GENERAL NOTES

1. **BUILDING HAS BEEN DESIGN IS IN ACCORDANCE WITH THE PROVISIONS OF ACI-318-08 CODE, and UBC-97 SPECIFICATIONS. AND SEISMIC ZONE 2B AS PER PAKISTAN BUILDING CODE REQUIREMENTS.**
2. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE JOB SPECIFICATIONS.
3A. **ALL REINFORCED CONCRETE IS 4000 PSI CYLINDER STRENGTH AT 28 DAYS, EXCEPT 3750 PSI** FOR SHEAR WALLS AND COLUMNS.
3. **DESIGN OF SPECIFIED CONCRETE MIX SHALL BE SUBMITTED BY THE CONTRACTOR AND SHALL BE GOT APPROVED FROM THE ENGINEER WELL BEFORE CONCRETING OF RELEVANT STRUCTURES ALONG WITH RESULT OF TEST CYLINDERS TESTED AS PER ASTM C 39. TEST SPECIMENS SHALL BE MADE AND CURED IN ACCORDANCE WITH ASTM C 31.**
4. **ALL REINFORCING STEEL IS DEFORMED 60,GRADE 60,000 PSI MIN. YIELD STRENGTH CONFORMING TO ASTM A-615 SPECIFICATIONS.**
5. **ORDINARY PORTLAND CEMENT, CONFORMING TO BS-12 / PS-232 SHALL BE USED IN ALL R.C.C. WORK EXCEPT WHERE IT IS SPECIFICALLY MENTIONED IN THE GEOTECHNICAL REPORT.**
6. **CEMENT FROM DIFFERENT SOURCES SHALL NOT BE MIXED FOR THE STRUCTURE.**
7. **COARSE SAND FROM APPROVED QUERIES / SOURCES SHALL BE USED.**
8. **WELL GRADED CRUSHED STONE FROM APPROVED QUERIES / SOURCES SHALL BE USED AS COARSE AGGREGATE. MAXIMUM NOMINAL SIZE OF THE COARSE AGGREGATE SHALL BE 3/4" INCH FOR ALL R.C.C. WORK.**
9. **POTABLE WATER, FREE OF ORGANIC AND OTHER IMPURITIES. SHALL BE USED FOR CONCRETE .**
10. **2" X 2" INCH PRECAST CONCRETE BLOCKS HAVING COMPRESSIVE STRENGTH OF 4000 PSI. AND SPACED NOT MORE THAN 4' FEET C/C SHALL BE USED FOR PROVISION OF REQUIRED COVER TO MAIN REINFORCEMENT. THICKNESS OF THESE BLOCKS SHALL BE EQUAL TO THE REQUIRED COVER.**
11. **ALL DIMENSIONS ARE IN FEET, EXCEPT NOTED OTHERWISE.**
12. **UNLESS OTHERWISE SHOWN ON THE PLANS, CONCRETE CLEAR COVER PROVIDED FOR REINFORCEMENT SHALL BE AS FOLLOWS;**

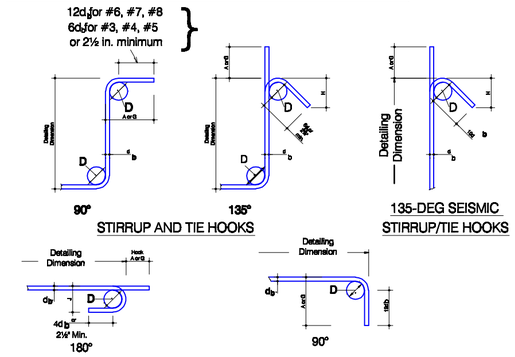
FOOTINGS ON 1:4:8		
BOTTOM	==========	**3"**
TOP , SIDES	==========	**2"**
SLABS	==========	**¾'**
BEAMS & COLUMNS	==========	**1½'**
WALLS	==========	1½"
RETAINING WALLS	==========	1½"
GRADE SLAB	==========	1"

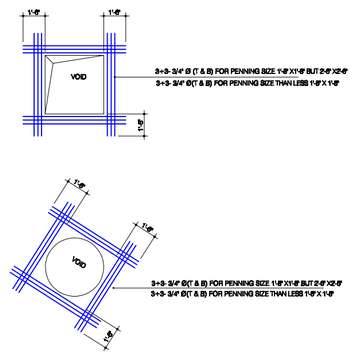
13. **CONSTRUCTION DRAWINGS ALONG WITH BAR BENDING SCHEDULE SHALL BE SUBMITTED BY THE CONTRACTOR FOR ENGINEER'S APPROVAL WELL BEFORE PROCEEDING ANY WORK.**
14. **ALL LAYOUT, CONFIGURATION, DIMENSIONS AND LEVELS SHALL BE VERIFIED BEFORE PROCEEDING WITH THE WORK.**
15. **ALL REINFORCING BARS SHALL BE HELD FIRMLY IN PLACE BEFORE AND DURING THE POURING OF CONCRETE BY MEANS OF ADEQUATE NUMBER OF WIRES AND SUPPORTS TO PREVENT DISLOCATION DURING THE COURSE OF CONSTRUCTION.**
16. **CONSTRUCTION JOINT NOT SHOWN ON THE DRAWING SHALL BE PROPERLY PLANED AND SO MADE AND LOCATED AS TO LEAST IMPAIR THE STRENGTH OF STRUCTURE AND SHALL NEED PRIOR APPROVAL OF THE ENGINEER. IN GENERAL THEY SHALL BE LOCATED NEAR THE MIDDLE OF THE SPAN OF SLAB AND BEAMS. JOINTS SHALL BE PERPENDICULAR TO MAIN REINFORCEMENT. ALL REINFORCING STEEL SHALL BE CONTINUED PROPERLY ACROSS THE JOINTS.**
17. **DURING CONSTRUCTION, SAFETY AND STABILITY OF THE STRUCTURE AND ALL TEMPORARY WORKS SHALL BE GIVEN PRIME IMPORTANCE. UTMOST CARE AND PRECAUTION SHALL BE EXERCISED BY THE CONTRACTOR DURING THE WORK AGAINST ANY MISHAP OR ACCIDENT.**
18. **BARS IN BEAMS SHALL BE JOGGLED IN VERTICAL PLANE FOR LAPS AND SHALL BE STAGGERED.**
19. **ALL LAPS ARE 54 TIMES BAR DIAMETER.**
20. **BARS IN COLUMN SHALL BE JOGGLED FOR LAPS WITH STARTER BARS.**
21. **POSITION OF BARS IN BEAMS SHALL BE ADJUSTED KEEPING IN VIEW THE POSITION OF VERTICAL BARS OF THE COLUMNS.**
22. **STIRRUPS SHALL BE PLACED IN SUCH A WAY THAT THEIR HOOKS SHALL BE STAGGERED AND LOCATED AT COMPRESSION FACE.**
23. **CONCRETE TEST CYLINDER SHALL BE CURED WITH THE SAME METHOD AND UNDER SAME CONDITIONS AS THOSE FOR THE CONCRETE WORK THEY REPRESENT.**
24. **NO CONCRETE SHALL BE POURED UNTIL ITS FORM WORK AND REINFORCEMENT HAS BEEN INSPECTED AND APPROVED BY THE ENGINEER.**
25. **SEQUENCE OF REMOVAL OF FORM WORK SHALL BE AS APPROVED BY THE ENGINEER.**
26. ALL STRUCTURAL DRAWINGS SHALL BE READ & CHECKED IN CONJUNCTION WITH THE ARCHITECTURAL, HVAC,ELECTRICAL, AND PLUMBING DRAWINGS FOR LAYOUT AND LEVELS OF DIFFERENT MEMBERS.
27. EXISTING UNDERGROUND SERVICES IF ANY, REQUIRED TO BE LEFT IN POSITION, SHALL BE CAREFULLY PROTECTED DURING EXCAVATION.
28. **EXCAVATION ADJACENT TO EXISTING STRUCTURES AND/OR UNDER-GROUND SERVICES SHALL BE MADE BY HAND.**
29. **ADEQUATE SHORING AND SUPPORT TO THE SIDES OF ALL EXCAVATION SHALL BE SUPPLIED AND ERECTED WHERE REQUIRED TO SAFE GUARD WORKMEN AND PROTECT ANY ADJACENT STRUCTURES.**
30. **LEAN CONCRETE 1:4:8 SHALL BE MADE WITH COARSE SAND AND CRUSHED STONE AGGREGATES PASSING SIEVE ONE INCH AND SHALL GIVE A MINIMUM OF 1000 PSI AT 28 DAYS.**
31. **FOUNDATION HAS BEEN DESIGNED FOR A BEARING CAPACITY OF .75 TSF.**
32. **THE FOUNDATION IS CAPABLE OF G+2 FLOORS.**
33. **ALL BLOCKS USED SHALL BE - AND SHOULD AT LEAST GIVE 1200 PSI WHEN TESTED FLAT WITH PROPER CAPPING.**
34. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED DRAWINGS SHOULD NOT BE SCALE
35. TOP OF GRADE SLAB/ PRESSURE SLAB AND FOUNDATION CONCRETE SHALL HAVE POWER FLOAT FINISH WITH ZERO UNDULATION IN LEVEL
36. BACK FILLING OF EXCAVATION BEHIND RETAINING WALL AND OTHER AREAS SHALL BE DONE IN EQUAL LAYER NOT EXCEEDING 6" THICKNESS. EACH LAYER IS TO ACHIEVE MINIMUM 95%%% MAX.DRY DENSITY
37. WATERPROOFING: SUBSTRUCTURE WATERPROOFING SHALL BE DONE, AND PROTECTIVE MEMBRANE SHALL BE PROVIDED AS SHOWN IN THE DRAWINGS.
38. 6" THICK CRUSHED GRAVEL LAYER SHALL BE PROVIDED BELOW LEAN CONCRETE IN ALL FOUNDATION, AS A LEVELING AND FILTER LAYER
39. ALL COLUMNS WILL BE CAPPED AT 3'-0" ABOVE ROOF LEVEL , WITH 1:3:6 CONCRETE
40. REINFORCEMENT BARS AND CAPPED COLUMNS SHALL BE EPOXY COATED AS PER DIRECTION OF ENGINEER INCHARGE.
41. ORDINARY PORTLAND CEMENT SHALL BE USED FOR ALL CONCRETE WORKS CONFORMING TO ASTM C150
42. CONSTRUCTION JOINTS : VERTICAL CONSTRUCTION JOINTS IN ALL WALLS SHALL BE USED ONLY IF UNAVOIDABLE, OR UNLESS OTHERWISE NOTED, AND TO BE LOCATED AT LEAST 5 FT. FROM ANY SUPPORTING COLUMN OR WALL OPENING. DISTANCE BETWEEN JOINTS IN WALL SHALL BE ALLOWED AS PER SPECIFICATIONS. NO HORIZONTAL CONSTRUCTION JOINTS WILL BE ALLOWED IN GRADE BEAMS. ALL MEMBERS IN THE FLOOR SYSTEM INCLUDING BEAMS, BRACKETS, COLUMN CAPITALS AND HAUNCHES SHALL BE PLACED MONOLITHICALLY. HORIZONTAL CONSTRUCTION JOINTS NECESSARY, MAY BE MADE AT CENTER OF BEAM OR SLAB
43. THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWING FOR CONCRETE POURING SEQUENCE FOR ALL FLOOR AND SUBMIT IT FOR THE APPROVAL OF ENGINEER INCHARGE BEFORE START OF WORK.
44. CEMENT FROM DIFFERENT SOURCES SHALL NOT BE MIXED FOR THE STRUCTURE , UNLESS APPROVED BY THE ENGINEER INCHARGE
45. CLEAN SAND FROM APPROVED QUARRIES/SOURCES, CONFORMING TO SPECIFICATIONS SHALL BE USED.
46. WELL GRADED CRUSHED STONE FROM APPROVED QUARRIES/SOURCES, CONFORMING TO SPECIFICATIONS SHALL BE USED AS COARSE AGGREGATE. MAXIMUM NOMINAL SIZE OF THE COARSE AGGREGATE SHALL BE 3/4" AND DOWN GAUGE FOR ALL R.C.C WORKS, UNLESS NOTED OTHERWISE
47. POTABLE WATER SHALL BE USED FOR CONCRETE & SHALL BE FREE OF ORGANIC & OTHER IMPURITIES.
48. ALL DIMENSIONS ARE GIVEN IN FEET & ALL LEVELS ARE IN FEET, UNLESS NOTED OTHERWISE
49. STRUCTURAL DRAWING SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING, BMS, ITC, SURVEILLANCE AND FIRE FIGHTING DRAWINGS. DETAILS FOR LOCATION OF PITS, BASES, SUMPS, TRENCHES, DEPRESSIONS, GROOVES, CURBS, CHAMFERS AND SLOPES NOT SHOWN ON STRUCTURAL DRAWINGS SHALL BE COORDINATED FROM THESE DRAWINGS
50. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING ALL REQUIREMENTS FOR SERVICES PENETRATIONS ETC. FOR ENGINEER INCHARGE APPROVAL. MODIFICATIONS NECESSITATED BY DETAILED PLAN/ EQUIPMENT INSTALLATION INFORMATION SHALL BE SUBJECT TO THE ENGINEER INCHARGE APPROVAL.
51. THE CONTRACTOR TO INSTALL ALL PIPE SLEEVES, BOXED OPENINGS, ANCHOR BOLTS, LIFT, RAIL INSERTS ETC. AS REQUIRED FOR THE VARIOUS TRADES. VERIFY AND OBTAIN PRIOR APPROVAL OF DIMENSIONS AND LOCATIONS OF ALL OPENINGS, PIPE SLEEVES, SLOTS, TRENCH AND ELECTRICAL FLOOR DUCTS AS REQUIRED BY THE VARIOUS TRADES.
52. ANY EMBEDDED ITEM PIPES / CONDUITS/PLATES, SLEEVES FOR UTILITIES ETC. MUST BE COORDINATED WITH RELEVANT DRAWINGS BEFORE CONCRETING OF BEAMS/COLUMNS/SLABS. ALL CONDUITS AND PIPES ARE TO BE LAID IN CONCRETE SHALL BE ABOVE MAIN REINFORCEMENT OF SLABS AND BEAM AND AS PER APPROVAL OF THE ENGINEER INCHARGE
53. ALL ELEVATIONS ARE REFERENCED TO THE PROJECT DATUM.
54. ADDITIONAL BARS SHALL BE PROVIDED AROUND ALL FLOOR AND WALL OPENINGS AS SHOWN IN THE DETAILS.
55. HOT WEATHER CONCRETING: THE INITIAL TEMPERATURE OF FRESH CONCRETE MUST NOT EXCEED 30ºC. CONCRETING SHALL NOT TAKE PLACE IN AMBIENT SHADE TEMPERATURE EXCEEDING 43ºC.
56. BACK FILLING OF EXCAVATION BEHIND RETAINING WALL AND OTHER AREAS SHALL BE DONE IN EQUAL LAYER NOT EXCEEDING 6" THICKNESS. EACH LAYER IS TO ACHIEVE MINIMUM 95% MAX.DRY DENSITY, AS DETAILED IN THE SPECIFICATIONS
57. NO CONCRETE SHALL BE POURED UNTIL ITS FORM WORK AND REINFORCEMENT HAS BEEN INSPECTED AND APPROVED BY THE CONSULTANTS, AND PROPER PRE-CAMBER IS PROVIDED
58. SEQUENCE OF REMOVAL OF FORM WORK SHALL BE AS SPECIFIED AND APPROVED BY THE ENGINEER INCHARGE

RECOMMENDED END HOOKS, ALL GRADES

Bar Size	Finished bend diameter D,in.	180-deg hooks		90-deg hooks
		A or G, in.	J, in.	A or G, in.
#3	2¼	5	3	6
#4	3	6	4	8
#5	3¾	7	5	10
#6	4½	8	6	12
#7	5¼	10	7	14
#8	6	11	8	16
#9	9½	15	11¼	19
#10	10 3/4	17	13¼	20
#11	12	19	14¾	24
#14	18¼	27	21¾	31
#18	24	36	28½	41

Bar Size	D (in.)	Stirrups and tie hook dimensions, in.			135 deg Stirup-tie hook dimensions, in.	
		90-deg hooks	135-deg hooks		135-deg hooks	
		A or G,	A or G,	H approx	A or G, in.	H approx
#3	**1½**	**4**	**4**	**2½**	**5**	3½
#4	2	4½	4½	3	6½	4½
#6	4½	12	7 3/4	4½	10 3/4	6½





REINFORCEMENT DETAIL AT OPENING IN SLAB / WALLS AND SLEEVES

TENDER DRAWING

Client SHAHEED BENAZIR BHUTTO UNIVERSITY	**Project** EXTENSION OF FACILITIES AT SHAHEED BENAZIR BHUTTO UNIVERSITY, SHAHEED BENAZIRABAD	**Job** ACADEMIC BLOCK	**TITLE** GENERAL NOTES	**DATE** 03-03-2022	**COM. LOCATION.**	**SHEET REF.** STR.	Consultant ESS -I- AAR PLANNING , ENGINEERING & SERVICES CONSULTANTS SUITE NO. 314, 3- RD. FLOOR MASHRIQ CENTER SIR SHAH SULAIMAN ROAD , GULSHAN - E - IQBAL BLOCK NO. 14, KARACHI , P. O. BOX NO. 7608
			Ref. Rev.	SCALE N.T.S	DRAWN M. FAYSAL	CHKD. BY Shoaib Ghazdar / JOB NO.	GN-01