

CONSTRUCTION NOTES

GENERAL NOTES :

- THE INTERPRETATION OF THESE DRAWINGS SHALL GOVERN AND DIMENSIONS SHALL GOVERN OVER NOTES UNLESS OTHERWISE SPECIFIED.
- REINFORCING BARS FOR CONCRETE EXPOSED TO WEATHER SHALL BE PROTECTED WITH AT LEAST 20MM CLEAR DISTANCE AND IN NO CASE LESS THAN 40MM CONCRETE COVER.
- REINFORCING BARS SHALL BE FORMED TO THE REQUIRED SHAPE AND POSITION AS SHOWN IN THE DRAWINGS.
- REINFORCING BARS SHALL BE PLACED AT THE CORNERS OF THE SLAB AS SHOWN IN FIGURE 1.
- REINFORCING BARS SHALL BE PLACED AT THE CORNERS OF THE SLAB AS SHOWN IN FIGURE 2.
- REINFORCING BARS SHALL BE PLACED AT THE CORNERS OF THE SLAB AS SHOWN IN FIGURE 3.
- REINFORCING BARS SHALL BE PLACED AT THE CORNERS OF THE SLAB AS SHOWN IN FIGURE 4.
- REINFORCING BARS SHALL BE PLACED AT THE CORNERS OF THE SLAB AS SHOWN IN FIGURE 5.
- REINFORCING BARS SHALL BE PLACED AT THE CORNERS OF THE SLAB AS SHOWN IN FIGURE 6.
- REINFORCING BARS SHALL BE PLACED AT THE CORNERS OF THE SLAB AS SHOWN IN FIGURE 7.

NOTES ON CONCRETE MIXES & PLACING :

- UNLESS OTHERWISE NOTED, THE STRUCTURAL SPECIFICATIONS, THE MINIMUM 28 DAYS COMPRESSIVE CYLINDER STRENGTH OF CONCRETE SHALL BE AS FOLLOWS:
 - FOR BEAMS AND SLABS: 21MPa (3000 PSI)
 - FOR COLUMNS AND PILES: 21MPa (3000 PSI)
 - FOR RETAINING WALLS: 21MPa (3000 PSI)
 - FOR FOOTING: 21MPa (3000 PSI)
 - FOR PARAPET WALLS, GUTTERS AND OTHER STRUCTURAL ELEMENTS: 21MPa (3000 PSI)
 - FOR CONCRETE CURB WALLS, BEDDED SLAB, STAIRS: 17MPa (2500 PSI)
 - FOR NON STRUCTURAL ELEMENTS: 17MPa (2500 PSI)
- CONCRETE SHALL BE DEPOSITED IN ITS FINAL POSITION WITHOUT SEGREGATION. REMOVAL OF FLOWING PLACING SHALL BE DONE PROPERLY WITH BUCKETS OR BORROWS AND NOT EXCEEDED 5X (5) METERS AGGREGATE LENGTH.
- NO DEPOSITING OF CONCRETE SHALL BE ALLOWED WITHOUT THE USE OF VIBRATORS UNLESS AUTHORIZED BY THE DESIGNER IN WRITING.

NOTES ON CONCRETE SLABS :

- ALL REINFORCEMENTS SHALL BE PROVIDED WITH 20MM CLEAR CONCRETE COVER EXCEPT FOR SLAB ON GRADE WHERE REINFORCEMENT SHOULD BE PLACED AT THE CENTER OF THE SLAB THICKNESS.
- UNLESS OTHERWISE SPECIFIED, ALL CONTIGUOUS SLABS HAVING SAME REINFORCEMENTS RUNNING IN ONE DIRECTION, REINFORCING BARS SHALL BE BEST UP OR EXTENDED AS SHOWN IN FIGURE 1.
- FOR TWO WAY SLABS, BARS ALONG THE SHORTER SPAN SHALL BE PLACED BELOW THE LONGER SPAN BARS AT CENTER AND ABOVE THE LONGER SPAN BARS AT THE SUPPORTS. THE SPACING OF BARS AT THE COLUMN STRIP SHALL BE 1.5 TIMES THE SPACING IN THE MIDDLE STRIP, BUT IN ANY CASE GREATER THAN 2.5 TIMES THE SLAB THICKNESS OR 450MM.
- TEMPERATURE BARS OF SUSPENDED SLABS SHALL BE PLACED ABOVE THE MAIN REINFORCEMENT AT M IDSPAN AND SHALL BE BELOW THE MAIN REINFORCEMENT AT THE SUPPORTS.
- UNLESS OTHERWISE NOTED, ALL BARS SHALL BE REINFORCED WITH 10MM² AT 0.25MOC BY AT CENTER OF SLAB SLAB CONSTRUCTION JOINTS SHALL NOT BE MORE THAN 3M.
- WHENEVER REQUIRED, DROP SLAB SHALL BE ADDITIONALLY REINFORCED AS SHOWN IN FIGURE 2.
- EXTRA REINFORCEMENTS SHALL BE PROVIDED AT CORNER SLAB AS SHOWN IN FIGURE 3.
- UNLESS NOTED IN THE PLAN, ALL OPENINGS SHALL BE REINFORCED ALL AROUND BY 210MM² BAR AT THE TOP AND BOTTOM OF THE SLAB.

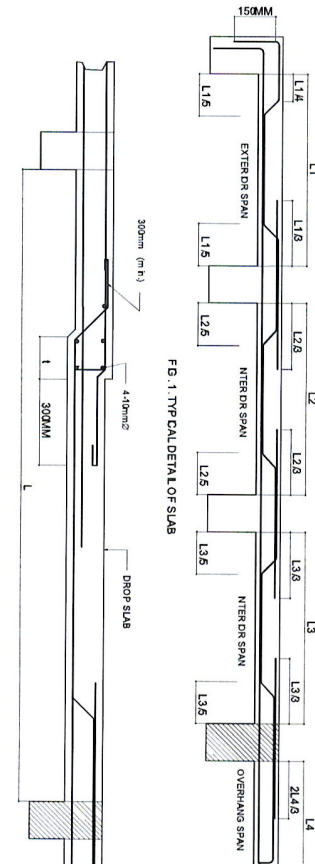
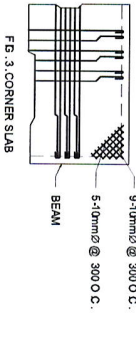


TABLE 1. SCHEDULE OF TEMPERATURE BARS

THICKNESS	MINIMUM TEMPERATURE BARS
100mm	10mm ² @ 400mm O.C.
120mm	10mm ² @ 300mm O.C.
150mm	10mm ² @ 250mm O.C.



NOTES ON REINFORCED CONCRETE BEAMS & GIRDERS

- UNLESS OTHERWISE NOTED, THE SPECIFICATIONS, THE MINIMUM 28 DAYS COMPRESSIVE CYLINDER STRENGTH OF CONCRETE SHALL BE AS FOLLOWS:
 - FOR BEAMS AND SLABS: 21MPa (3000 PSI)
 - FOR COLUMNS AND PILES: 21MPa (3000 PSI)
 - FOR RETAINING WALLS: 21MPa (3000 PSI)
 - FOR FOOTING: 21MPa (3000 PSI)
 - FOR PARAPET WALLS, GUTTERS AND OTHER STRUCTURAL ELEMENTS: 21MPa (3000 PSI)
 - FOR CONCRETE CURB WALLS, BEDDED SLAB, STAIRS: 17MPa (2500 PSI)
 - FOR NON STRUCTURAL ELEMENTS: 17MPa (2500 PSI)
- CONCRETE SHALL BE DEPOSITED IN ITS FINAL POSITION WITHOUT SEGREGATION. REMOVAL OF FLOWING PLACING SHALL BE DONE PROPERLY WITH BUCKETS OR BORROWS AND NOT EXCEEDED 5X (5) METERS AGGREGATE LENGTH.
- NO DEPOSITING OF CONCRETE SHALL BE ALLOWED WITHOUT THE USE OF VIBRATORS UNLESS AUTHORIZED BY THE DESIGNER IN WRITING.
- WHEN BEAM CROSSES A GIRDER, REINFORCING BARS USE SEPARATORS OF 8mm EQUAL TO THE BAR DIAMETER BUT NOT LESS THAN 20mm SPACED AT 90MM ON CENTER. IN NO CASE SHALL BE LESS THAN TWO SEPARATORS BETWEEN LAYERS OF BARS.
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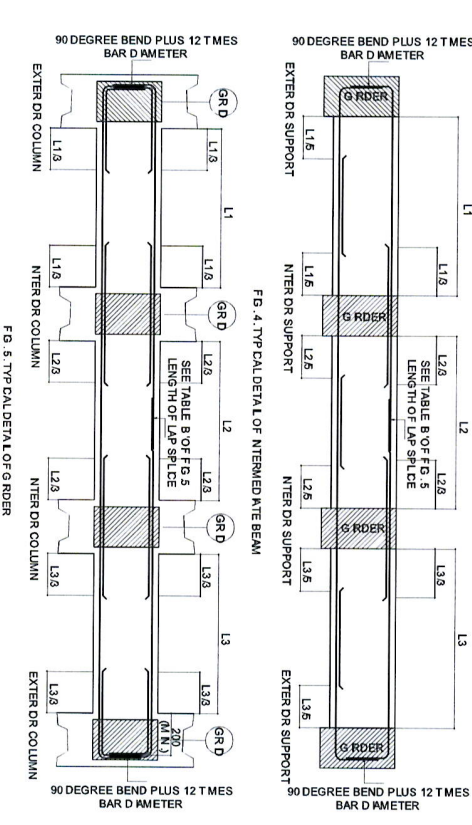
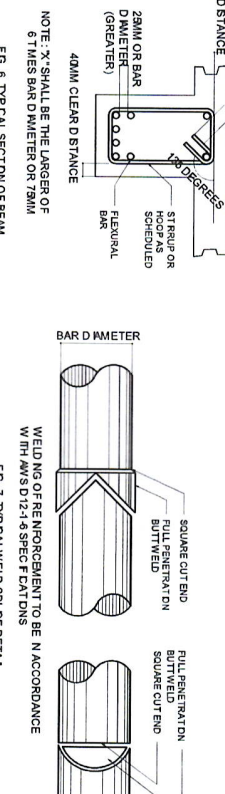


TABLE 2. DEVELOPMENT LENGTH

BAR SIZE	FOR F _y = 275MPa			FOR F _y = 414MPa			FOR F _y = 275MPa			FOR F _y = 275MPa		
	Case 1	Case 2	Case 3	Case 1	Case 2	Case 3	Case 1	Case 2	Case 3	Case 1	Case 2	Case 3
10mm	300	450	300	350	450	300	300	450	300	300	450	300
12mm	350	525	350	400	525	350	350	525	350	350	525	350
16mm	450	675	450	500	675	450	450	675	450	450	675	450
20mm	600	900	600	650	900	600	600	900	600	600	900	600
25mm	750	1125	750	800	1125	750	750	1125	750	750	1125	750
32mm	1000	1500	1000	1050	1500	1000	1000	1500	1000	1000	1500	1000



NOTES ON REINFORCED CONCRETE COLUMN :

- BEAM COLUMN JOINTS SHALL BE PROVIDED BY A HOOP AT 100MM. THE NUMBER OF SETS FOR SUCH HOOPS SHALL BE THE SAME IN THE CONF NED REGION AS SCHEDULED.
- WHERE COLUMN CHANGES IN SIZE, VERTICAL REINFORCEMENT SHALL BE OFFSET AT A SLOPE OF NOT MORE THAN 45 DEGREE. 10MM² BARS AT 100MM SHALL BE PROVIDED THROUGHOUT THE OFFSET REGION.
- SPICE SHALL BE ALLOWED ONLY IN THE CENTER HALF OF THE CLEAR COLUMN HEIGHT. BEAMS SHALL BE PROVIDED WITH 100MM CLEAR CONCRETE COVER OF ALL REINFORCING BARS AS PRESENTED IN TABLE 2.
- COLUMN TIES AND SPICE SHALL BE PROVIDED WITH 100MM CLEAR CONCRETE COVER OF ALL REINFORCING BARS AS PRESENTED IN TABLE 2.
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NOTES ON STRUCTURAL STEEL :

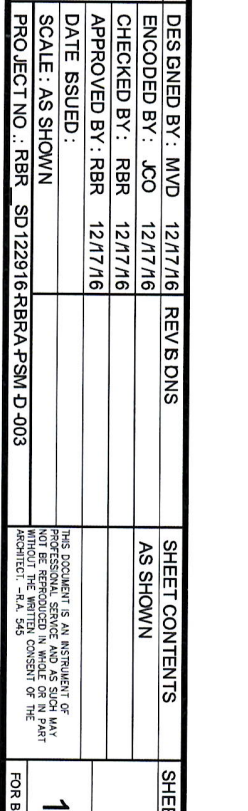
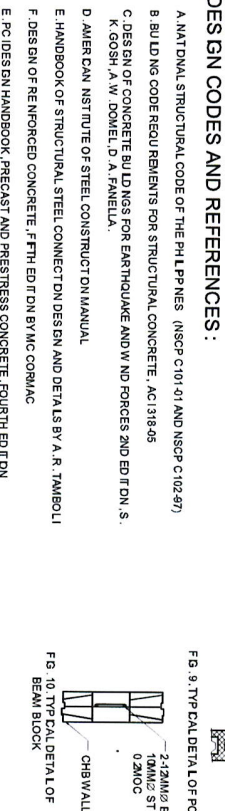
- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL UNLESS OTHERWISE SPECIFIED.
- ALL STRUCTURAL STEEL INCLUDING THAT OF GUSSET PLATES SHALL BE ASTM A36 STEEL WITH YIELD STRENGTH OF F_y = 248MPa.
- ALL BOLTS AND THREADFASTENERS SHALL BE ASTM A307.
- ALL WELDS SHALL BE TOXIC ELECTRODE AND SHALL DEVELOP AT LEAST 100% OF THE STRENGTH OF THE CONNECTED MEMBERS.
- THE CONTRACTOR SHALL SUBMIT TO THE STRUCTURAL ENGINEER THE SHOP DRAWINGS FOR APPROVAL BEFORE ANYWORKS SHALL COMMENCE.
- ALL DOUBLE ANGLE STRUCTURAL MEMBERS MUST BE PROVIDED WITH FLAT PLATES AT 300X300MM SPACING.
- ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL HAVE AT LEAST TWO COATS OF RED LEAD OR ZINC CHROMATE PRIMER PAINT.
- ALL TRUSSES, BEAMS, AND GIRDERS MUST BE PROVIDED WITH A CAMBER AT THE RATE OF 3MM FOR EVERY 3.0M OF CLEAR SPAN IN A PARABOLIC LAYOUT.

NOTES ON FOUNDATIONS :

- ALL FOOTINGS SHALL BE DESIGNED BASED ON THE ALLOWABLE SOIL BEARING CAPACITY OF 150MPa. THE CONTRACTOR SHALL REPORT IN WRITING TO THE DESIGNER THE ACTUAL SOIL BEARING CAPACITY AT THE LEVEL OF THE FOOTING AND CONFIRM THE ACTUAL SOIL BEARING CAPACITY BEFORE DEPOSITING CONCRETE.
- NO FOOTING SHALL REST ON UNCOMPACTED FILL NOR LOOSE SOIL. ALL FOOTINGS SHOULD REST AT LEAST 1.0 BELOW THE GROUND THE MINIMUM CONCRETE PROTECTIVE COVER FOR REINFORCEMENTS SHALL BE 75MM CLEAR.
- ALL COLUMN REINFORCEMENTS SHALL REST ABOVE THE BOTTOM REINFORCEMENTS OF THE FOOTING WITH 90 DEGREE BEND PLUS 12 TIMES BAR DIAMETER EXTENDING AT THE FREE END BUT NOT LESS THAN 300MM. HOOPS IN THE COLUMN SHALL CONTINUE BELOW THE TOP OF THE FOOTING AT 0.3MOC.

NOTES ON CHB WALLS :

- ALL CHB WALLS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 450 PSI AND SHALL BE REINFORCED AS PRESENTED IN TABLE 3.
- MINIMUM LAP LENGTH OF SPICE SHALL BE 250MM.
- PROVIDE RIBB ANGLE REINFORCEMENT AT CORNERS, 600MM LONG.
- PROVIDE BEAMS BLOCKS AT EVERY 10TH LAYER OF CHB AND A POST AT EVERY 3M. SEE FIGURE 9 AND FIGURE 10.
- WHERE CHB WALLS AND COLUMNS, RC BEAMS, AND RC WALLS JOINTS WITH THE SAME SIZE AS THE VERTICAL OR HORIZONTAL REINFORCEMENTS SHALL BE PROVIDED.



EXAATTO BUILDERS, INC.
Legazpi Premium Development Corporation

ENG NEER: RUELB. RAM REZ, M.Sc. M. ASPE
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DEPARTMENT OF SCIENCE AND TECHNOLOGY
M. MARAPPA REG. DN HIGH SCHOOL
BRGY. RIVAL, ODONGAN, ROMBLON

EDWARD C. ALBARACAN
CAMPUS DIRECTOR

APPROVED:

DESIGNED BY:	12/17/16	REVISED:
ENCODED BY:	JCO	12/17/16
CHECKED BY:	RBR	12/17/16
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