUNTED WITH WEATHER PROOF CANOPY WITH VIPER SYSTEM
- IP65 PTZ — IP COLOR CAMERA, PTZ DOME TYPE, WALL MOUNTED WITH WEATHER PROOF CANOPY WITH VIPER SYSTEM
- UNDER VEHICLE SURVEILLANCE CAMERA (UVSC)

ACCESS CONTROL SYSTEM

- PROXIMITY & BAR CODE MULTI READER
- EXIT PUSH BUTTON
- BM — BIOMETRIC SCAN DEVICE
- DC — SINGLE DOOR CONTROLLER

CABLE ANTENNA TV SYSTEM (CATV)

- TV SIGNAL SPLITTER
- TV SIGNAL TAPOFF
- TV AMPLIFIER
- TV OUTLET

CABLE SHEDULE

- 4C6ASFL — 4 PAIR CAT6A S/FTP LSZH CABLE
- 4C6AUL — 4 PAIR CAT6A UTP LSZH CABLE
- 4C6UL — 4 PAIR CAT6 UTP LSZH CABLE
- 25C5UL — 25 PAIR CAT5 UTP LSZH CABLE.
- 100C5UL — 100 PAIR CAT5 UTP LSZH CABLE
- 12FSUUL — 12 CORE FIBER OPTICS CABLE SINGLE MODE OUTDOOR TYPE WITH UNITUBE SHEATH HEAVY ARMOURED WITH PE JACKET
- 2C1.5CWZ — 2 CORE 1.5 Sq.mm (120 min) FIRE RESISTANT ENHANCED LSZH CABLE COMPLYING BS 5839, BS 6387, EN50200. BS 8434-2:2003 + A2:200 CABLE
- RG7 — RG-7 CO-AXIAL CABLE
- RG11 — RG-11 CO-AXIAL CABLE

BIDDING DRAWING

CLIENT	PAKISTAN ENGINEERING COUNCIL				
CONSULTANT	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.				
	ARCHITECTURE & PLANNING DIVISION KARACHI. 4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi, Tel: 99225430-34				
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PROJECT	ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I				
TITLE.	COMMUNICATION LEGEND AND GENERAL NOTES				
DATE.	APRIL, 2026				
DRAWING No.	5043/08/TD/ T001				
SCALE	N.T.S				
REV.	0				

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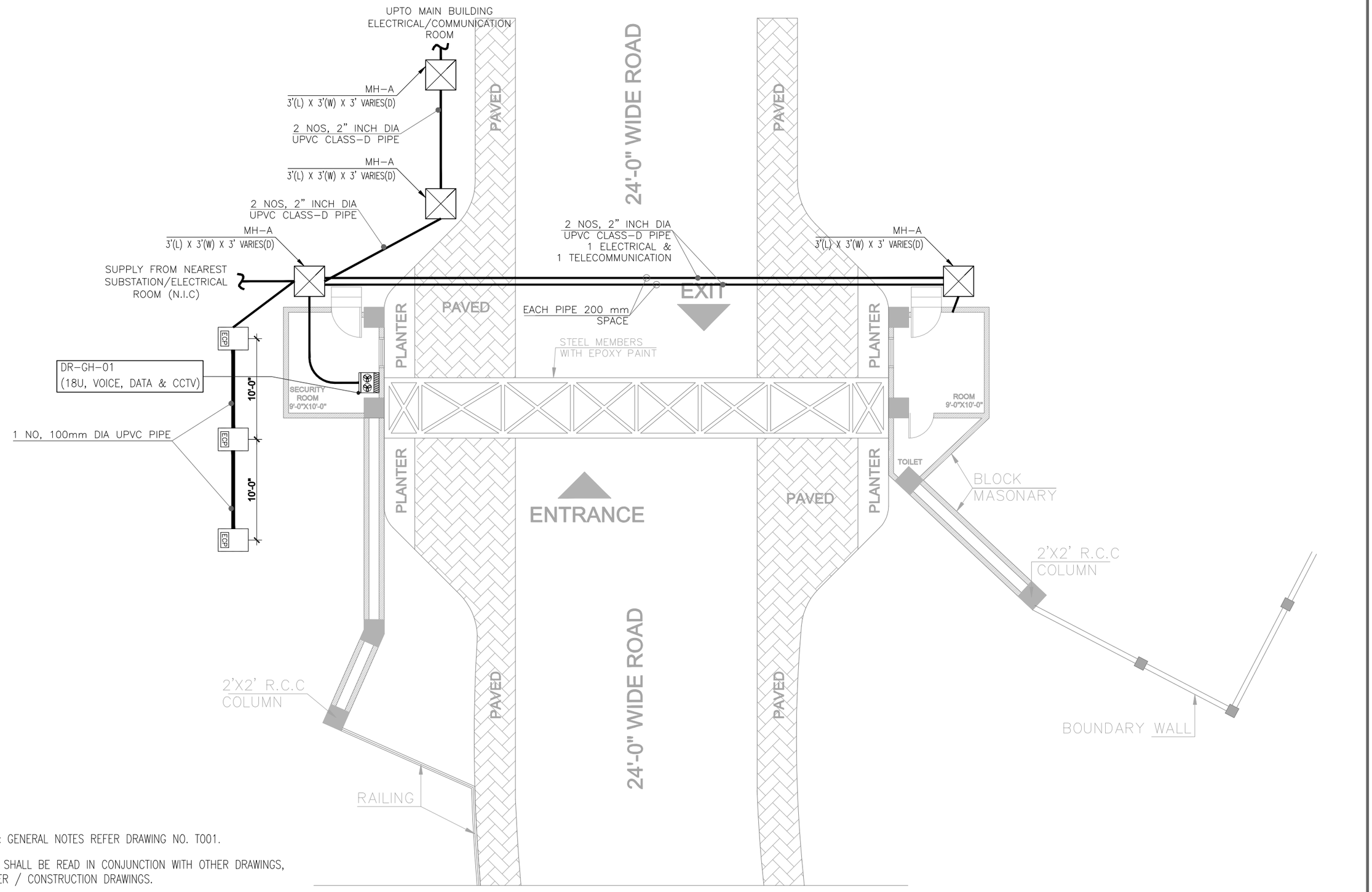

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BIDDING DRAWING

CLIENT: PAKISTAN ENGINEERING COUNCIL	CONSULTANT: NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ARCHITECTURE & PLANNING DIVISION KARACHI. 4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi, Tel: 99225430–34	PROJECT: ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I	TITLE: GATE HOUSE - 1 COMMUNICATION PANELS, RACEWAYS & EARTHING LAYOUT	SCALE: N.T.S	
			DATE: APRIL, 2026	DRAWING No.: 5043/08/TD/ T002	REV.: 0

REV.	DATE	DESCRIPTION	APPROVED		
03				DRAWN	TM
02				SUBMITTED	SA
01				RECOMMENDED	SA
00	APRIL, 2026	ISSUED FOR BIDDING		CHD./VER.	AMS
				APPROVED	AMS

Z:\GATE HOUSE\PEC GATE HOUSE 18.03.2026_TM 15–04–2026.DWG

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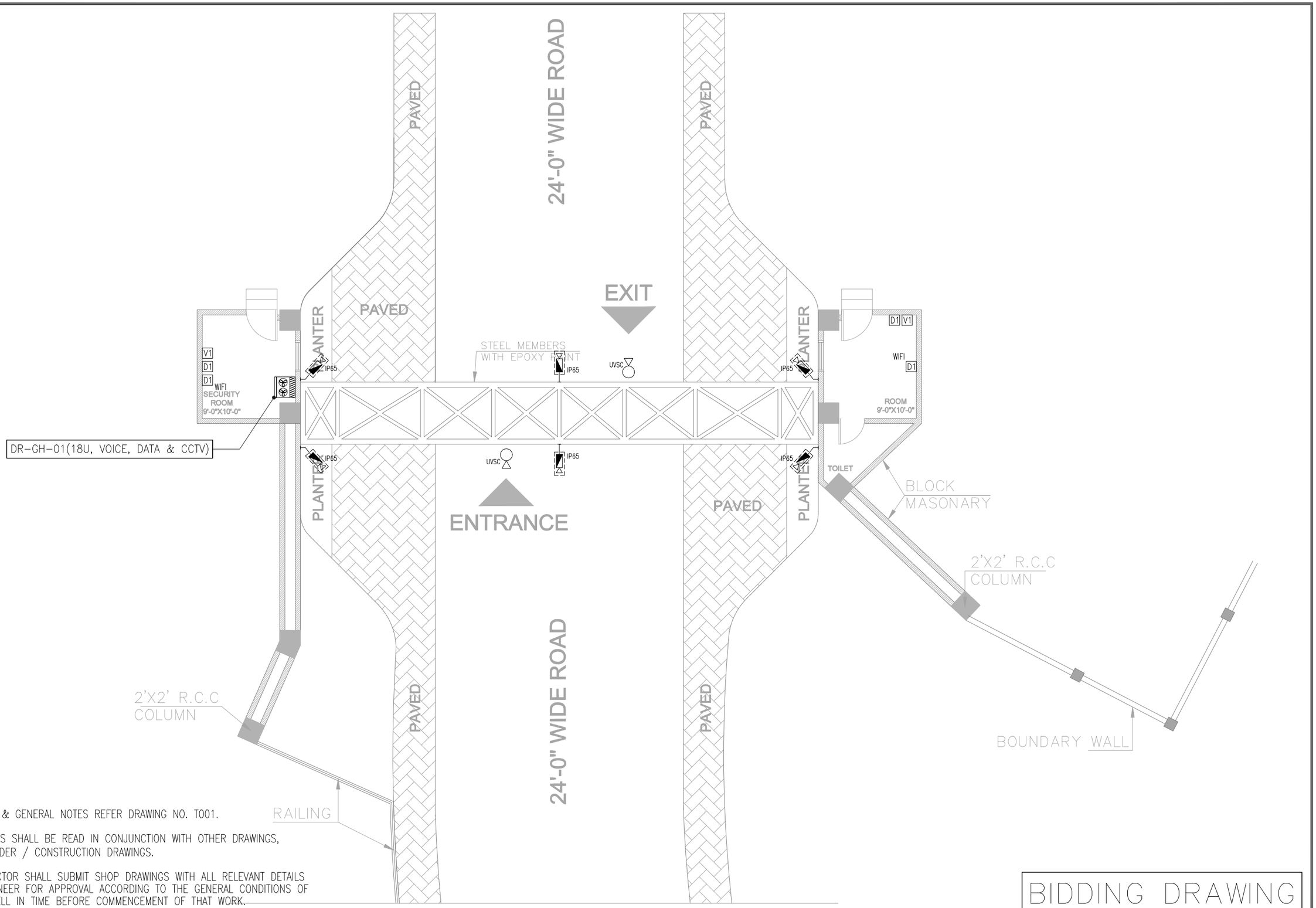

NOTES

1. FOR LEGEND & GENERAL NOTES REFER DRAWING NO. T001.
2. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER DRAWINGS, PART OF TENDER / CONSTRUCTION DRAWINGS.
3. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WITH ALL RELEVANT DETAILS TO THE ENGINEER FOR APPROVAL ACCORDING TO THE GENERAL CONDITIONS OF CONTRACT WELL IN TIME BEFORE COMMENCEMENT OF THAT WORK.

BIDDING DRAWING

CLIENT
PAKISTAN ENGINEERING COUNCIL

CONSULTANT
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
ARCHITECTURE & PLANNING DIVISION KARACHI.
4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi,
Tel: 99225430-34

REV.	DATE	DESCRIPTION	APPROVED		
03				DRAWN	TM
02				SUBMITTED	SA
01				RECOMMENDED	SA
00	APRIL, 2026	ISSUED FOR BIDDING		CHD./VER.	AMS
				APPROVED	AMS

PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.
GATE HOUSE - 1
GROUND FLOOR DATA, TELEPHONE & CCTV LAYOUT

SCALE
N.T.S

DATE.
APRIL, 2026

DRAWING No.
5043/08/TD/ T003

REV.
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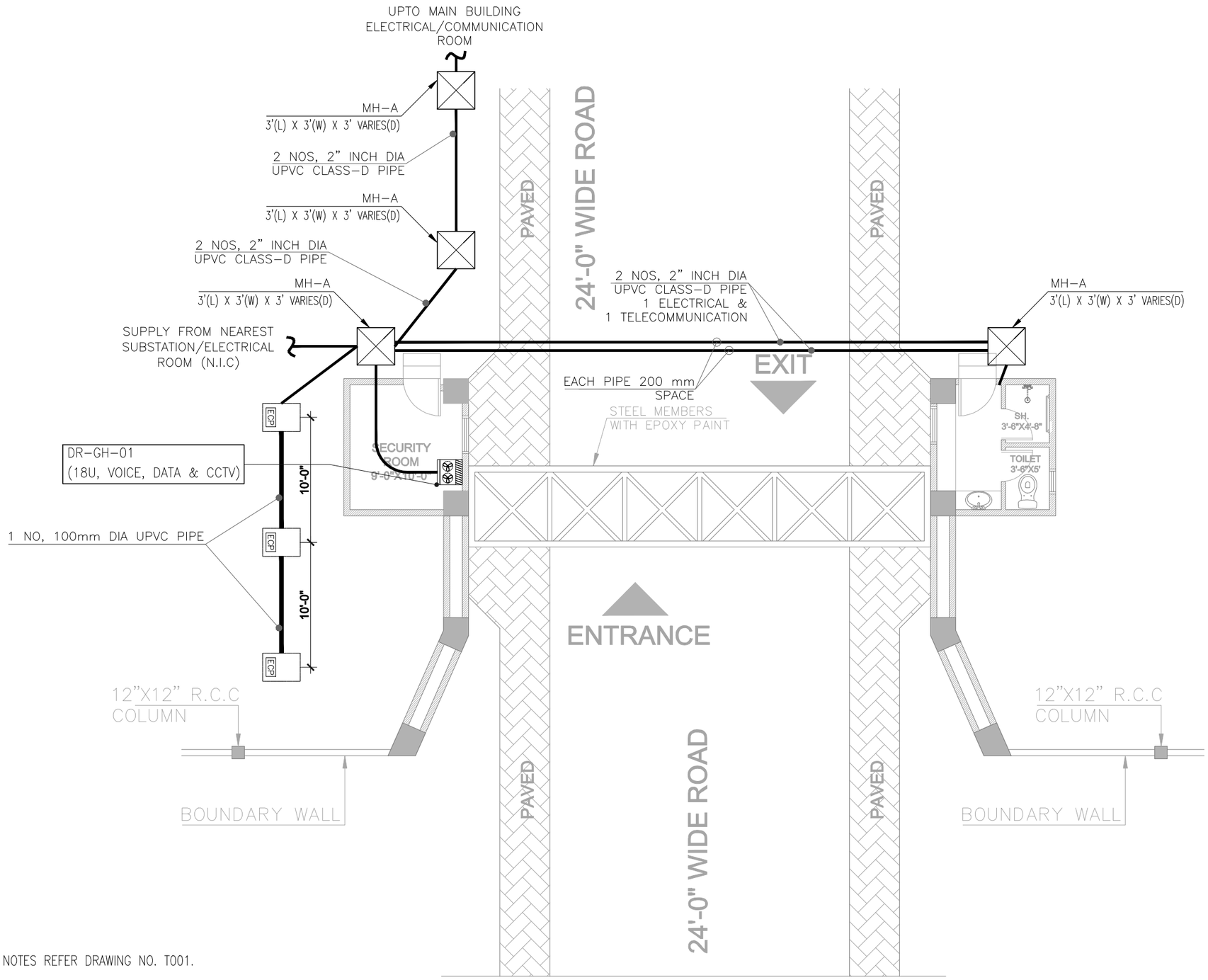

NOTES

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GATE HOUSE-2 & 3
GROUND FLOOR

BIDDING DRAWING

CLIENT
PAKISTAN ENGINEERING COUNCIL

CONSULTANT
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
ARCHITECTURE & PLANNING DIVISION KARACHI.
4th Floor, N.I.C.L. Building, Abbasi Shaheed Road, Karachi,
Tel: 99225430–34

REV.	DATE	DESCRIPTION	APPROVED
03			
02			
01			
00	APRIL, 2026	ISSUED FOR BIDDING	

DRAWN	TM
SUBMITTED	SA
RECOMMENDED	SA
CHD./VER.	AMS
APPROVED	AMS

PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.
GATE HOUSE - 2 & 3
COMMUNICATION PANELS, RACEWAYS & EARTHING LAYOUT

SCALE: N.T.S

DATE: APRIL, 2026

DRAWING No.: **5043/08/TD/ T004**

REV.: 0

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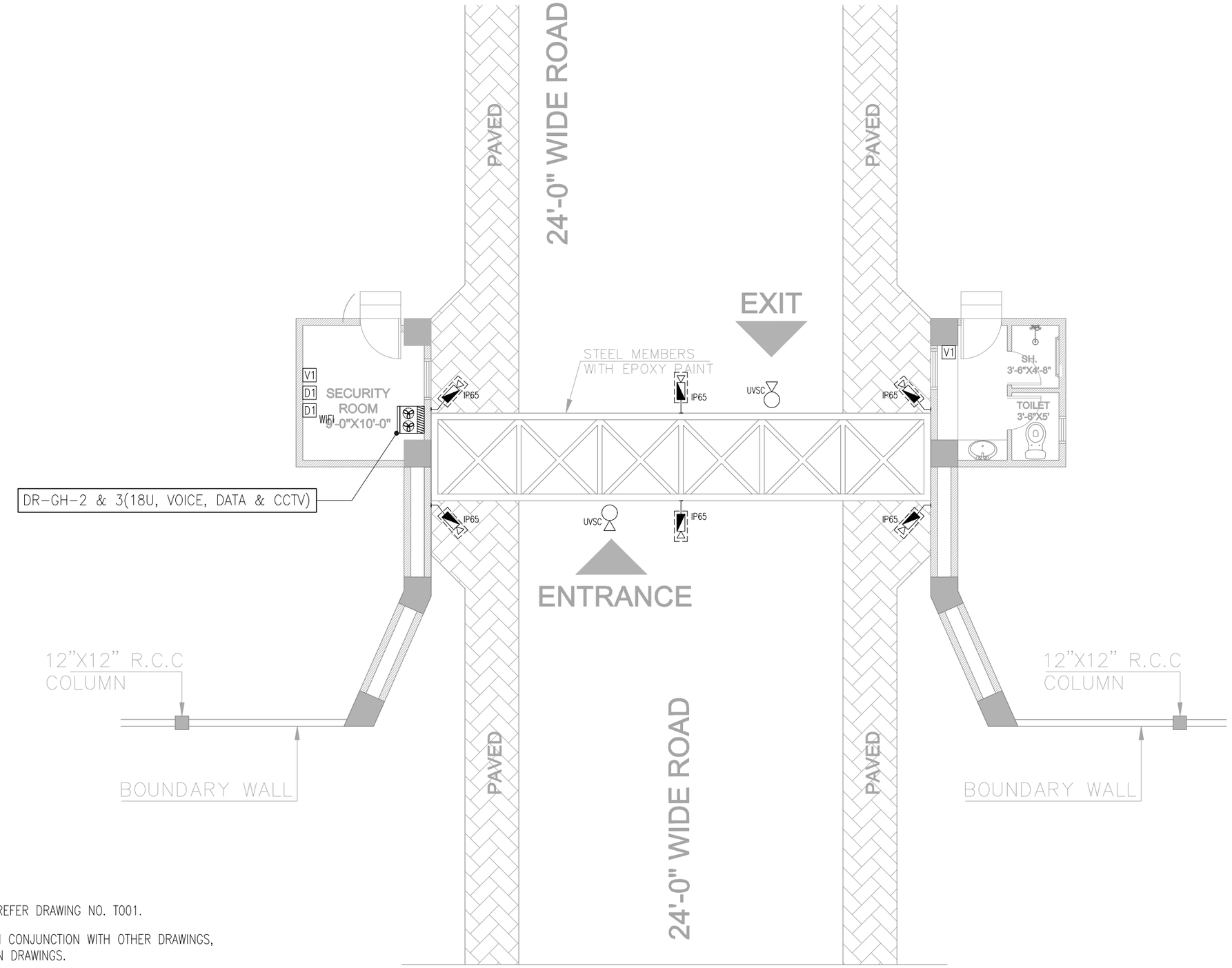

NOTES

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GATE HOUSE-2 & 3

BIDDING DRAWING

CLIENT
PAKISTAN ENGINEERING COUNCIL

CONSULTANT
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
ARCHITECTURE & PLANNING DIVISION KARACHI.
4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi,
Tel: 99225430-34

REV.	DATE	DESCRIPTION	APPROVED
03			
02			
01			
00	APRIL, 2026	ISSUED FOR BIDDING	

DRAWN	TM
SUBMITTED	SA
RECOMMENDED	SA
CHD./VER.	AMS
APPROVED	AMS

PROJECT
ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.
GATE HOUSE - 2 & 3
GROUND FLOOR DATA, TELEPHONE & CCTV LAYOUT

SCALE: N.T.S

DATE: APRIL, 2026

DRAWING No.: **5043/08/TD/ T005**

REV.: 0

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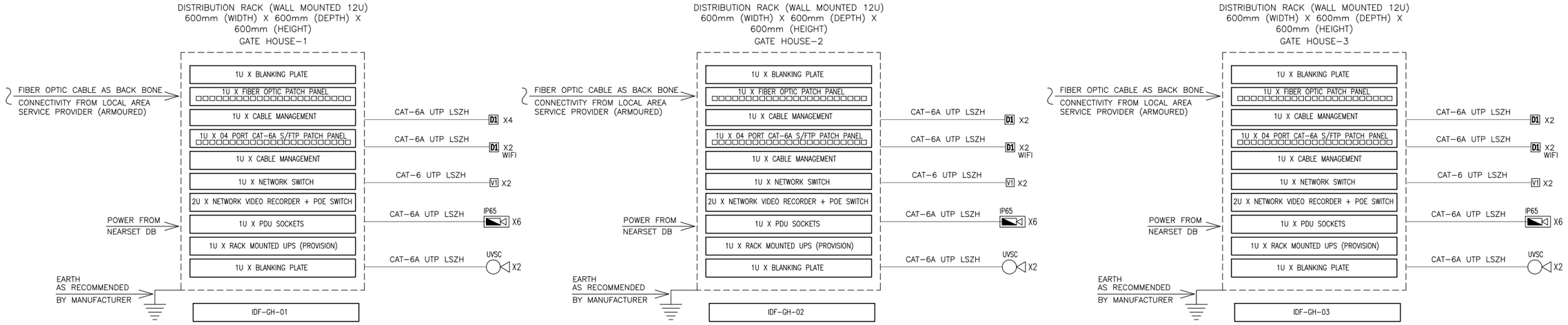

DATA, VOICE & CCTV NETWORK DIAGRAM

NOTES

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2. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER DRAWINGS, PART OF TENDER / CONSTRUCTION DRAWINGS.
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BIDDING DRAWING

CLIENT

PAKISTAN ENGINEERING COUNCIL

CONSULTANT

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.

ARCHITECTURE & PLANNING DIVISION KARACHI.
4th Floor, N.J.C.L Building, Abbasi Shaheed Road, Karachi,
Tel: 99225430-34

REV.	DATE	DESCRIPTION	APPROVED		
03				DRAWN	TM
02				SUBMITTED	SA
01				RECOMMENDED	SA
00	APRIL, 2026	ISSUED FOR BIDDING		CHD./VER.	AMS
				APPROVED	AMS

PROJECT

ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I

TITLE.

COMMUNICATION RISER DIAGRAM

SCALE: N.T.S

DATE: APRIL, 2026

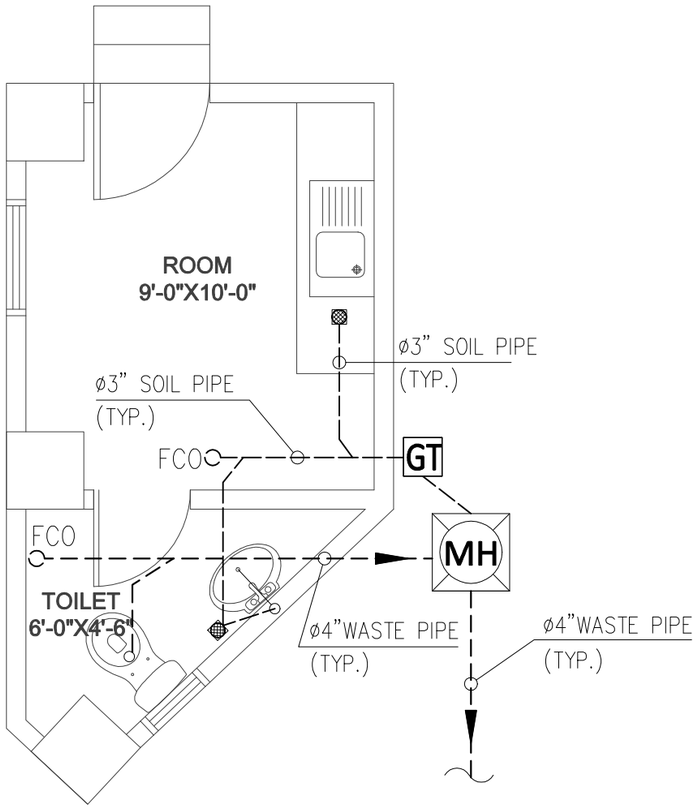
DRAWING No.: **5043/08/TD/ T006**

REV.: 0

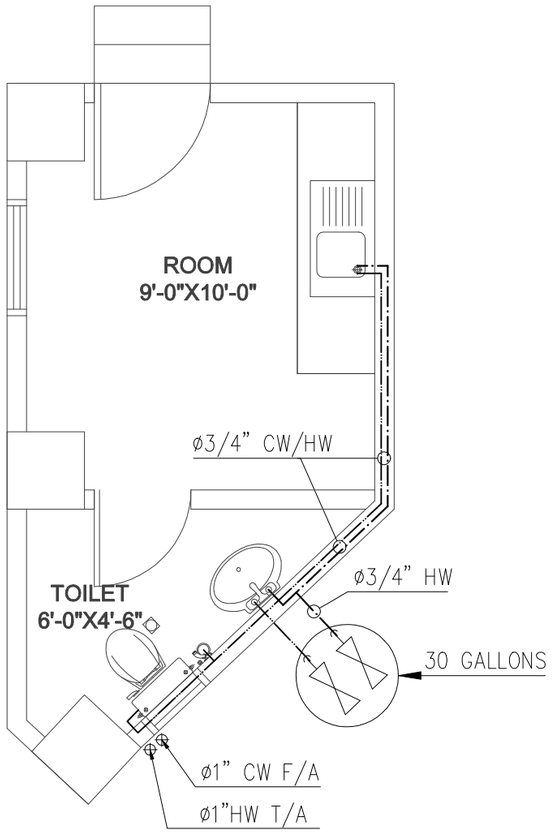
Z:\GATE HOUSE\NEW FOLDER\DWG_ELECT&COMM_TD_R00_2026_04_15_PEC_GATEHOUSE.DWG

3/32"=1'-0" SHEET SIZE: A2

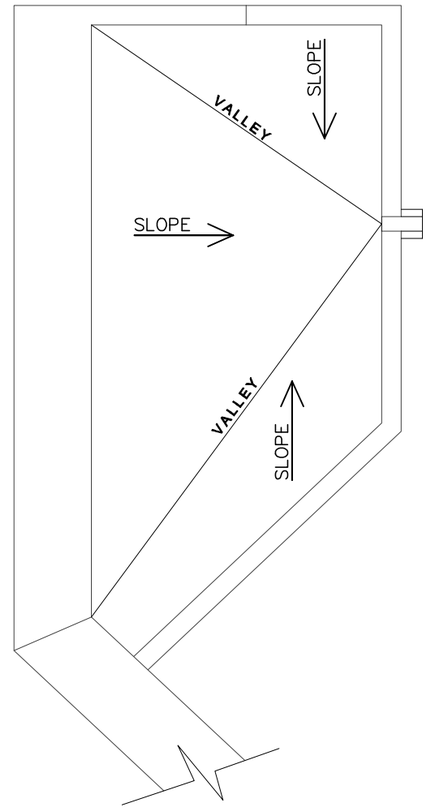
PLUMBING



GUARD ROOM PLAN
(SANITARY DRAINAGE SYSTEM)



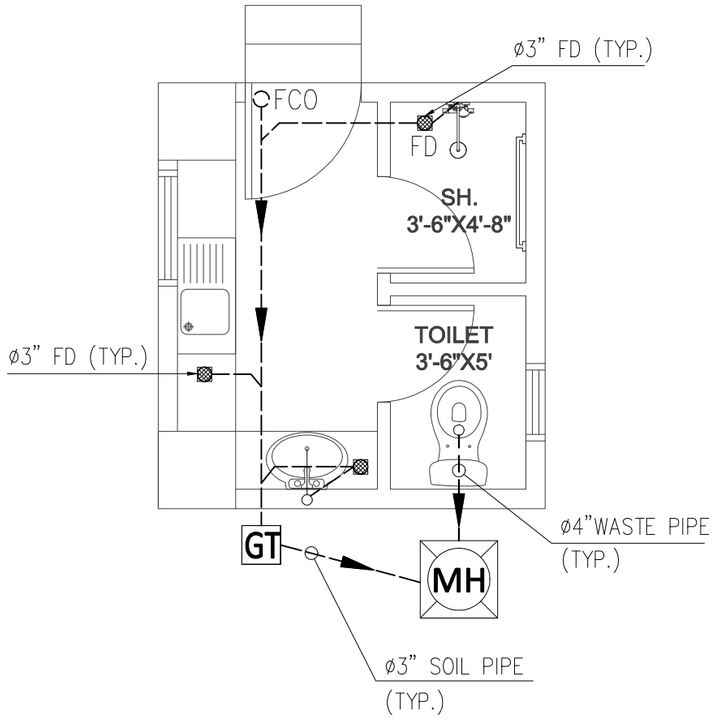
GUARD ROOM PLAN
(WATER SUPPLY SYSTEM)



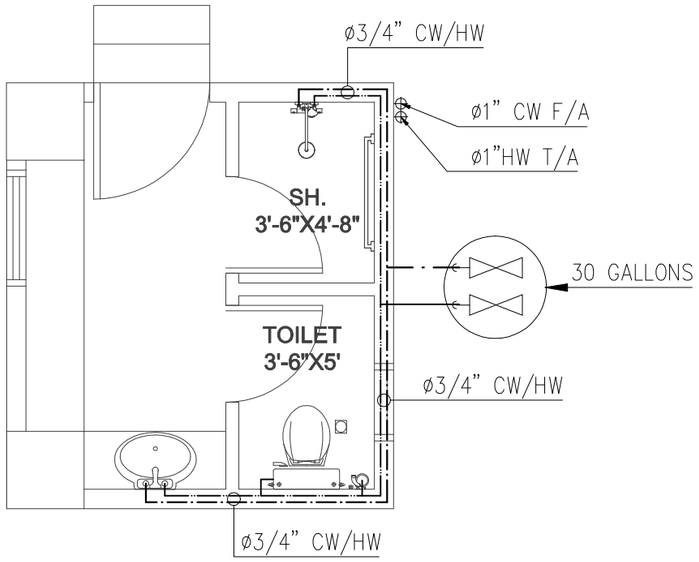
GUARD ROOM ROOF PLAN

CLIENT: PAKISTAN ENGINEERING COUNCIL	CONSULTANT: NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ARCHITECTURE & PLANNING DIVISION KARACHI. 4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi, Tel: 99225430-34	04		DRAWN	I.K
		03		SUBMITTED	
		02		RECOMMENDED	
		01		CHD./VER.	KIRAN
		REV.	DATE / DESCRIPTION / APPROVED	APPROVED	
PROJECT: ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I	GATE HOUSE-1 SANITARY DRAINAGE & WATER SUPPLY SYSTEM	DATE: DECEMBER, 2025	DRAWING No.: 44010/08/TD/ B005	REV.: 0	SCALE: 1/4"=1'-0"

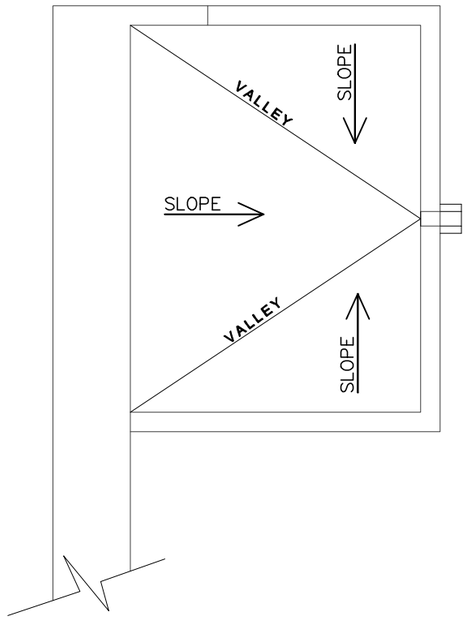
G:\NESPAK PROJECTS (IMRAN)\KIRAN\PEC\DHA GATE HOUSE\PEC GATE HOUSE 18.03.2026.DWG
3/32"=1'-0" SHEET SIZE: A2



KITCHENETTE & TOILET PLAN
(SANITARY DRAINAGE SYSTEM)



KITCHENETTE & TOILET PLAN
(WATER SUPPLY SYSTEM)



KITCHENETTE & TOILET ROOF PLAN

CLIENT: PAKISTAN ENGINEERING COUNCIL	CONSULTANT: NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ARCHITECTURE & PLANNING DIVISION KARACHI. 4th Floor, N.I.C.L Building, Abbasi Shaheed Road, Karachi, Tel: 99225430-34	PROJECT: ESTABLISHMENT OF PEC ENGINEERING COMPLEX AT DHA CITY KARACHI PHASE-I	GATE HOUSE-2 & 3 SANITARY DRAINAGE & WATER SUPPLY SYSTEM	SCALE: 1/4"=1'-0"	
			DATE: DECEMBER, 2025	DRAWING No.: 44010/08/TD/ B006	REV.: 0

REV.	DATE	DESCRIPTION	APPROVED		
04				DRAWN	I.K
03				SUBMITTED	
02				RECOMMENDED	
01				CHD./VER.	KIRAN
				APPROVED	

G:\NESPAK PROJECTS (IMRAN)\KIRAN\PEC\DHA GATE HOUSE\PEC GATE HOUSE 18.03.2026.DWG

3/32"=1'-0" SHEET SIZE: A2