GENERAL NOTES

1. GENERAL

1.1 SETTING OUT
ALL NECESSARY BOUNDARY LINES, BUILDING LINES AND CORNER PEGS SHALL BE ESTABLISHED AND APPROVED BY A REGISTERED GEODETIC ENGINEER.
ALL DIMENSIONS MEASURED ON SITE SHALL BE CHECKED AND CONFIRMED WITH RELEVANT ARCHITECTURAL, STRUCTURAL AND M&E DRAWINGS.
ALL DISCREPANCIES IN THE DIMENSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ ENGINEER PRIOR TO THE ORDERING OF MATERIAL AND COMMENCEMENT OF CONSTRUCTION OF THE RELEVANT WORKS.

1.2 LEVELS
ALL NECESSARY REDUCED LEVELS OF THE EXISTING SITE AND PROPOSED BUILDING FORMATION LEVELS SHALL BE ESTABLISHED WITH REFERENCE TO APPROVED BENCH MARKS. ALL LEVELS SHOWN ARE IN METRIC MEASUREMENT.
ANY DISCREPANCIES IN THE MEASURED LEVELS AND THE LEVELS STATED IN THE RELEVANT ARCHITECTURAL DRAWINGS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT/ ENGINEER.

1.3 DRAWINGS
ALL STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS AND SPECIFICATION.
ANY DISCREPANCIES BETWEEN DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ ENGINEER.
THE LATEST REVISIONS IN THE DRAWINGS SHALL BE INCORPORATED IN THE CONSTRUCTION WORKS.

1.4 INCORPORATION OF M&E REQUIREMENTS IN STRUCTURE
THE CONTRACTOR SHALL INCORPORATE ALL MECHANICAL, SANITARY AND ELECTRICAL WORKS TO BE EMBEDDED IN THE CONCRETE OR OPENINGS FOR PIPE OR DUCT WORKS BASED IN THE REQUIREMENTS OF M&E DRAWINGS IN HIS POSSESSION. HE SHALL CHECK THE M&E DRAWINGS AND RESOLVE DISCREPANCIES, IF ANY, BEFORE CONCRETING.
ANY DEVIATIONS IN THE STRUCTURAL WORK DUE TO SERVICES REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ ENGINEER FOR HIS APPROVAL.

2. SUBSTRUCTURE WORKS

2.1 EARTHWORKS
ALL EARTHWORKS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF STRUCTURAL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
FOR ALL EXCAVATIONS INCLUDING BUT NOT LIMITED TO FOOTINGS, PITS AND TRENCHES BELOW GROUND LEVEL, CULVERTS AND DRAIN PIPE TRENCHES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND PROVISION OF ADEQUATE SHORING AND STRUTTING TO THE SATISFACTION OF THE ARCHITECT/ ENGINEER. DETAILS OF THE SHORING AND STRUTTING SHALL BE SUBMITTED TO THE ARCHITECT/ ENGINEER.

2.2 LEAN CONCRETE
UNLESS OTHERWISE STATED, A MINIMUM OF 50mm THICK LEAN CONCRETE LAYER SHALL BE PROVIDED ON ALL SOIL SURFACES FORMING THE UNDERSIDE OF ANY REINFORCED FOOTINGS, BEAMS, SLABS, SUMP PITS, DRAINS, ETC.

3. MATERIALS AND WORKMANSHIP

3.1 STANDARDS AND SPECIFICATIONS
WHERE APPLICABLE, ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE RELEVANT CODES:
A. NSCP 2010
B. NATIONAL BUILDING CODE OF THE PHILIPPINES
C. ACI 318 - 2008
D. AISC

3.2 MATERIAL STRENGTHS

3.2.1 CONCRETE
UNLESS OTHERWISE STATED ON THE DRAWINGS, THE GRADE OF CONCRETE SHALL BE AS FOLLOWS:

LEAN OR MASS CONCRETE	:	1,500 psi
FOOTINGS, FOOTING TIE BEAMS, COLUMNS, SUSPENDED BEAMS AND SLABS, GIRDERS, PARAPET WALLS	:	3,000 psi
SLAB-ON-GRADE, CATCH BASIN, AREA DRAIN	:	2,500 psi

3.2.2 STEEL REINFORCEMENT
THE MINIMUM YIELD STRENGTH OF STEEL REINFORCEMENT SHALL BE AS FOLLOWS:

DEFORMED BARS Ø18mm AND BIGGER	:	275 MPa
DEFORMED BARS Ø12mm AND SMALLER	:	275 MPa

3.2.3 STRUCTURAL STEEL
ALL STRUCTURAL STEELWORKS SHALL CONFORM TO GRADE 36 STEEL UNLESS OTHERWISE SPECIFIED.
ALL STRUCTURAL STEEL WORKS SHALL BE CARRIED OUT CONFORMING TO THE LATEST EDITION OF THE AISC AND RELEVANT PROVISIONS OF THE NSCP.

3.3 WORKMANSHIP
CONCRETE COVER TO ALL REINFORCEMENT INCLUDING STIRRUPS (UNLESS OTHERWISE SHOWN ON DRAWINGS), SHALL BE NOT LESS THAN:

EXPOSED TO WEATHER OR IN CONTACT		
WITH EARTH	:	70 mm
SLABS	:	20 mm
BEAM SOFFIT AND SIDES	:	40 mm
COLUMNS	:	40 mm
WALLS	:	20 mm
FOOTINGS	:	75 mm

3.4 LAPS AND SPLICES (UNLESS OTHERWISE SPECIFIED)

PARAMETERS			
MATERIAL	Mpa	ACI 318-11 DEVT. & SPLICE LENGTH	
f'c	20.7		
fy	275	16mm & HIGHER	
fyh	230	12mm & LOWER	
tie Ø	10	stirrup Ø	10
fyt	40000	fyt	40000

BARS (mm)	ANCHORAGE LENGTH (mm)	Lch (mm)	STANDARD HOOK (mm) 90°	180°	135°-90°	BEAM COMP. SPLICE (mm)	TENSION LAP SPLICE (mm) LAP CLASS	BEAM TOP BAR	BEAM BOTTOM BAR	COLUMN TIED	COLUMN SPIRAL	LIMIT WT. (kg/m)
10	600	150	180	110	120-120	300	A	380	300	300	300	0.616
							B	490	390			
12	710	170	200	120	130-130	300	A	450	350	350	350	0.888
							B	590	460			
16	950	350	260	130	180-180	460	A	910	700	700	700	1.579
							B	1150	910			
20	1180	440	320	160	200-320	580	A	1140	870	870	870	2.466
							B	1480	1130			
25	1900	550	400	200	250-400	720	A	1750	1370	1370	1370	3.854
							B	2310	1780			
28	2190	610	480	260		810	A	1990	1530	1530	1530	4.833
							B	2590	1990			
32	2590	700	550	290		930	A	2270	1750	1750	1750	6.313
							B	2950	2280			
36	2900	790	650	360		1040	A	2560	1970	1900	1900	7.991
							B	3330	2560			

NOTES:
1. FOR COLUMNS AT ANY LEVEL, NO MORE THAN ALTERNATE BARS SHOULD BE SPLICED, NOT MORE THAN 33% OF THE BARS SHALL BE SPLICED WITHIN THE REQUIRED LAP LENGTH MINIMUM DISTANCE BETWEEN TWO ADJACENT SPLICED SHALL BE 600mm.
2. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 300mm DEPTH OF CONCRETE CAST BELOW REINFORCEMENT.
3. LAP SPLICE SHALL BE "CLASS B" TENSION LAP SPLICE IF MORE THAN ONE HALF OF THE BARS WERE SPLICED AT ANY SECTION, WHILE "CLASS A" TENSION LAP SPLICE IF HALF OR FEWER THAN HALF OF THE BARS WERE SPLICED.
4. TOP BARS SPLICE FOR BEAMS, SHOULD BE "BEAM COMPRESSIVE SPLICE".

4. STANDARD PROVISIONS
REGARDLESS OF WHETHER OR NOT SHOWN IN DRAWINGS AND OTHER TENDER DOCUMENTS, THE FOLLOWING STANDARD PROVISIONS ARE CONSIDERED PART OF THE CONTRACT AND SHALL BE CARRIED OUT UNLESS OTHERWISE STATED.

4.1 STARTER BARS FOR WALLS AND COLUMNS
STARTER BARS FROM THE STRUCTURAL SYSTEM FOR R.C. WALLS AND COLUMNS SHALL CORRESPOND IN NUMBER AND SIZE TO THE REINFORCEMENT IN THE WALL OR COLUMN IN WHICH THEY ARE TO BE EMBEDDED. ALL STARTER BARS FOR WORKS NOT TO BE CARRIED OUT AT LEAST FOR ONE MONTH SHALL BE PROTECTED WITH 2 COATS OF CEMENT WASH. THE COATING SHALL BE MAINTAINED PERIODICALLY TO ENSURE PROTECTION TO THE REINFORCEMENT. BARS SHALL NOT BE BENT OR OTHERWISE DAMAGED WHILE THEY ARE EXPOSED.

4.2 CONSTRUCTION JOINTS
THE LOCATION OF CONSTRUCTION JOINTS AND THE CONCRETE CASTING PLAN SHALL BE SUBJECTED TO THE APPROVAL OF THE ENGINEER.

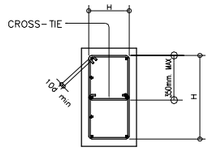
4.3 R.C. STIFFENERS FOR CONCRETE MASONRY WALLS
R.C. STIFFENERS FOR CONCRETE MASONRY WALLS AND STARTER BARS THEREFROM SHALL BE PROVIDED AS PER ARCHITECTURAL DRAWINGS, UNLESS OTHERWISE STATED:
A: FOR MASONRY WALLS 3.0m HIGH, USE 150mm X 300mm STIFFENER BEAMS AND COLUMNS REINFORCED WITH 4-Ø16 AND Ø10 @ 200mm O.C. SPACING OF STIRRUPS/ LATERAL TIES. STIFFENERS SHALL BE SPACED AT NOT MORE THAN 5m APART.

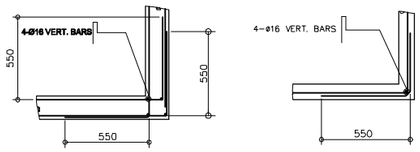
5. CRITICAL CONSTRUCTION PROCEDURE

5.1 TO MINIMIZE CRACKING DUE TO SHRINKAGE IN THE LARGE AREA SLABS AND WALLS, THE CONTRACTOR SHALL PROVIDE SHRINKAGE JOINTS (POUR STRIPS) AT APPROPRIATE INTERVALS AS APPROVED BY THE ARCHITECT/ ENGINEER. THE JOINTS SHALL NOT BE CONCRETED UNTIL AT LEAST 7 DAYS AFTER THE ADJACENT CONCRETE PANELS HAVE BEEN CAST.

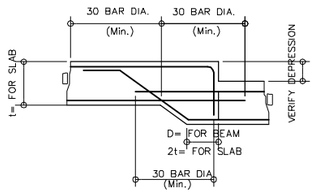
5.2 CONCRETE IN FLOOR SLABS SHALL BE LAID TO FALLS AS SHOWN IN THE ARCHITECTURAL DRAWINGS DURING THE INITIAL CASTING OF THE CONCRETE.

NOTES:
1. YIELD STRESS OF HOOPS=230 MPa
2. D=USE MAXIMUM COLUMN DIMENSION, 1/6 CLEAR HEIGHT OR 18"(450mm) WHICHEVER IS GREATER.
3. NUMBER OF HOOP TIES SAME AS PER COLUMN TIES SCHEDULE.
4. ALL CONCRETE REINFORCEMENT DETAIL SHOULD BE DONE IN ACCORDANCE WITH ACI DETAILING MANUAL 2004 PUB SP-66(04)

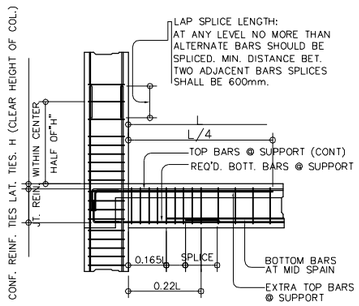




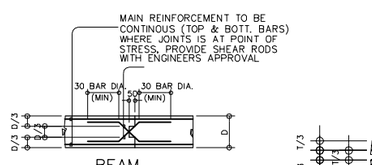
TYPICAL CONNECTION DETAIL OF R.C. WALL AT CORNERS



TYPICAL DETAIL FROM BEAM OR SLAB CHANGE SOFFIT

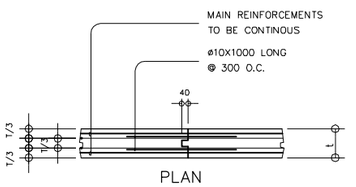


TYP. DETAIL OF COL. LAP SPLICE & EXT. GIRDER TO COL. CONNECT

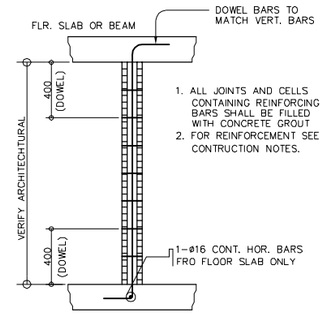


BEAM

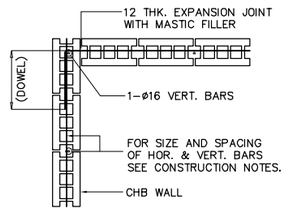
TYPICAL SLAB AND BEAM CONSTRUCTION JOINT DET.



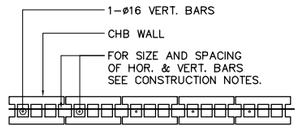
PLAN



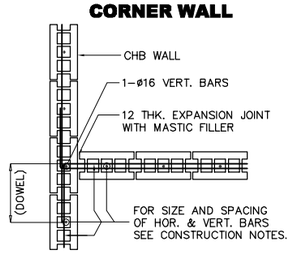
TYP. SECTION OF MASONRY PARTITION REINFORCEMENTS



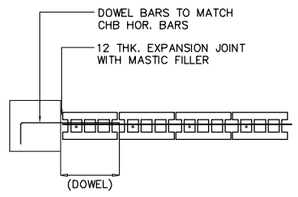
CORNER WALL



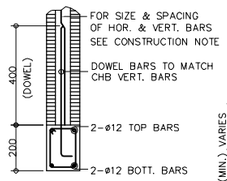
OPENING OR END WALL



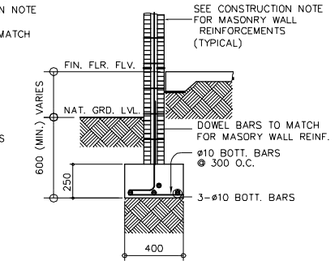
INTERSECTION WALL



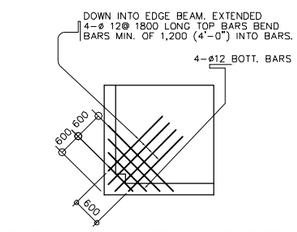
INTERSECTING R.C. COL. OR WALL



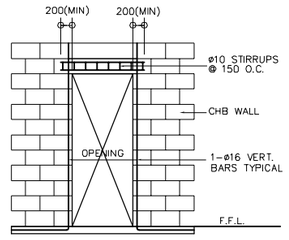
SECTION



TYPICAL CHB FOOTING DETAILS (WF-1)

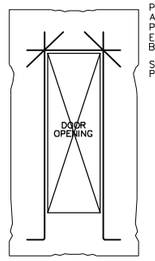


TYPICAL CORNER SLAB DETAIL



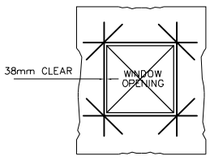
ELEVATION

TYP. DET. OF LINTEL BEAM AT CHB WALL OPENING

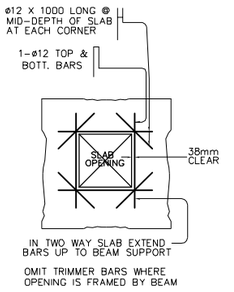


NOTE:
PROVIDE THESE ADDITIONAL BARS FOR ALL OPENINS PLUS BARS (NOT SHOWN) PARALLEL TO SIDE OF OPENING EQUAL TO THE NUMBER OF TERMINATED BARS AT OPENING

SEE ARCHITECTURAL AND MECHANICAL PLANS FOR SLABS OPENING LOCATION.



TYP. EXTERIOR WDW. & DOOR OPENING



TYP. SLAB OPENING DET.

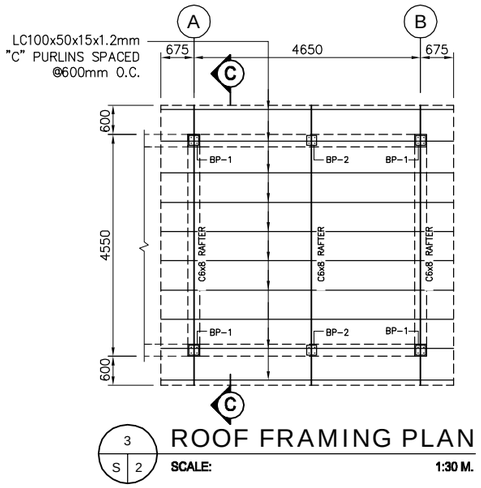
STRUCTURAL STANDARD DETAILS
2 / S | 1
NOT TO SCALE

GIBMA Engineering Services
Design - Construction - Project Management - Surveys
93 Kalikasan Street Karangalan Village Phase 2A, Dela Paz, Pasig City 1611
Tel. No.: 682 7114 Fax. No.: 682 8467 Cellphone No.: 0920 9226441
URL: www.gibma.com E-mail: gibma2003@yahoo.com

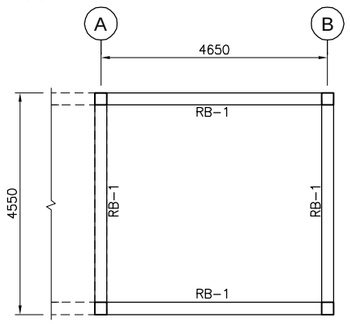
CIVIL / STRUCTURAL ENGINEER: GILBERT B. MAGBUTAY		PROJECT TITLE: PROPOSED PUMP HOUSE & FIRE TANK	OWNER: METAL INDUSTRY RESEARCH AND DEVELOPMENT CENTER (MIRDC)	DATE:	REVISION:	DESCRIPTION:	DESIGNED BY:	JVNN
							CADD BY:	RHV
REG. NO.: 055251	PTR NO.: 5035423						DATE:	
DATE: AUG. 1, 1989	ISSUED ON: JAN. 3, 2019	LOCATION:	ADDRESS:				CHECKED BY:	GBM
							APPROVED BY:	

SHEET CONTENTS: PUMP HOUSE
GEERAL NOTES
TYPICAL STANDARD STRUCTURAL DETAILS

DRAWING NO.: S - 1
SHEET NO.: ./.



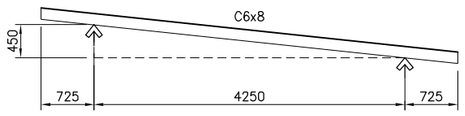
3 / S 2 — ROOF FRAMING PLAN
SCALE: 1:30 M.



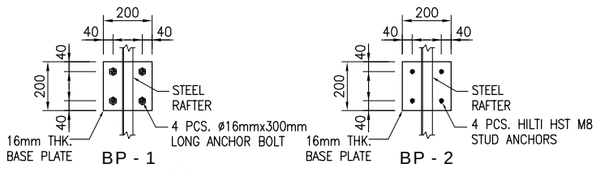
2 / S 2 — ROOF BEAM FRAMING PLAN
SCALE: 1:75 M.

SCHEDULE OF BEAMS

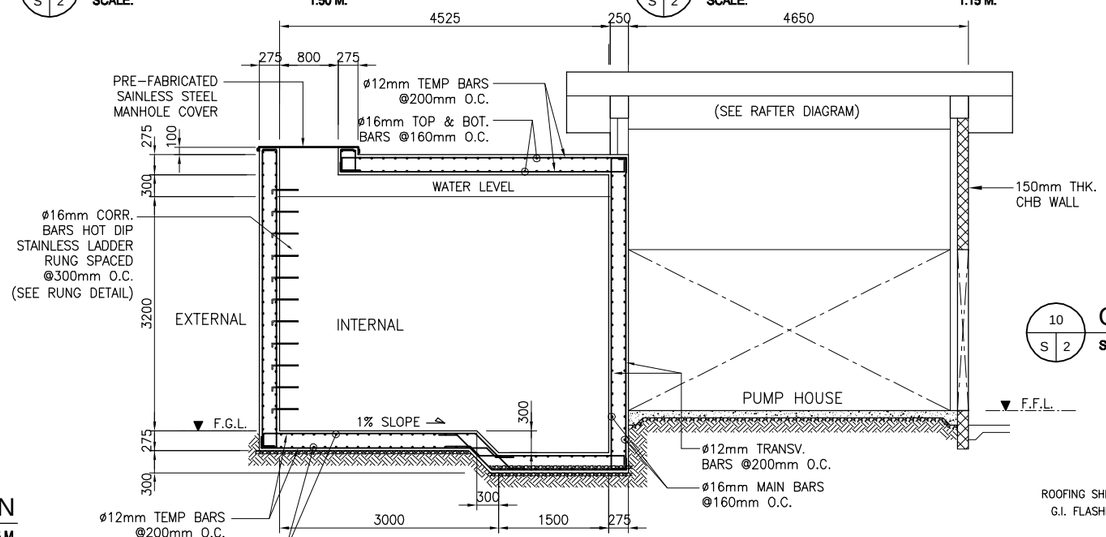
BEAM MARKING	SECTION (BxH)	BEAM TYPE	LEFT END REBARS		MIDSPAN REBARS		RIGHT END REBARS		SPACING OF ø10 STIRRUPS TO CENTER
			TOP	BOTTOM	TOP	BOTTOM	TOP	BOTTOM	
RB-1	250 X 300	CONTINUOUS	2-ø16	2-ø16	2-ø16	2-ø16	2-ø16	2-ø16	1 @ 50, REST @ 90 O.C.



6 / S 2 — RAFTER DIAGRAM
SCALE: 1:50 M.



7 / S 2 — BASE PLATE DETAIL
SCALE: 1:15 M.

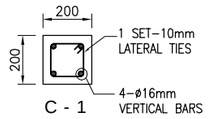


SCHEDULE OF FOOTING

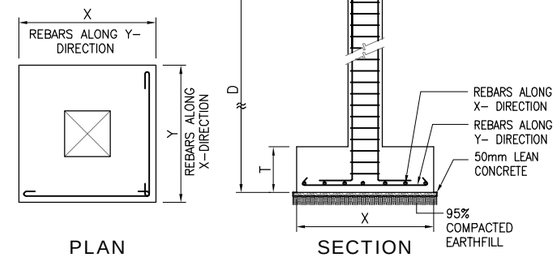
FOOTING DESIGNATION	FOOTING SIZE			ALONG X-DIRECTION		ALONG Y-DIRECTION		DEPTH OF FOOTING
	X mm	Y mm	THICKNESS (T) mm	TOP	BOTTOM	TOP	BOTTOM	(D) mm
F-1	1000	1000	300	–	7-ø16		7-ø16	1300

SCHEDULE OF COLUMN

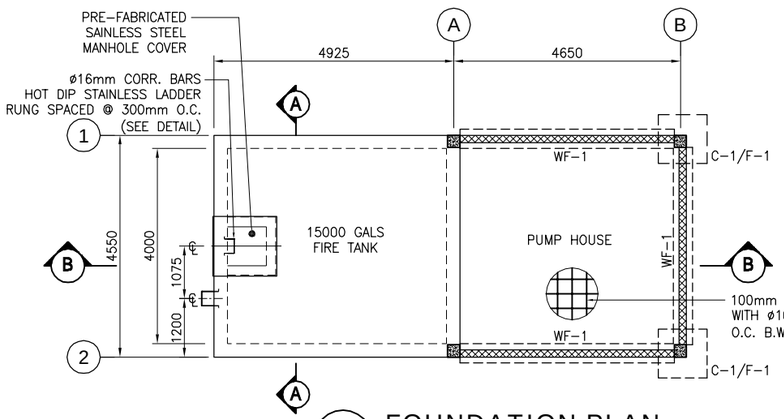
COLUMN MARKING	LEVEL	SECTION (B X H)	MAIN VERT. REBARS	ø10 LATERAL TIES
C-1	FOOTING – ROOF BEAM	250 X 250	4 – ø16	1 @ 50, 3@100, REST @ 150 O.C.



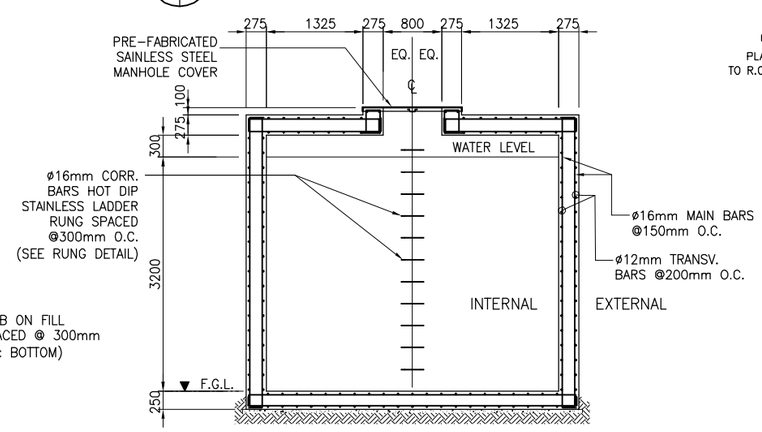
10 / S 2 — COLUMN DETAIL
SCALE: 1:15 M.



11 / S 2 — FOOTING DETAIL
SCALE: N.T.S.

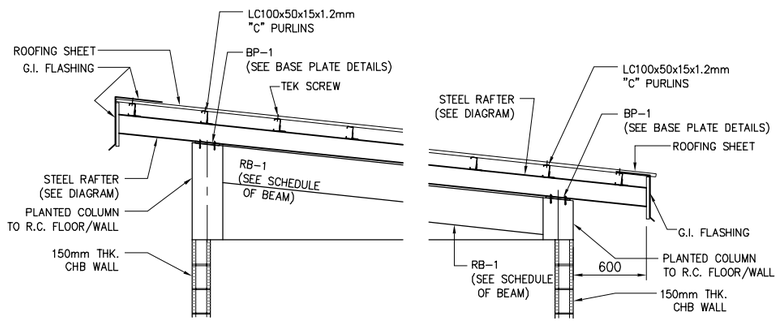


1 / S 2 — FOUNDATION PLAN
SCALE: 1:75 M.

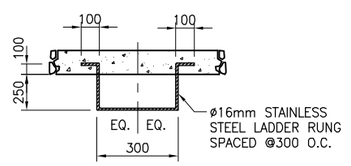


4 / S 2 — SECTION THRU A-A
SCALE: 1:50 M.

5 / S 2 — SECTION THRU B-B
SCALE: 1:50 M.



9 / S 2 — SECTION THRU C-C
SCALE: 1:30 M.



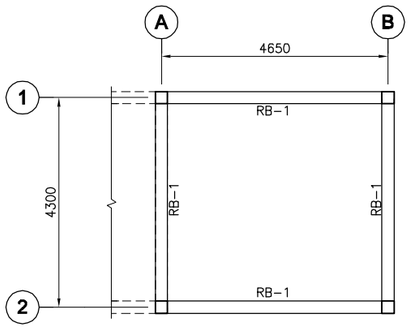
8 / S 2 — LADDER RUNG DETAIL
SCALE: N.T.S.

NOTES:

1. ALL DIMENSIONS, ELEVATIONS AND SPACING OF REBARS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. COMPRESSIVE STRENGTH OF CONCRETE (f'c) SHALL BE 20.7 MPa; FOR LEAN CONCRETE (f'c) = 13.80 MPa
3. REINFORCING BARS SHALL CONFORM TO THE REQUIREMENT PNS: 49:1991, DEFORMED STEEL BARS, GRADE 230
4. ALLOWABLE BEARING CAPACITY OF SOIL IS 235 KPa AT 2.5M DEPTH.
5. DETAILS OF PIPES, FITTINGS AND ACCESSORIES SHALL BE REFERRED TO PLUMBING/MECHANICAL DRAWINGS.
6. PROVIDE NON-TOXIC INTEGRAL AND MEMBRANE WATERPROOFING ON BASE AND WALLS OF TANK.
7. LOCATION OF 65MM dia. G.I. INLET PIPE CAN BE MOVED DEPENDING ON THE ACTUAL LOCATION OF WATER SOURCE
8. STRUCTURAL STEEL MATERIALS SHALL BE A-36 STEEL.
9. PROVIDE WATERSTOP AT EVERY CONSTRUCTION JOINT BELOW GROUND LEVEL.
10. FOR RAMP SLAB DETAIL, SEE DRAWING NO. S-3

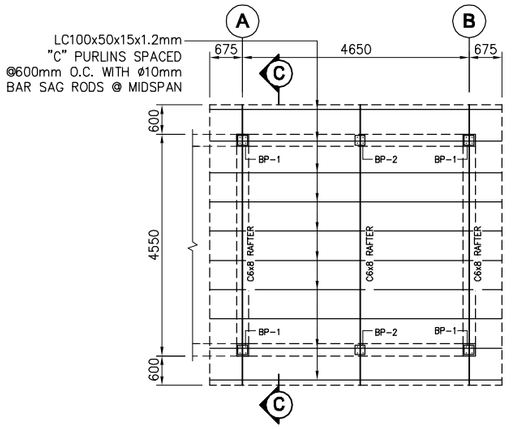
GIBMA Engineering Services
Design - Construction - Project Management - Surveys
93 Kalikasan Street Karangalan Village Phase 2A, Dela Paz, Pasig City 1611
Tel. No.: 682 7114 Fax. No.: 682 8467 Cellphone No.: 0920 9226441
URL: www.gibma.com E-mail: gibma2003@yahoo.com

CIVIL / STRUCTURAL ENGINEER: GILBERT B. MAGBUTAY		PROJECT TITLE: PROPOSED PUMP HOUSE & FIRE TANK	OWNER: METAL INDUSTRY RESEARCH AND DEVELOPMENT CENTER (MIRDC)	DATE:	REVISION:	DESCRIPTION:	DESIGNED BY:	JVNN	SHEET CONTENTS: 15,000 GALS. FIRE TANK AND PUMP HOUSE FOUNDATION PLAN, ROOF BEAM & FRAMING PLAN, SECTIONS COLUMN, FOOTING & DETAILS	DRAWING NO.: S - 2
							CADD BY:	RHV		
							DATE:			SHEET NO.: -
REG. NO.: 055251	PTR NO.: 5035423						CHECKED BY:	GBM		
DATE: AUG. 1, 1989	ISSUED ON: JAN. 3, 2019	LOCATION:	ADDRESS:				APPROVED BY:			



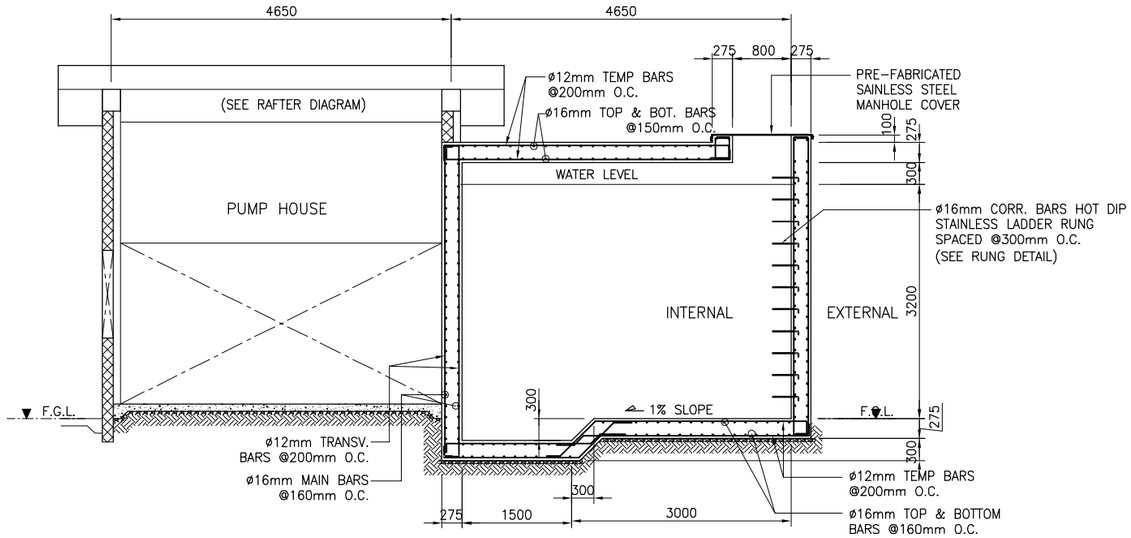
2 S 3 ROOF BEAM FRAMING PLAN

SCALE: 1:75 M.



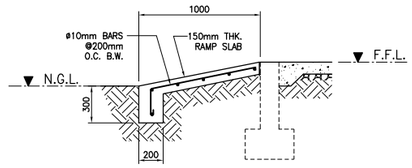
3 S 3 ROOF FRAMING PLAN

SCALE: 1:30 M.



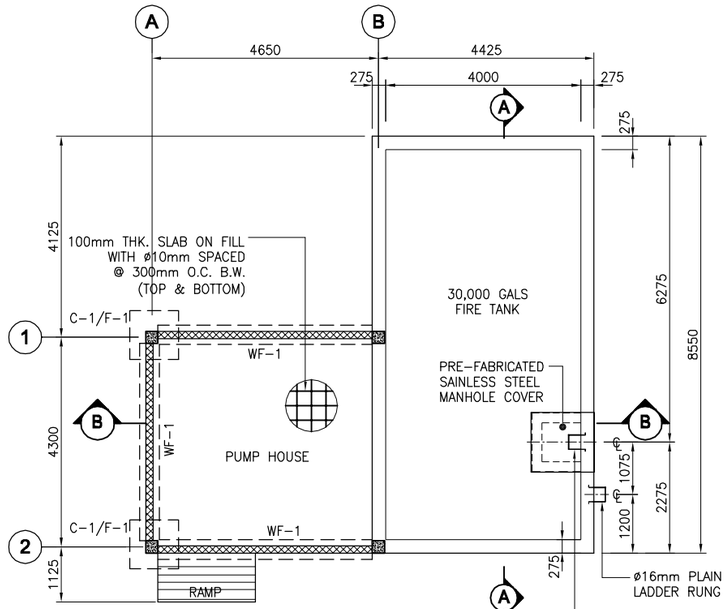
4 S 3 SECTION THRU B-B

SCALE: 1:50 M.



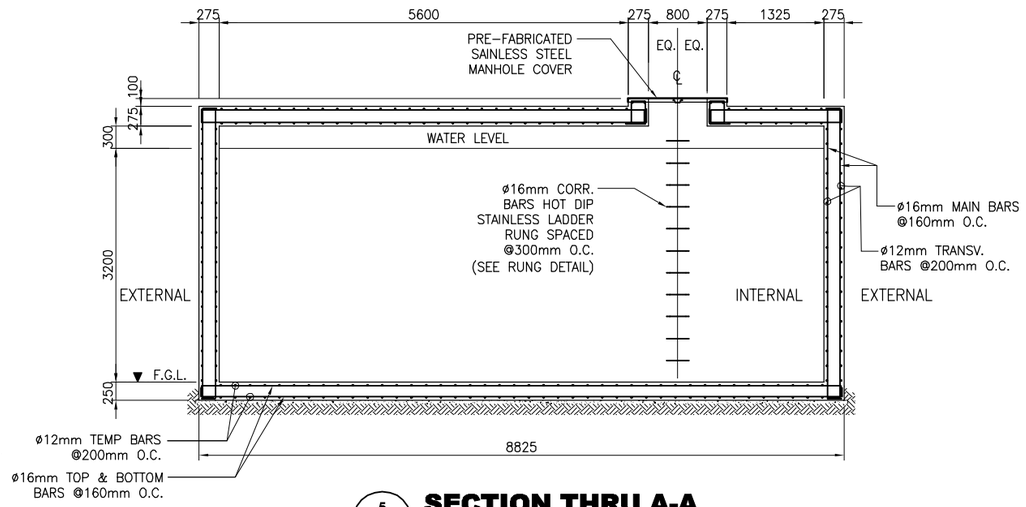
6 S 3 RAMP DETAIL

SCALE: 1:20 M.



1 S 3 FLOOR PLAN

SCALE: 1:75 M.



5 S 3 SECTION THRU A-A

SCALE: 1:50 M.

NOTES:

1. ALL DIMENSIONS, ELEVATIONS AND SPACING OF REBARS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. COMPRESSIVE STRENGTH OF CONCRETE (f'c) SHALL BE 20.7 MPa; FOR LEAN CONCRETE (f'c) = 13.80 MPa
3. REINFORCING BARS SHALL CONFORM TO THE REQUIREMENT PNS: 49:1991, DEFORMED STEEL BARS, GRADE 230
4. ALLOWABLE BEARING CAPACITY OF SOIL IS 235 KPa AT 2.5M DEPTH.
5. DETAILS OF PIPES, FITTINGS AND ACCESSORIES SHALL BE REFERRED TO PLUMBING/MECHANICAL DRAWINGS.
6. PROVIDE NON-TOXIC INTEGRAL AND MEMBRANE WATERPROOFING ON BASE AND WALLS OF TANK.
7. LOCATION OF 65MM dia. G.I. INLET PIPE CAN BE MOVED DEPENDING ON THE ACTUAL LOCATION OF WATER SOURCE
8. STRUCTURAL STEEL MATERIALS SHALL BE A-36 STEEL.
9. PROVIDE WATERSTOP AT EVERY CONSTRUCTION JOINT BELOW GROUND LEVEL.
10. FOR SCHEDULE OF COLUMN, FOOTING & BEAM, SEE DRAWING NO S-2.
11. FOR RAFTER DIAGRAM AND OTHER DETAILS, SEE DRAWING NO. S-2
12. FOR SECTION THRU C-C, SEE DRAWING NO. S-2.

GIBMA Engineering Services
Design - Construction - Project Management - Surveys
93 Kalikasan Street Karangalan Village Phase 2A, Dela Paz, Pasig City 1611
Tel. No.: 682 7114 Fax. No.: 682 8467 Cellphone No.: 0920 9226441
URL: www.gibma.com E-mail: gibma2003@yahoo.com

CIVIL / STRUCTURAL ENGINEER: GILBERT B. MAGBUTAY		PROJECT TITLE: PROPOSED PUMP HOUSE & FIRE TANK	OWNER: METAL INDUSTRY RESEARCH AND DEVELOPMENT CENTER (MIRDC)	DATE:	REVISION:	DESCRIPTION:	DESIGNED BY:	JVNN
							CADD BY:	RHV
REG. NO.: 055251	PTR NO.: 5035423						DATE:	
DATE: AUG. 1, 1989	ISSUED ON: JAN. 3, 2019	LOCATION:	ADDRESS:				CHECKED BY:	GBM
							APPROVED BY:	

SHEET CONTENTS: 30,000 GALS. FIRE TANK AND PUMP HOUSE
FOUNDATION PLAN, ROOF BEAM & FRAMING PLAN, SECTIONS COLUMN, FOOTING & DETAILS

DRAWING NO.: S - 3

SHEET NO.: -