

Structural Drawings

LIST OF DRAWING

DWG No.	DRAWING TITLE
S(01-12)	List of Drawings & General Notes
S(02-12)	Columns Axes
S(03-12)	Foundation Reinforcement
S(04-12)	Ground Beams
S(05-12)	Columns Reinforcement
S(06-12)	First Slab
S(07-12)	First Slab Beams
S(08-12)	Second Slab
S(09-12)	Second Slab Beams
S(10-12)	Third Slab
S(11-12)	Third Slab Beams
S(12-12)	Stair Reinforcement

I -GENERAL NOTES

- EACH OF THE STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE PERTINENT LAYOUT, CIVIL, ARCHITECTURAL MECHANICAL AND ELECTRICAL DRAWINGS. IF ANY DISCREPANCY IS FOUND, THE CONTRACTOR MUST REPORT TO THE CONSULTANT IMMEDIATELY.
- ALL DIMENSIONS SHOWN ARE IN C.METERS, UNLESS OTHERWISE INDICATED. LEVELS ARE IN METERS. SCALING FROM DRAWINGS IS NOT PERMITTED.
- ALL CONSTRUCTION MATERIALS SPECIFIED IN THE DRAWINGS AND IN THE TYPICAL DETAILS SHALL CONFORM TO THE APPLICABLE CODES, STANDARDS OF CONSTRUCTION, AND TO THE SPECIFICATIONS.
- THE CONTRACTOR SHALL SUBMIT, TO THE CONSULTANT FOR APPROVAL WORKSHOP DRAWINGS SHOWING PROPPING SYSTEM, REINFORCEMENT DETAILS, AND ANY OTHER SPECIFIC REQUIREMENT INDICATED ON THE DRAWINGS.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL SAFETY MEASURES AND MUST TAKE ALL NECESSARY PRECAUTIONS AND MEASURES TO ACHIEVE THIS.
- ALL SHARP CONCRETE CORNERS SHALL BE 20mm CHAMFERED(PVC TRIANGLE).
- ALL MATERIALS USED IN THE CONCRETE AND INTERNAL WATER PROOFING SHALL BE HEALTH APPROVED AS NON-TOXIC (W.B.S SCHEME APPROVED)
- THE FORM WORK OF ALL FLUID RETAINING STRUCTURES SHALL BE FAIR-FACE.
- WATER RESISTANCE LEAKAGE TESTS MUST BE MADE TO THE WATER RETAINING STRUCTURES IN ACCORDANCE WITH BS 8007 TESTS SHALL BE REPEATED UNTIL NO LEAKAGE IS DETECTED.

II CONCRETE

- REINFORCED CONCRETE MIXES SHALL BE DESIGNED AND PRODUCED PROVIDED THAT MINIMUM CEMENT CONTENT IS 350kg/m 3FOR WATER RETAINING STRUCTURES AND MAXIMUM FREE WATER/CEMENT RATIO IS 0.45 IN ORDER TO MAINTAIN DURABILITY REQUIREMENTS ,APPROVED SUPER-PLASTISIZERS COMPLYING TO BS :5075PART 3CAN BE ADDED TO THE MIXES ACCORDING TO THE MANUFACTURER SPECIFICATION TO IMPROVE THE WORKABILITY OF THE MIXES TO A MAX .OF 120mm SLUMP . MAX .CEMENT CONTENT 3SHALL NOT EXCEED 400Kg/m .
- THE CONTRACTOR MUST SUBMIT FOR APPROVAL BEFORE WORK THE CONCRETE MIX DESIGN TO BE FOLLOWED IN CONSTRUCTION &SHALL PERFORM NECESSARY TESTS TO SATISFY THE ENGINEER .
- STRENGTH TESTS FOR CONCRETE SHALL BE MADE IN ACCORDANCE WITH BS 1881

III -REINFORCING STEEL

- ALL REINFORCING STEEL BARS INCLUDING SPLICES SHALL BE DEFORMED , HIGH YIELD STEEL GRADE)60(OF 414(MPa YIELD STRENGTH)CONFORMING TO BS 4449TYPE)2(BARS OR EQUIVALENT ASTM STANDARDS.

IV -DETAILS OF REINFORCEMENT

- UNLESS OTHERWISE SHOWN ON THE DRAWINGS ,SPLICES IN BEAMS,COLUMNS,WALLS ,SLABS &FOUNDATIONS SHALL BE NOT LESS THAN 60BAR DIA .
- LAPS IN BEAMS ,SLABS ,FOUNDATIONS ,AND WALLS SHOULD BE STAGGERED .
- UNLESS OTHERWISE SHOWN ON THE DRAWINGS ,BARS SHOULD BE CUT OR BENT IN ACCORDANCE WITH BS 4466THE CONTRACTOR MUST SUBMIT FOR APPROVAL BAR BENDING SCHEDULES THAT ALSO COMPLY WITH BS 4466 BEFORE CASTING .
- BAR BENDS :
 - THE MINIMUM INSIDE DIAMETERS OF BENDS SHALL BE ACCORDING (BS).4466
 - ALL BARS SHALL BE BENT COLD .BARS PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT .
- BAR SUPPORTS &SPACERS BAR SUPPORTS OR SPACERS ,WHEREVER NEEDED ,SHALL BE OF THE SAME SIZE AS MAIN BARS ,BUT NOT LESS THAN 25mm .THEY SHALL BE ALSO PLACED AT A MAXIMUM SPACING OF 1.0M OR LESS .
- BARS LOCATED IN POSITIVE OR NEGATIVE MOMENT REGIONS IN THE CUT AS SHOWN IN FIGURE (2DWG 000A)SLAB &BEAM ELEMENTS SHALL BE
- UNLESS OTHERWISE SHOWN ON THE DRAWINGS ,THE FOLLOWING DEVELOPMENT LENGTHS (ld)ARE TO BE USED :
A)FOR NO 19 .BARS AND SMALLER ,ld 45 =db ;db BEING THE BAR DIA .IN mm .
B)FOR NO 20 .BARS AND LARGER ,ld 55 =db

V -JOINTS

- JOINTS SHOWN ON THE DRAWINGS ARE COMPULSORY ,UNLESS NOTED OTHERWISE ,AND ARE TYPICAL AS SHOWN IN FIGURE (3DWG 000A).
- UNLESS OTHERWISE INDICATED ON DRAWINGS ,HORIZONTAL CONSTRUCTION JOINTS SHALL NOT BE MADE IN SLABS ,RIBS OR BEAMS.CONSTRUCTION JOINTS(IN OTHER PLACES)ARE SUBJECT TO THE APPROVAL OF THE ENGINEER &SHALL BE WATER TIGHT.

VI -OPENINGS ,PIPES AND SLEEVES EMBEDDED IN CONCRETE

- ALL OPENINGS ,PIPES AND SLEEVES ON STRUCTURAL DRAWINGS ,SHALL BE COORDINATED WITH THE CIVIL ,ARCHITECTURAL MECHANICAL AND ELECTRICAL DRAWINGS .
- PROVIDE ,AROUND OPENINGS ,ADDITIONAL REINFORCEMENT IN ACCORDANCE WITH THE TYPICAL DETAILS SHOWN IN FIGURE (4DWG 000A) . UNLESS OTHERWISE INDICATED ON THE DRAWINGS .
- REQUIRED OPENINGS NOT SHOWN ON THE DRAWINGS SHALL BE REPORTED TO THE ENGINEER.

VII -CONCRETE PROTECTION

- UNLESS OTHERWISE INDICATED ON THE DRAWINGS, CONCRETE CLEAR COVER TO REINFORCEMENT SHALL BE AS FOLLOWS:
 - 75 mm FOR ALL CONCRETE IN CONTACT WITH EARTH.
 - 50 mm FOR ALL CONCRETE IN CONTACT WITH WATER.
 - 40 mm FOR ROOF SLABS. d. 40 mm FOR ALL OTHER CONCRETE.
- REINFORCEMENT & FORM WORK SHALL BE COVERED DURING CONSTRUCTION.
- ALL CONCRETE ELEMENTS IN CONTACT WITH SOIL SHALL BE PROTECTED BY WATERPROOFING MEMBRANE AS PER SPECIFICATIONS
- FOR POTABLE WATER TANKS ALL FOUNDATIONS SHALL RECEIVE WATERPROOFING (TANKING SYSTEM) AS PER SPECIFICATION THE ROOF OF THE RESERVOIR SHALL BE WATERPROOFED USING A 4mm BITUMINIOUS MEMBRANE (AS PER SPECIFICATION) OVER A LAYER OF FOAM CONCRETE (THICK 50 TO 150mm) THE MEMBRANE SHALL BE OVERLAID BY AN APPROVED SEPARATION LAYER AND BY A 50mm LAYER OF WELL ROUNDED GRAVEL GRADED FROM (16-32mm)

VIII -GEOTECHNICAL INVESTIGATION

- A GEOTECHNICAL INVESTIGATION &REPORT WAS CARRIED OUT AND WILL BE SUPPLIED TO THE CONTRACTOR .THE CONTRACTOR SHALL COMPLY WITH THE REPORT RECOMMENDATIONS .
- BACK FILLING MATERIAL SHALL BE SELECTED ACCORDING TO THE SOIL INVESTIGATION REPORT ,AND SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND TO THE SATISFACTION OF THE ENGINEER .BACK FILLING MATERIAL SHALL BE LAID IN 200mm WELL COMPACTED LAYERS .
- BACK FILLING WILL NOT BE PERMITTED AROUND WALLS PRIOR TO SUCCESSFUL LEAKAGE TESTS AND/OR PERMISSION OF THE ENGINEER .

IX -FOUNDATIONS

- EXCAVATIONS SHALL TAKE FULL ACCOUNT OF ADJACENT PROPERTIES & THEIR FOUNDATIONS ,SURROUNDING ROADS &ADJACENT SERVICES .
- ALL FOUNDATIONS SHALL BE FORMED ON FIRM WELL COMPACTED GROUND THE OVERLAYING MATERIAL SHALL BE EXCAVATED UNTIL SUITABLE MATERIAL IS EXPOSED &THE VOID FILLED WITH LEAN MIX CONCRETE .
- ALL SHALLOW HOLES SHALL BE BACK FILLED WITH LEAN MIX CONCRETE .
- AN ADEQUATE DRAINAGE PIPE SHALL BE INSTALLED BEHIND ALL RETAINING WALLS TO DRAIN POSSIBLE WATER TABLE .
- RETAINING WALLS &PITS ARE TO BE PROPPED &BRACED UNTIL PERMANENT SUPPORT HAS ATTAINED FULL DESIGN STRENGTH .
- FILL IS NOT TO BE PLACED BEHIND RETAINING WALLS OR PITS UNTIL THE CONCRETE HAS ATTAINED FULL DESIGN STRENGTH AND STRUCTURAL CONFIGURATION HAS COMPLIED WITH THE DESIGN INTENT .
- BACK FILL BEHIND RETAINING WALLS SHALL BE IN ACCORDANCE WITH THE SOIL REPORT .
- FOUNDATIONS ARE DESIGNED FOR A SAFE BEARING CAPACITY OF 2.0kg/sq.cm.

DETAILING NOTES :

- (TYP .)INDICATES EXACT BAR SIZE AND SPACING ARRANGEMENTS AT SIMILAR (i.e ,MIRROR IMAGE)LOCATIONS ,UNLESS SHOWN OTHERWISE .
- ALL BARS TO BE CUT 20mm CLEAR OF ALL PASSING -THROUGH REINFORCED CONCRETE PIPES (RCP .)UNLESS SHOWN OTHERWISE
- BAR SPACING SHOWN IS APPROXIMATE .CONTRACTOR IS TO USE EXACT NO . OF BARS AND SPACING AS WRITTEN AND PLACE THEM AT EQUAL SPACINGS .
- STAGGER ALL OPTIONAL LAP SPLICE LOCATIONS
- CLR .MEANS CLEAR COVER FROM OUTSIDE FACE OF CONCRETE TO OUTER SURFACE OF BAR.



NOTES:

- DESIGN BEARING CAPACITY IS 1.75 KG/CM2
- THE CONTRACTOR HAS TO CONDUCT SOIL INVESTIGATION TO ENSURE THIS ASSUMPTION .
- EXCAVATION LEVEL SHOULD BE NOT LESS THAN (~1.50) FROM N.G.L
- ALL CONCRETE IN CONTACT WITH SOIL SHOULD CONTAIN TYPE SULFATE RESISTANT CEMENT.
- CONCRETE COVER FOR FOUNDATION = 5CM THICK
- CONCRETE COVER FOR INTERNAL WORK = 2.5CM
- CONCRETE COVER FOR EXTERNAL WORK = 3.5CM
- ALL THE CONCRETE UP THE PLINTH LEVEL MUST BE COATED WITH TWO COATS OF HOT BETUMIN.
- READY MIX CONCRETE MUST BE APPROVED BY THE ENGINEER.
- BACKFILLING MUST BE CARRIED OUT IN LAYERS 25CM THICK EACH LAYER (WATERED AND COMPACTD)
- N.G.L WILL BE FIXED BY THE ENGINEER
- CONCRETE CURB CRUSHING STRENGTH AFTER 28 DAYS
B = 25N/MM2 , FOR BEAMS & SLABS
B = 30N/MM2 , FOR COLUMNS
- RIBBED HIGH YIELD STEEL FY=420N/MM2
- MILD YIELD STEEL FY=250N/MM2
- FOUNDATION WAS DESIGNED TO HAVE GROUND FLOOR, FIRST , SECOND & THIRD FLOORS ONLY.
- STANDERD RADII OF BENDS AND HOOKS AS GIVEN BELOW TO BE USED UNLESS SPECIFICALLY SHOWN OTHERWISE

BENDS		HOOKS	
BAR SIZE	GRADE 250 (TYPE AND GRADE R)	GRADE 420 (TYPE AND GRADE L)	
D	R	R	
6	12	18	
8	16	24	
10	20	30	
12	24	36	
14	28	42	
16	32	48	
18	36	54	
20	40	60	
25	50	100	

FUNDED BY:



EMPLEMENTED BY:

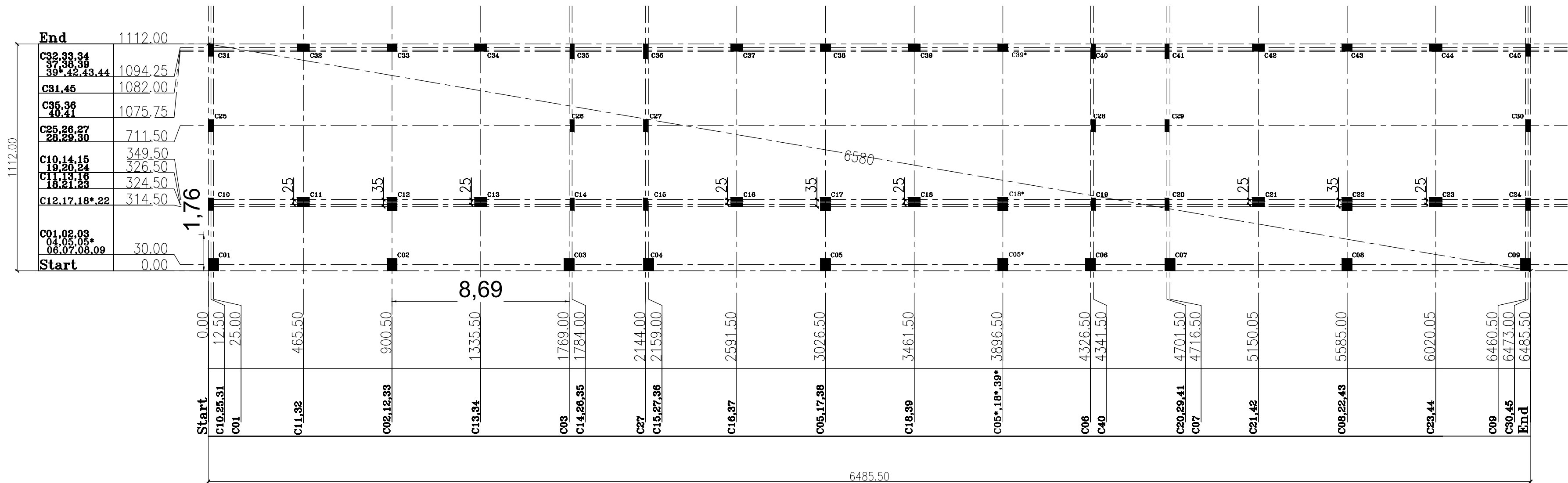


IN COOPERATION WITH:



FOR TENDER ONLY

Project Name RIGHT TO EDUCATION		
School name Al Motanaby Primary Boys School		
Drawing name List of Drawings General Notes		
Symbol RES	DRAWING No. ST 01	Rev. No. R1

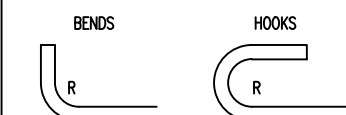


State of Palestine
Ministry of Education & Higher Education

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D	R	R
6	12	18
8	16	24
10	20	30
12	24	36
14	28	42
16	32	48
18	36	54
20	40	60
25	50	100

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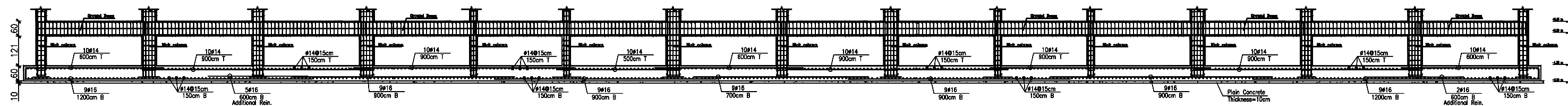
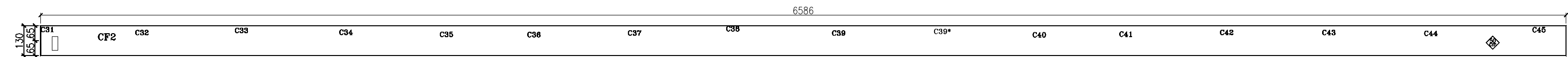
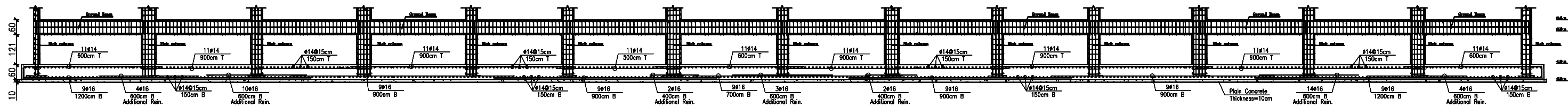
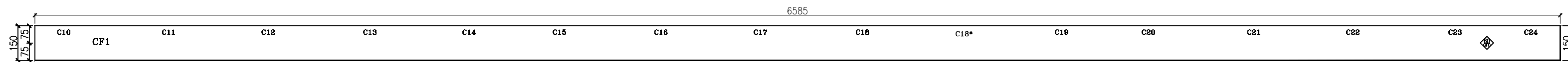
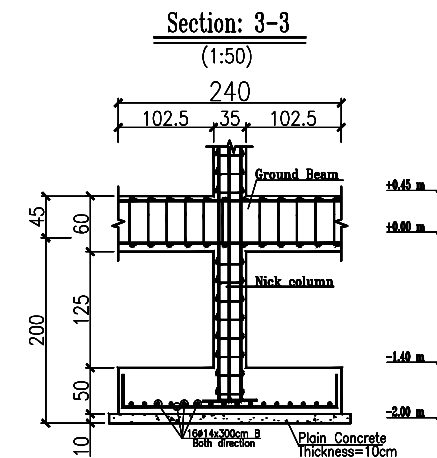
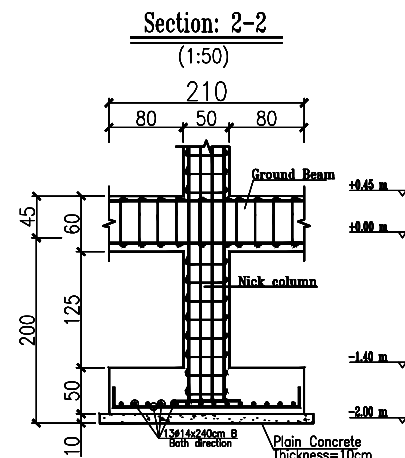
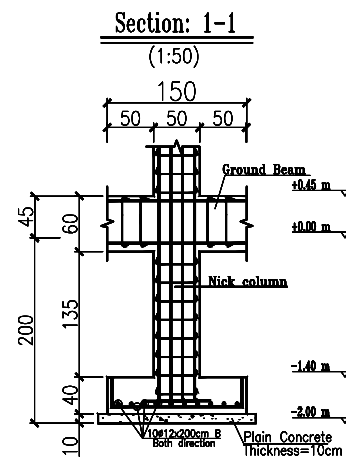
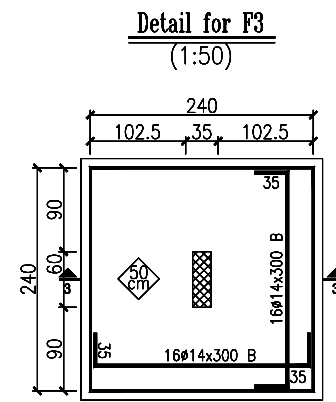
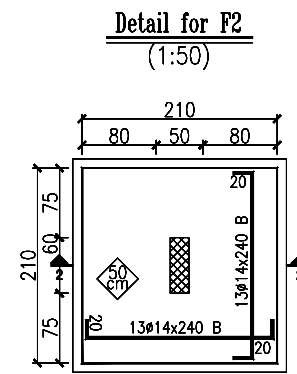
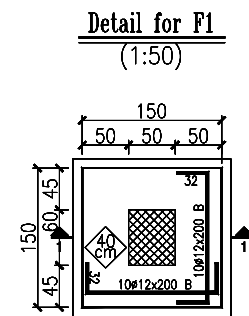
IN COOPERATION WITH:



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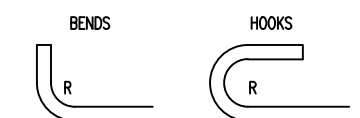
Project Name RIGHT TO EDUCATION		
School name Al Motanaby Primary Boys School		
Drawing name Columns Axes Foundation Reinforcement		
Symbol RES	DRAWING No. ST 02	Rev. No. R1

Isolated Footings Table					
TYPE	COLUMNS	NO.	AxBxH(m)	LONG STEEL	SHORT STEEL
F1	C01,03,04,06 07,09,25	7	1.50x1.50x0.40	10Ø12x2.00	10Ø12x2.00
F2	C02,05,08,26 27,28,30	7	2.10x2.10x0.50	13Ø14x2.40	13Ø14x2.40
F3	C29	1	2.40x2.40x0.50	16Ø14x3.00	16Ø14x3.00
					NOTES
					Plain Concrete 1.70x1.70x0.10
					Plain Concrete 2.30x2.30x0.10
					Plain Concrete 2.60x2.60x0.10



NOTES:

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- EXCAVATION LEVEL SHOULD BE NOT LESS THAN (-1.50) FROM N.G.L.
- ALL CONCRETE IN CONTACT WITH SOIL SHOULD CONTAIN TYPE SULFATE RESISTANT CEMENT.
- CONCRETE COVER FOR FOUNDATION = 5CM THICK.
- CONCRETE COVER FOR INTERNAL WORK = 2.5CM.
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- BACKFILLING MUST BE CARRIED OUT IN LAYERS 25CM THICK EACH LAYER (WATERED AND COMPACTED).
- N.G.L. WILL BE FIXED BY THE ENGINEER.
- CONCRETE CUBE CRUSHING STRENGTH AFTER 28 DAYS
- B = 25N/MM2 ; FOR BEAMS & SLABS
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- MILD YIELD STEEL FY=250N/MM2
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BAR SIZE	GRADE 250 (TYPE AND GRADE R)	GRADE 420 (TYPE AND GRADE L)
D	R	R
6	12	18
8	16	24
10	20	30
12	24	36
14	28	42
16	32	48
18	36	54
20	40	60
25	50	100

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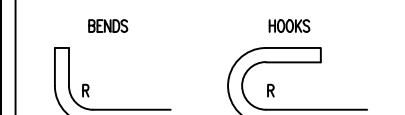
IN COOPERATION WITH:



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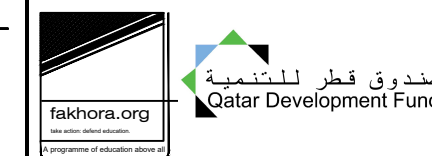
Project Name RIGHT TO EDUCATION		
School name Al Motanaby Primary Boys School		
Drawing name Foundation Details		
Symbol RES	DRAWING No. ST 03	Rev. No. R1

- NOTES:
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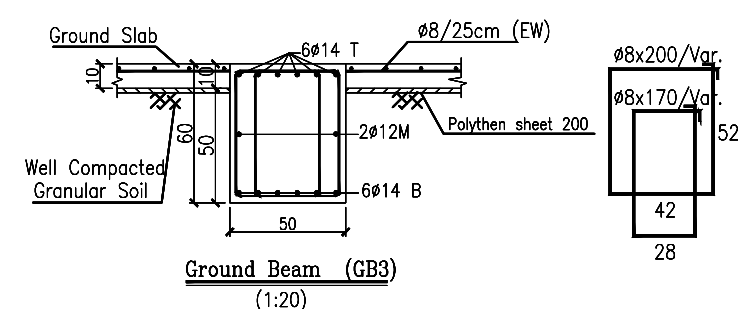
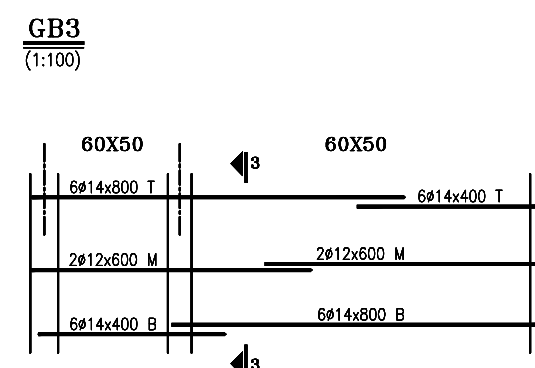
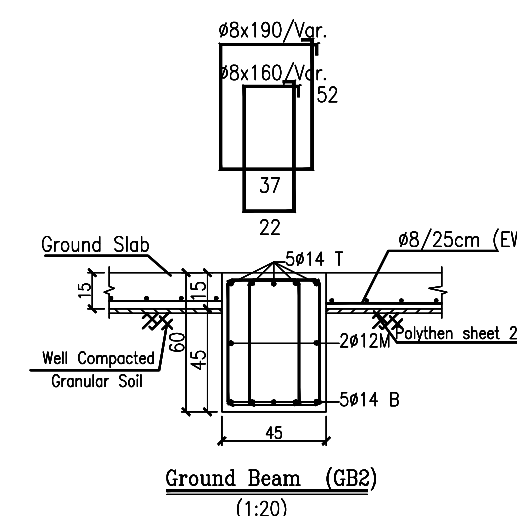
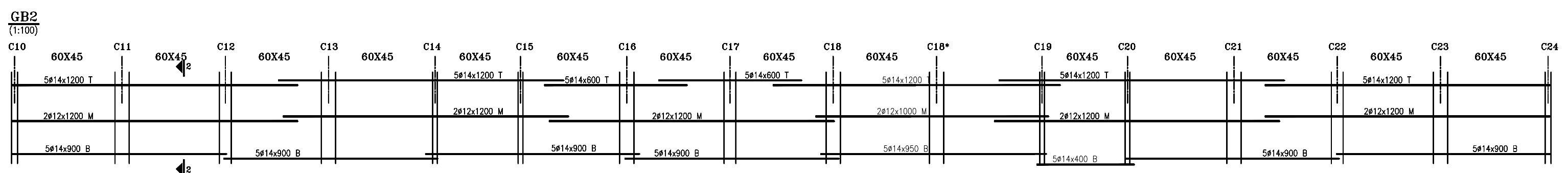
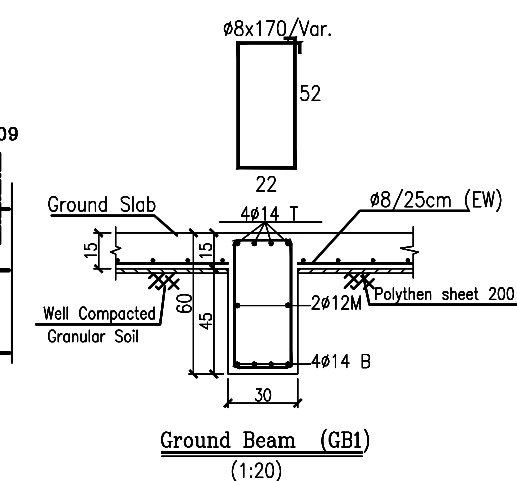
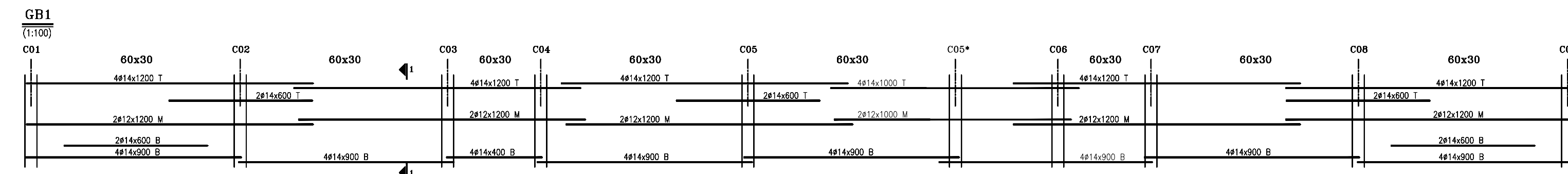
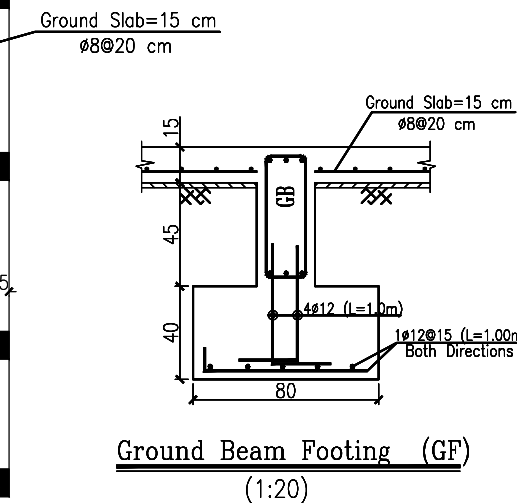
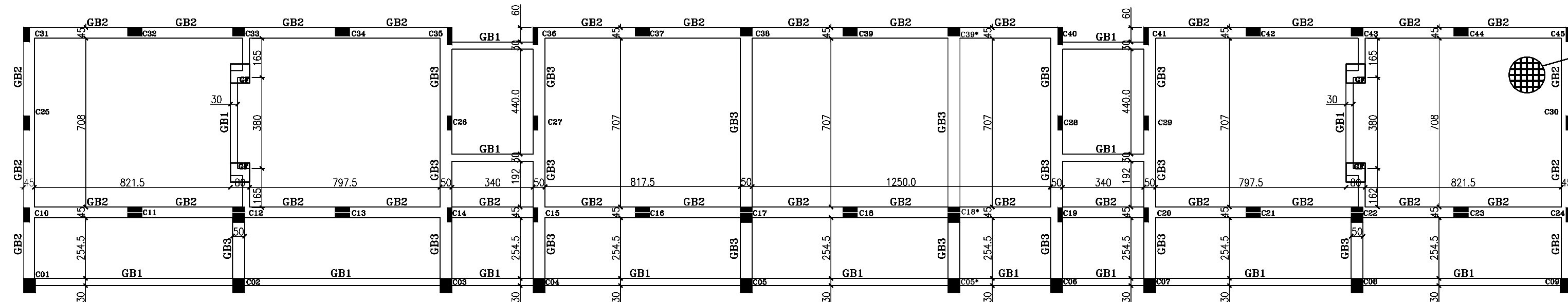


IN COOPERATION WITH:



FOR TENDER ONLY

Project Name	RIGHT TO EDUCATION	
School name	Al Motanaby Primary Boys School	
Drawing name	Ground Beams	
Symbol	DRAWING No. ST 04	Rev. No.
RES		R1

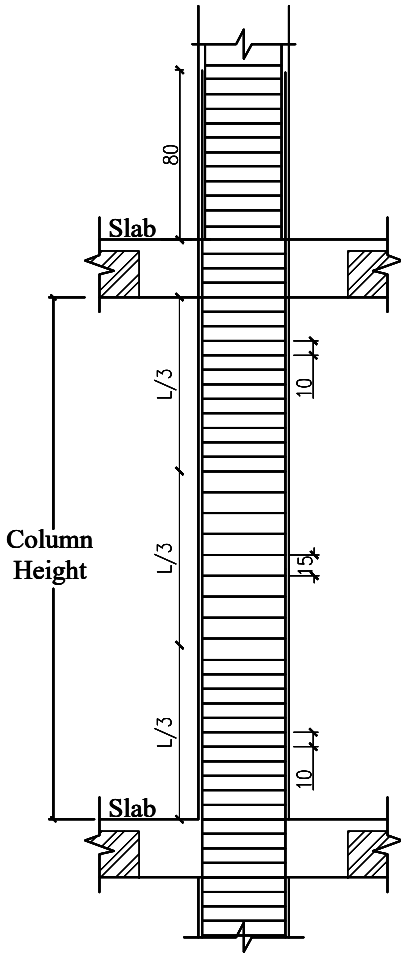


Columns Table

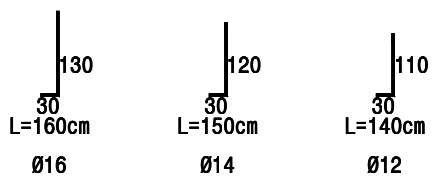
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Groups	Columns	No.	Neck Columns & Ground Floor	First & Second Floor
G1	C10,24,25 30,31,45	6		
G2	C14,15,19 20,26,27 28,29	8		
G3	C35,36,40,41	4		
G4	C32,34,37 39,42,44	6		
G5	C33,38,43	3		
G6	C12,17,22	3		
G7	C01,02,03,04 05,06,07,08 09	09		
G8	C11,13,16 18,21,23	6		

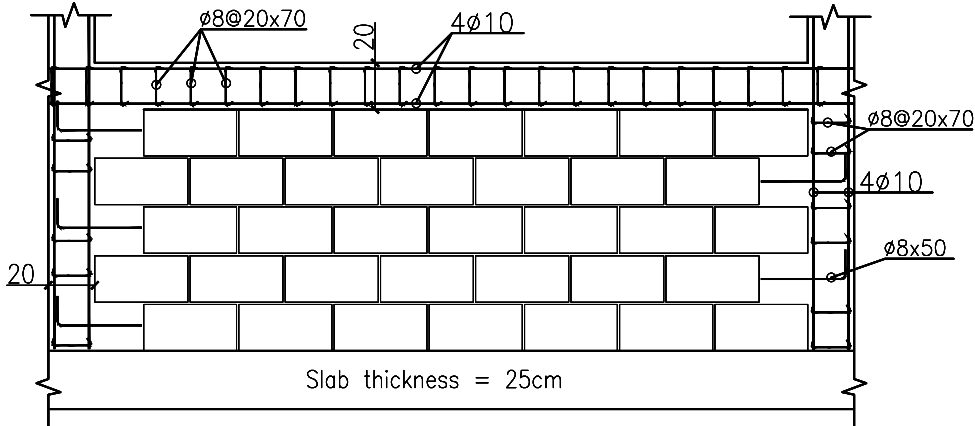
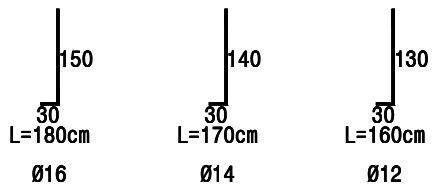
Stirrups Spacing
(NTS)
For All Floor



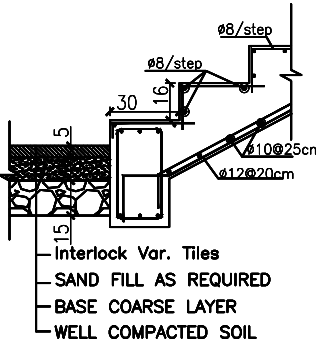
COLUMNS & WALLS DOWELS
(in 50cm th. BASE)



(in 55,65cm th. BASE)

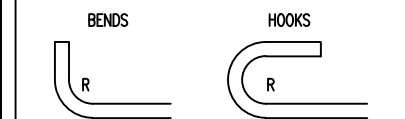


Joint point between different hollow block



External Stair
(1:20)

NOTES:
- DESIGN BEARING CAPACITY IS 1.75 KG/CM2
- THE CONTRACTOR HAS TO CONDUCT SOIL INVESTIGATION TO ENSURE THIS ASSUMPTION .
- EXCAVATION LEVEL SHOULD BE NOT LESS THAN (-1.50) FROM N.G.L
- ALL CONCRETE IN CONTACT WITH SOIL SHOULD CONTAIN TYPE SULFATE RESISTANT CEMENT.
- CONCRETE COVER FOR FOUNDATION = 5CM THICK
- CONCRETE COVER FOR INTERNAL WORK = 2.5CM
- CONCRETE COVER FOR EXTERNAL WORK = 3.5CM
- ALL THE CONCRETE UP THE PLINTH LEVEL MUST BE COATED WITH TWO COATS OF HOT BITUMIN.
- READY MIX CONCRETE MUST BE APPROVED BY THE ENGINEER.
- BACKFILLING MUST BE CARRIED OUT IN LAYERS 25CM THICK EACH LAYER (WATERED AND COMPACTED)
- N.G.L WILL BE FIXED BY THE ENGINEER
- CONCRETE CURE CRUSHING STRENGTH AFTER 28 DAYS
B = 25N/MM2 ; FOR BEAMS & SLABS
B = 30N/MM2 ; FOR COLUMNS
- RIBBED HIGH YIELD STEEL FY=420N/MM2
- MILD YIELD STEEL FY=250N/MM2
- FOUNDATION WAS DESIGNED TO HAVE GROUND FLOOR, FIRST , SECOND & THIRD FLOORS ONLY.



BAR SIZE	GRADE 250 (TYPE AND GRADE R)	GRADE 420 (TYPE AND GRADE L)
D	R	R
6	12	18
8	16	24
10	20	30
12	24	36
14	28	42
16	32	48
18	36	54
20	40	60
25	50	100

FUNDED BY:



IMPLEMENTED BY:



IN COOPERATION WITH:

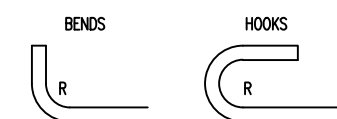


Project Name	
RIGHT TO EDUCATION	
School name	
Al Motanaby Primary Boys School	
Drawing name	
Columns Reinforcement	
Symbol	Rev. No.
RES	81

NOTES:

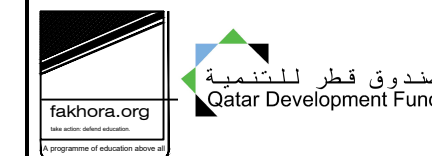
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14	28	42
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18	36	54
20	40	60
25	50	100

FUNDED BY:



IMPLEMENTED BY:

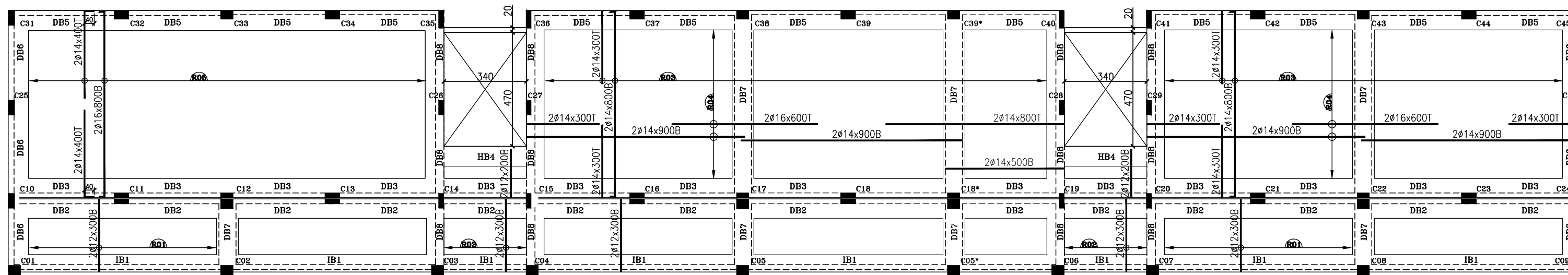
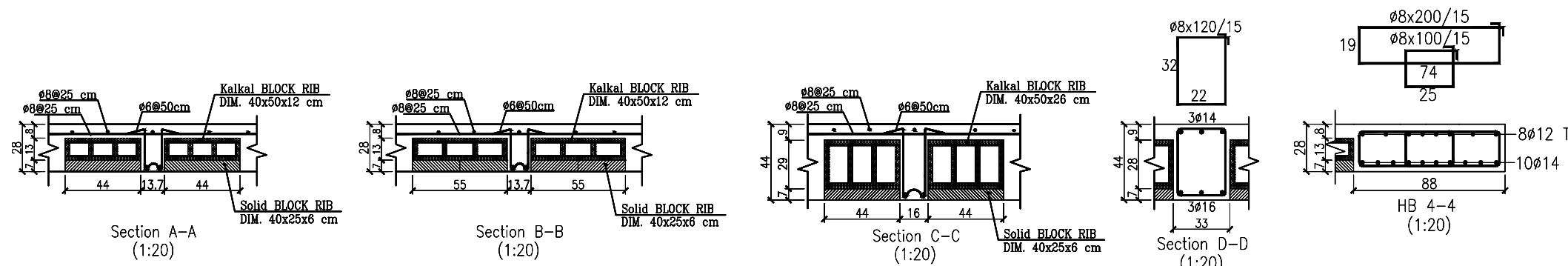
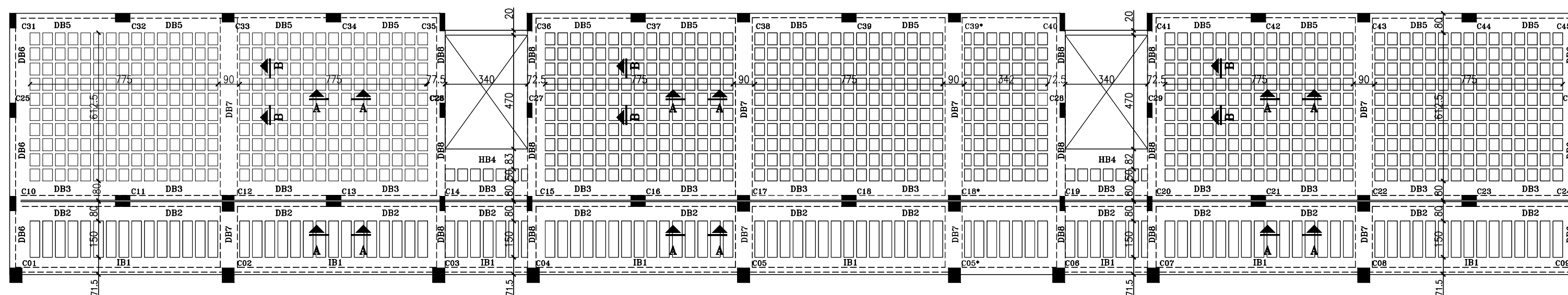


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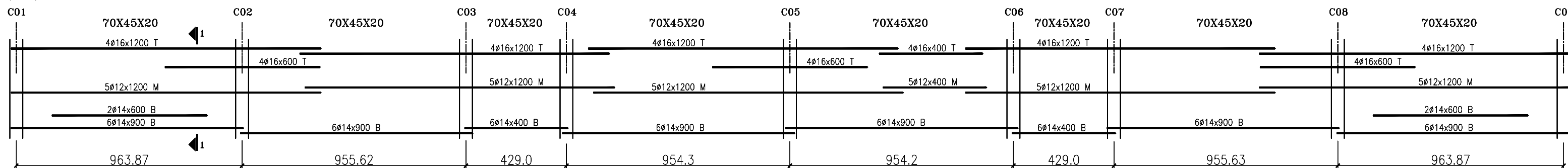
FOR TENDER ONLY

Project Name RIGHT TO EDUCATION		
School name Al Motanaby Primary Boys School		
Drawing name First Slab		
Symbol RES	DRAWING No. ST 06	Rev. No. R1



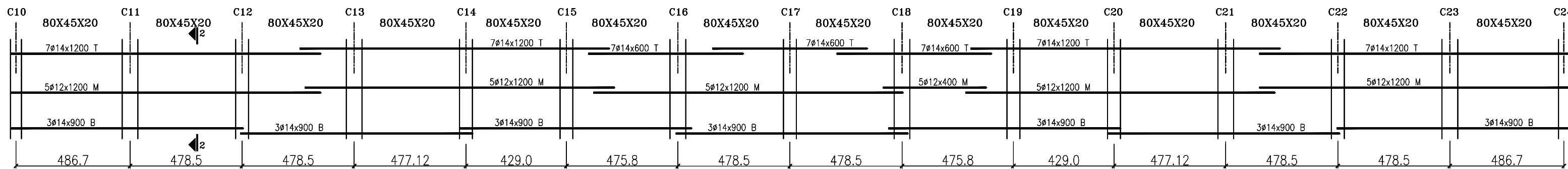
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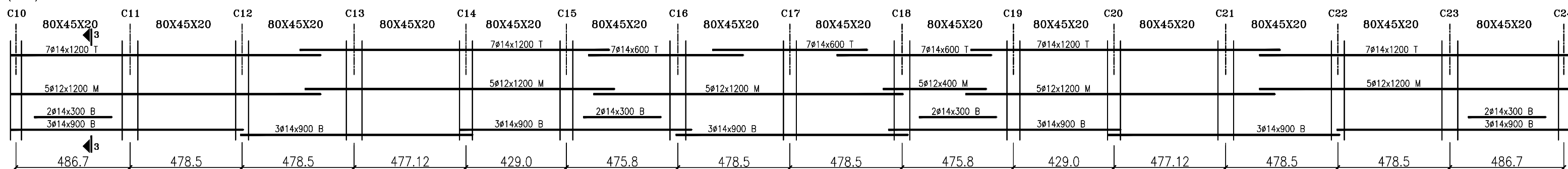
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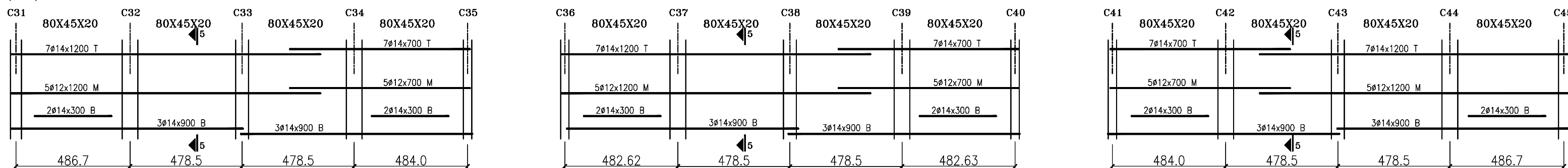
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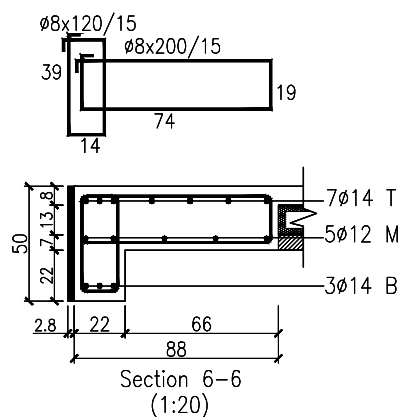
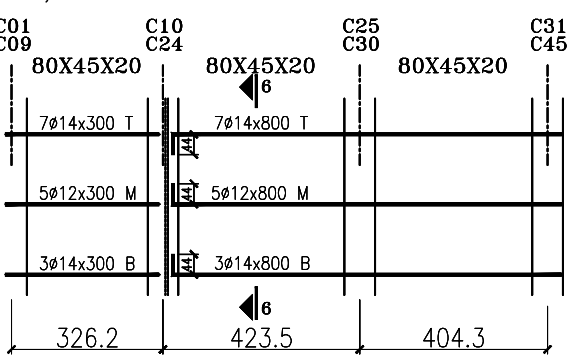
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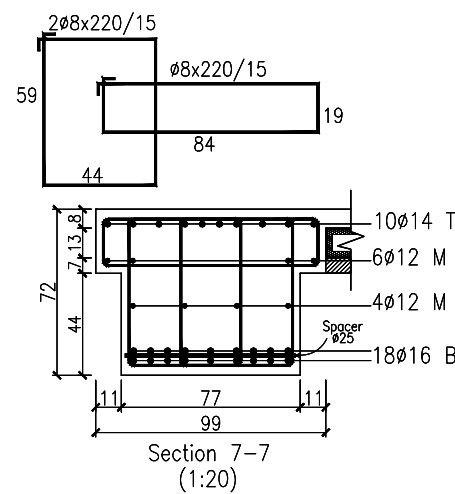
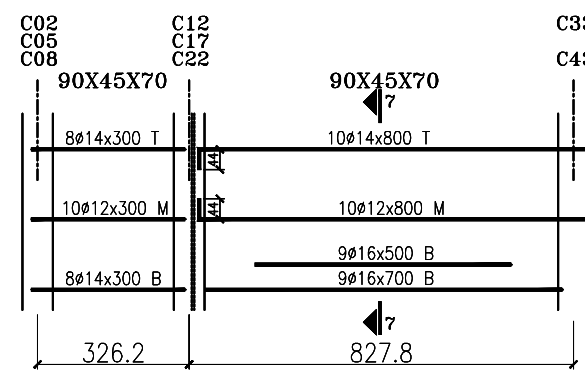
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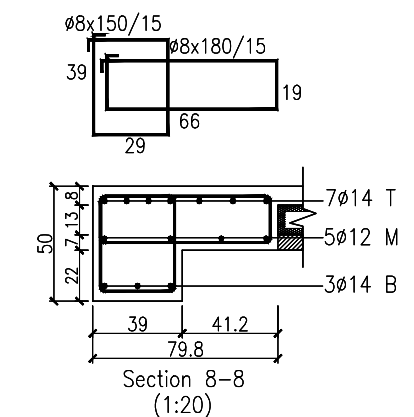
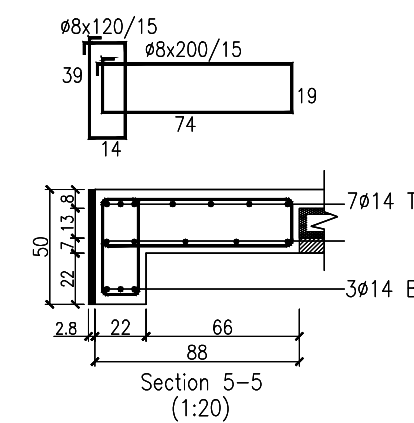
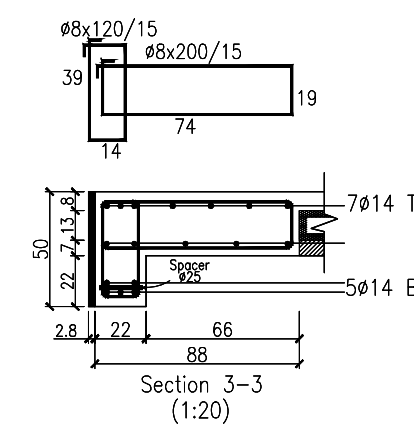
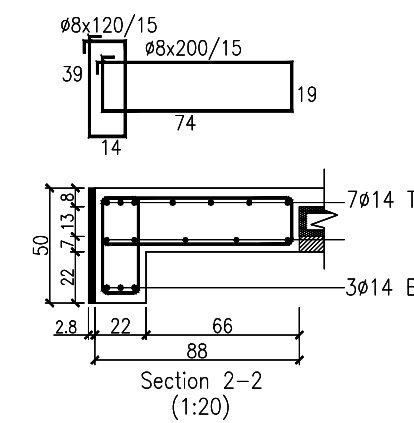
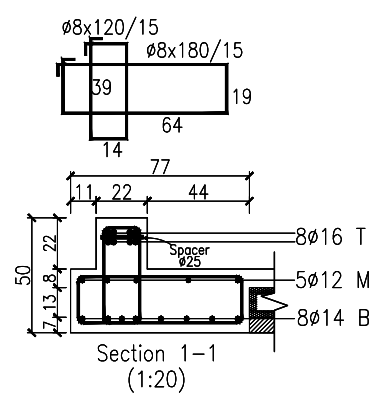
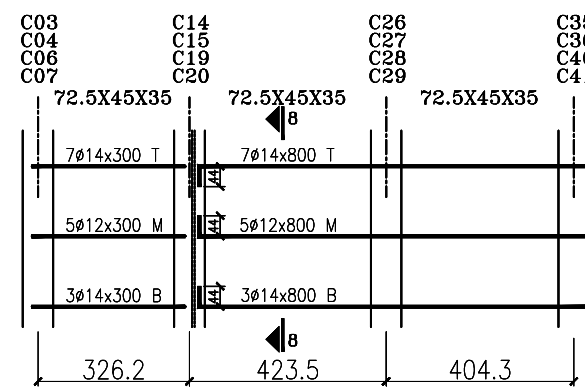
DB7

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DB8

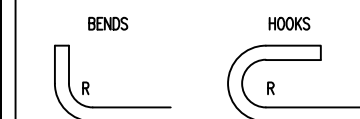
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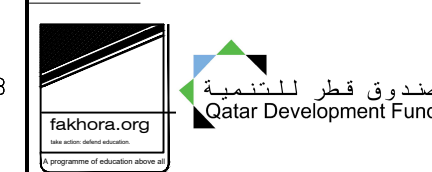
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FUNDED BY:



IMPLEMENTED BY:



IN COOPERATION WITH:



Project Name	
RIGHT TO EDUCATION	
School name	
Al Motanaby Primary Boys School	
Drawing name	
First Slab Beams	
Symbol	Rev. No.
RES	R1
DRAWING No. ST 07	