## **GENERAL NOTES:**

- 1.1 UNLESS NOTED OTHERWISE, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS AND ELEVATIONS SHOWN ARE IN METERS.
- THE CONTRACTOR SHALL VERIEVALL DIMENSIONS AND CONDITIONS AT THE SITE, AND SHALL NOTIFY THE ENGINEER OF DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND INFORMATION SHOWN ON THE DRAWINGS BEFORE PROCEEDING WITH THE WORK. THIS SHALL INCLUDE THE LOCATION AND DIMENSIONS OF GROOVES, REGLETS, SLEEVES, CURBS, OPENINGS, EMBEDDED OR ATTACHED ITEMS, ETC, (REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING.)
- 1.3 ALL FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALE SHOWN ON PLANS. SECTIONS OR DETAILS, SPECIFIC NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.
- 1.4 THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURES. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION UNLESS SO STATED, THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEASURES TO PROTECT THE STRUCTURES, ADJACENT PROPERTIES, WORKMEN AND OTHER PERSONS DURING ALL PHASES OF CONSTRUCTION.
- 1.5 THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IN CHARGE OF ANY CONDITION WHICH IN HIS OPINION MIGHT ENDANGER THE STABILITY OF THE STRUCTURES OR CAUSE DISTRESS IN THE STRUCTURES.
- THE CONTRACTOR SHALL PROVIDE TEMPORARY ERECTION BRACINGS AND SHORINGS FOR ALL THE STRUCTURAL MEMBERS AS REQUIRED FOR STRUCTURE STABILITY DURING ALL PHASES OF CONSTRUCTION.
- 1.7 THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO ENSURE THE PROPER ALIGNMENT OF THE STRUCTURES DURING AND AFTER THE INSTALLATION OF ALL STRUCTURAL AND FINISH MATERIALS.
- 1.8 THE CONTRACTOR SHALL INFORM THE SUB-CONTRACTORS THAT NO CONSTRUCTION MATERIALS SHALL BE STORED ON POURED FLOORS, AND SHALL ENSURE THAT THE SUB-CONTRACTORS DO NOT VIOLATE THIS IMPORTANT REQUIREMENT.
- TYPICAL DETAILS AND GENERAL NOTES ON S-1 AND S-2 SHALL APPLY TO ALL PARTS OF THE WORKS UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

THE FOLLOWING SHALL GOVERN THE DESIGN, FABRICATION AND CONSTRUCTION

- 2.1 AMERICAN CONCRETE INSTITUTE (ACI PUBLICATIONS); ACI 318-95 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE ACI 315-94 MANUAL OF STANDARD PRACTICE FOR DETAILS AND DETAILING OF CONCRETE REINFORCEMENT.
- 2.2 AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) PUBLICATION: MANUAL OF STEEL CONSTRUCTION, NINTH EDITION. \*ALLOWABLE STRESS DESIGN\* (ASD)
- 2.3 AMERICAN WELDING SOCIETY (AWS) PUBLICATION D.1.1-2000.
- 2.4 AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)
- 2.5 NATIONAL STRUCTURAL CODE OF THE PHILIPPINES (NSCP) VOL. 1, SIXTH FOITION 2010
- 2.6 ASSOCIATION OF STRUCTURAL ENGINEERS OF THE PHILIPPINES (ASEP) HANDBOOK OF STRUCTURAL STEEL SHAPES AND SECTIONS, 2004
- 2.7 UNIFORM BUILDING CODE (UBC), VOL. 2 1997 EDITION

3.1.	DEAD	LOADS (UL):				
	3,1,1	CONCRETE				

3.1.	2 STEEL 3 SOIL 4 CEILING	18,00 200	kN/m <sup>3</sup> Pa	4.0 MATERIA	ALS:	
3.1.	5 MISCELLANEOUS 6 100mm THK,CHB WALL	200 2107	Pa Pa	4,1 NORM	AL WEIGHT CONCRETE:	
3,1,	7 150mm THK.CHB WALL	2730	Pa	4.1.1	CONCRETE USED IN THIS WORK SHALL HAVE	A MINIMUM COMPRESSIVE STRENG
3.1.	8 FLOOR TILES PLUS MORTAR	1100	Pa		@ 28 DAYS AS FOLLOWS:	
3.2. LIV	E LOADS (LL):				COLUMN, BEAM, SLAB, & OTHERS	fc' = 28MPa (4,000 PSI)
3.2	1 OFFICE	2400	Pa		FOOTING	fc' = 21MPa (3,000 PSI)
	2 STORAGE	7200	Pa			
3.2	3 STAIRS, HALLWAYS, AND ASSEMBLY	4800	Pa	4.1.2	ALL CONCRETE SHALL BE DEPOSITED, VIBRAT	TED AND CURED IN ACCORDANCE
3.2	4 ROOF	750	Pa		WITH ACI STANDARD 318-2005.	
3.2	5 PLENARY HALL	4800	Pa	4.1.3	MINIMUM CONCRETE COVER FOR REINFORCH A, FOOTINGS & BOT, OF FOOTING TIE BEAM = 1	
3,3, WN	D LOAD (WL)				B, BEAMS AND COLUMNS = 40mm (TO STIRRUF	PS AND TIES)
WI	WIND LOADING ON MWFRS (MAIN WIND FORCE RESISTING SYSTEM):				C. SLABS AND WALLS = 20mm (CAST AGAINST	FORMS)
	$P = q_{i}[(GC_{pi})/(GC_{pi})]$				BEFORE CONCRETE IS POURED, CHECK WITH PLACEMENT OF ALL OPENINGS, SLEEVES, CUI	

24.00 kN/m

- P= DESIGN WIND PRESSURE, KN/m2
- g = VELOCITY PRESSURE, KN/m3
- = 47,3 x 10<sup>-8</sup> Kz Kzt V<sup>2</sup> Iw
- WHERE KZ = VELOCITY PRESSURE COEFFICIENT GIVEN IN NSCP TABLE 207.3
- EXPOSURE B. Kzt = TOPOGRAPHIC FACTOR = 1.0
- V = BASIC WIND SPEED SHOWN IN NSCP FIG. 207-1 = 250kph
- = IMPORTANCE FACTOR = 1,15 = GUST EFFECT FACTOR SHOWN = 0,85
- Cp = EXTERNAL PRESSURE COEFFICIENT SHOWN IN NSCP FIG. 207-3

- GC, = PRODUCT OF INTERNAL PRESSURE & GUST EFFECT FACTOR IN NSCP TABLE 207-4.
- 3.4. SEISMIC LOAD . E SEISMIC LOADS FOR BUILDING STRUCTURES ARE CALCULATED BASED ON THE FOLLOWING:

## E = pEh + Ev

## WHERE:

- = EARTHQUAKE LOAD ON THE STRUCTURE
- = THE EARTHQUAKE LOAD DUE TO THE BASE SHEAR, V, OR THE DESIGN LATERAL FORCE Fp.
  = THE ESTIMATED MAXIMUM EARTHQUAKE FORCE THAT CAN BE
- DEVELOPED IN THE STRUCTURE.
- DEVELOPED IN THE STRUCTURE:

  THE LOAD EFFECT RESULTING FROM THE VERTICAL COMPONENT
  OF THE EARTHOUAKE GROUND MOTION AND IS EQUAL TO AN
  ADDITIONAL OF 0.5 Ca I D TO THE DEAD LOAD EFFECT. D, FOR
  STRENGTH DESION, AND MAY BE TAKEN AS ZERO FOR ALLOWABLE STRESS DESIGN
- Ωo = THE SEISMIC FORCE AMPLIFICATION FACTOR THAT IS REQUIRED TO ACCOUNT FOR STRUCTURAL OVERSTRENGTH.
- = RELIABILITY / REDUNDANCY FACTOR WHICH SHALL NOT BE TAKEN LESS THAN 1.0 AND GREATER THAN 1.5, IS GIVEN BY THE FOLLOWING FORMULA:

# ρ = 2 - f<sub>max√Aa</sub>

## WHERE:

- \*\* THE MAXIMUM ELEMENT-STORY SHEAR RATIO, FOR A GIVEN DIRECTION OF LOADING, THE ELEMENT-STORY SHEAR RATIO IS THE RATIO OF THE DESIGN OF STORY SHEAR IN THE HEAVILY LOADED SINGLE ELEMENT DIVIDED BY THE TOTAL DESIGN STORY SHEAV
  - FOR MOMENT FRAMES, IT SHALL BE TAKEN AS THE MAXIMUM OF THE SUM OF THE SHEARS IN ANY TWO ADJACTIC COLUMNS IN A MOMENT FRAME BAY DIVIDED BY THE STORY SHEAR, FOR COLUMNS COMMON TO TWO BAYS, 70 PERCENT OF THE SHEAR IN THAT COLUMN MAY BE USED IN THE COLUMN SHEAR SUMMATION.
  - Ag = THE GROUND FLOOR AREA OF THE STRUCTURE.

## FARTHQUAKE BASE SHEAR (V):

THE TOTAL DESIGN BASE SHEAR IN A GIVEN DIRECTION SHALL BE DETERMINED FROM THE FOLLOWING FORMULA:

# V = CVI (W)

AND NEED NOT EXCEED THE FOLLOWING:

# V = 2.5 Cal(W)

BUT SHALL NOT BE LESS THAN THE FOLLOWING

## V = 0,11 Cal W

IN ADDITION FOR SEISMIC ZONE 4, THE TOTAL BASE SHALL ALSO BE NOT LESS THAN THE FOLLOWING:

0.40
1.5
8,5 (SMRF
2.8
A
1.6

- NEAR SOURCE TYPE No.
- IUM COMPRESSIVE STRENGTH
- fc' = 28MPa (4,000 PSI) fc' = 21MPa (3,000 PSI)
- IS SHALL BE AS FOLLOWS:
- CAST AGAINST EARTH) TIES)
- RADES TO ENSURE PROPER ONDUITS, ETC, RELATIVE TO THE WORK.
- WHEN CONCRETE WILL BE EXPOSED TO EXTERNAL SOURCES OF CHLORIDES IN SERVICES, SUCH AS DEICING SALTS, BRACKISH WATER, SEAWATER OR SPRAY FROM THESE SOURCES, CONCRETE MUST BE PROPORTIONED TO SATISFY THE SPECIAL EXPOSURE REQUIREMENTS OF ACI 319-2005,
- ALL CONCRETE SHALL BE KEPT MOIST FOR A MINIMUM OF 7 CONSECUTIVE DAYS IMMEDIATELY AFTER POURING BY THE USE OF WET BURLAP.

4.2.1 UNLESS OTHERWISE SPECIFIED ON PLANS, ALL REINFORCING BARS SHALL BE DEFORMED WITH A MINIMUM YIELD STRENGTH. Jy = 414 MPa (60,000 PSI). FOR DIAMETER 120m AND BELOW, USE by = 275 Mpa (40,000 PSI).

- 4.2.2 ALL REINFORCING BARS SHALL BE CLEANED OF RUST, GREASE OR OTHER MATERIALS WHICH TEND TO IMPAIR BOND.
- ALL REINFORCING BARS SHALL BE ACCURATELY AND SECURELY PLACED 4.2.3 BEFORE POURING CONCRETE OR APPLYING MORTAR OR GROUT.
- 4.2.4 LAPPED SPLICES SHALL BE STAGGERED WHERE POSSIBLE.
- UNLESS INDICATED OTHERWISE, SPLICING OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI 318-2005.
- UNLESS SHOWN OTHERWISE ON PLANS, SPLICES SHALL BE AS FOLLOWS:
- A, BEAMS AND FOOTING TIE BEAMS : TOP AND BOTTOM BARS SHALL NOT BE SPLICED WITHIN THE COLUMN OR WITHIN A DISTANCE OF TWICE THE MEMBER DEPTH FROM THE FACE OF THE COLUMN; AT LEAST TWO EXTRA STIRRUP - TIES SHALL BE PROVIDED AT ALL SPLICES, THE SPLICE LENGTH SHALL NOT BE LESS THAN THE LENGTH IN ITEM 4.2.9 BELOW.
- B, COLUMNS: SPLICES WHEN PERMITTED SHALL BE MADE WITHIN THE CENTER HALF OF COLUMN HEIGHT, AND LAP SPLICE SHALL NOT BE LESS THAN 40 BAR DIAMETERS. THE USE OF APPROVED MECHANICAL DEVICES MAY BE PERMITTED PROVIDED THAT NOT MORE THAN ALTERNATE BARS ARE SPLICED AT ANY LEVEL AND THE MINIMUM VERTICAL DISTANCE BETWEEN TWO ADJACENT BAR SPLICES SHALL BE 600mm.
- C. CONCRETE MASONRY UNIT (CMU) WALLS: VERTICAL BARS SHALL BE SPLICED AT THE TOP OF WALL FOOTING OR TIE BEAM AND AT THE BOTTOM OF RC LINTEL BEAM OR BEAMS, SPLICE LENGTHS SHALL BE 600mm MIN
- UNLESS INDICATED OTHERWISE, ALL BEAMS TERMINATING AT THE COLUMN SHALL HAVE TOP AND BOTTOM BARS EXTENDING TO THE FAR FACE OF THE COLUMN, TERMINATING IN A STANDARD 90° HOOK LENGTH OF ANCHORAGE NOT LESS THAN 600mm.
- SHOP DRAWINGS FOR BENDING AND CUTTING OF REINFORCEMENT SHALL
- BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO FARRICATION. 4.2.9 SPLICE LENGTH OF REINFORCING BARS SHALL BE AS SHOWN IN THE TABLE BELOW

## 4.3 STRUCTURAL STEEL/ANCHOR BOLTS/BOLTS/WELDS & WELDMENTS

- 4.3.1 ALL STRUCTURAL STEEL SHALL HAVE A MINIMUM YIELD STRENGTH, Fy = 248 MPa (36 KSI) AND SHALL CONFORM TO ASTM A 36 SPECIFICATIONS.
- ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE AISC SPECIFICATIONS (9TH EDITION) AND CODE OF STANDARD PRACTICE AS AMENDED TO DATE.
- ALL COLD FORMED STEEL SHALL HAVE A MINIMUM STRENGTH. Fy = 230 MPa (33 KSI)
- NO STEEL SHALL BE FABRICATED OR ERECTED UNTIL SHOP DRAWINGS HAVE BEEN APPROVED BY THE STRUCTURAL ENGINEER
- 4.3.5 ALL SHOP AND FIELD WELDING SHALL BE IN ACCORDANCE WITH AWS D.1.1-2000 AND PERFORMED BY QUALIFIED WELDERS.
- UNLESS INDICATED OTHERWISE, WELDING ELECTRODES SHALL BE E70XX, MINIMUM THICKNESS OF WELD SHALL BE 3mm,
- UNI ESS OTHERWISE INDICATED ALL ANCHOR BOLTS SHALL CONFORM TO ASTM A307 SPECIFICATIONS.
- BOLTS FOR MEMBER CONNECTIONS SHALL BE HIGH STRENGTH BOLTS, CONFORMING TO ASTM A325 FRICTION TYPE WITH WASHERS.

## 4,4 CONCRETE MASONRY UNITS (CMU)

- 4.4.1 CMU USED IN THESE WORKS SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH @ 28 DAYS AS FOLLOWS: 100mm THICK NON-LOAD BEARING CMU, 7m = 2.4 MPa (350 PSI) 150mm THICK NON-LOAD BEARING CMU, I'm = 2.4 MPa (350 PSI
- ALL CELLS SHALL BE SOLIDLY FILLED WITH GROUT, CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 13,80 MPa (2,000 PSI) @ 28 DAYS.
- UNLESS INDICATED OTHERWISE, CMU REINFORCEMENT SHALL BE 10mm/0 HOR. BARS SPACED @ 600mm AND 10mm/0 VERT. BARS SPACED @ 600mm.
- 4.4.4 ALL WALLS SHALL BE CONSTRUCTED IN CONVENTIONAL RUNNING BOND, GROUT MASONRY IN 2.4m MAXIMUM LIFTS, REINFORCING SHALL BE
- SECURED AGAINTS DISPLACEMENT PRIOR TO GROUTING BY WIRE POSITIONERS AT INTERVALS NOT EXCEEDING 200 BAR DIAMETERS
- 4.4.6 IF WORK IS STOPPED ONE (1) HOUR OR LONGER, PROVIDE HORIZONTAL CONSTRUCTION JOINTS BY STOPPING THE GROUT 50mm BELOW THE TOP OF THE BLOCK,

- 5.1 CONTRUCTION JOINTS NOT INDICATED ON PLANS SHALL BE MADE SO AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.
- 5.2 UNLESS SHOWN OTHERWISE, SLAB ON GRADE SHALL HAVE CONTROL JOINTS @ 6.00m MAXIMUM CENTER TO CENTER.

- IF THERE ARE TWO OR MORE LAYERS OF REINFORCING BARS, USE SEPARATORS OF SIZE NOT LESS THAN 25mm BARS SPACED ABOUT 1,00m ON CENTER AND PLACED DIAGONALLY. IN NO CASE SHALL THERE BE LESS TWO (2) SEPARATORS BETWEEN LAYERS OF BARS.
- WHEN A BEAM CROSSES A GIRDER, REST BEAM BARS ON TOP OF GIRDER BARS. REINFORCING BARS SHALL BE SYMMETRICAL ABOUT THE CENTER LINE WHENEVER POSSIBLE. UPPER LAYER SHALL BE PLACED DIRECTLY ABOUT THOSE IN THE BOTTOM LAYER. SPACING OF BARS IN LAYER SHALL NOT BE LESS THAN 0.025m NOR ONE BAR DIAMETER.
- GENERALLY, NO SPLICE SHALL BE PERMITTED ON BEAM AT POINT WHERE CRITICAL BENDING STRESSES OCCUR, WELDED SPLICES SHALL DEVELOP IN TENSION AT LEAST 125%
  OF THE SPECIFIED STRENGTH OF THE BAR, NOT MORE THAN 50% OF THE BARS AT ANY ONE SECTION SHALL BE ALLOWED TO BE SPLICED THEREIN.
- FOR BAR TERMINATIONS OF TOP BARS AT SUPPORT AND MIDSPAN BARS, CUT-OFF ONLY TWO BARS AT EVERY 0.3m INTERVAL (UNLESS REQUIRED IN SPECIFICATIONS, OR NOTED OTHERWISE.)

- 7.1 FOOTINGS WERE DESIGNED USING AN ASSUMED ALLOWABLE SOIL BEARING CAPACITY OF 150 kPa AT DEPTHS INDICATED IN THE DRAWING, IN CASE THE ACTUAL SOIL BEARING CAPACITY IS FOUND LESS THAN THE ASSUMED 150 kPa NOTIFY THE DIRECTOR, BUREAU OF DESIGN, FOR PROPER REVISION OF FOOTINGS.
- 7.2 CONFIRMATION OF ACTUAL SOIL BEARING CAPACITY SHALL BE PERFORMED PRIOR TO THE CONSTRUCTION OF THE FOUNDATION.
- 7.3 WHERE LOOSE/SOFT MATERIAL IS ENCOUNTERED AT DEPTH OF FOOTING/FOUNDATION INDICATED, EXCAVATE TO FIRM LAYER AND REPLACE LOOSE/SOFT MATERIALS UNDERNEATH THE FOOTING WITHIN THE FOOTING AREA PLUS 1/2 DEPTH OF SOIL MATERIAL ON ALL SIDES WITH SELECTED BACKFILL. COMPACT SELECTED BACKFILL. TO 95% MAXIMUM DRY DENSITY ( ASTM D1557).
- 7.4 ALL COLUMN FOOTINGS SHALL REST ON 100mm THK COMPACTED GRAVEL BASE COURSE, UNLESS OTHERWISE STATED,
- 7.5 FILL/BACKFILL SHALL BE PLACED IN 200mm LAYERS AND EACH LAYER SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY BEFORE SUBSEQUENT LAYERS ARE TO BE LAID.

## LAP SPLICE & ANCHORAGE LENGTH TABLE

					LAP SPLICE (m)					MIN. LAP SPLICE	
BAR ANCHORAGE LENGTH (mm)	STANDARD HOOK. (m)		TENSION BAR		COMP. BAR		UNIT	LENGTH OF COL. REINF INDIVIDUAL BARS			
	(m)	50"	180°	135*	TOP BAR	OTHERS	TOP BAR	OTHERS	(kg/m)	WITES	W/ SPIRAL
10	0,50	0.15	0,13	0.10	0.42	0.30	0.42	0.30	0,617	0,30	0,30
12	0.50	0.20	0.15	0.12	0.42	0.30	0.42	0,30	0.889	0,30	0,30
16	0.60	0.25	0.18	0.14	0.73	0.52	0.87	0.62	1,580	0.52	0.47
20	0.60	0.30	0.20	0.20	0.91	0,65	1.10	0.78	2,469	0.65	0,58
25	0,68	0.40	0.28	0.26	1.15	0.82	1,40	1.00	3,858	0.80	0.73
28	0.86	0.48	0.38		1.45	1.03	1.53	1.09	4.840	0.90	0.82
32	1,12	0.56	0,43		1.90	1.35	1.74	1.24	6,327	1.03	0.93
36	1.43	0.61	0.48		2.40	1.70	2.00	1.40	8.00	1.20	1.05
MOTES.									COLUMN	WALL	ANCHORAGE

1. ACI SECTION 12.4 STATES THAT DEVELOPMENT LENGTH OF INDIVIDUAL BARS WIN A BUNDLE, IN TENSION OR COMPRESSION, SHALL BE THAT FOR THE INDIVIDUAL BAR, INCREASED 20% FOR THREE BAR BUNDLE, AND 33% FOR FOUR BAR BUNDLE. 2. FOR COLUMNS AT ANY LEVEL NO MORE THAN ALTERNATE BARS SHOULD BE SPLICED, NOT

- MORE THAN 33% OF THE BARS SHALL BE SPLICED WAN THE REQUIRED LAP LENGTH. MINIMUM DISTANCE BETWEEN TWO ADJACENT BAR SPLICES SHALL BE 600mm. 3, TOP BARS ARE HORIZONTAL BARS W/ MORE THAN 300mm DEPTH OF CONCRETE CAST BELOW THE REINFORCEMENT.
- 4. AS MUCH AS POSSIBLE, SPLICES SUBJECTED TO TENSILE STRESSES ARE DISCOURAGE, THESE SHOULD BE AVOIDED OR PROVIDED W/ STANDARD HOOKS.



LENGT

HOOK -

180°

6.1 UNLESS OTHERWISE NOTED IN PLANS OR SPECIFICATIONS, CAMBER ALL BEAMS AND GIRDERS AT LEAST 0.05m FOR EVERY 4.55m OF SPAN EXCEPT CANTILEVERS FOR WHICH THE CAMBERS SHALL BE AS NOTED IN THE PLANS OR AS ORDERED BY THE DESIGNERS. BUT IN NO CASE LESS THAN , 0.15m FOR EVERY 3.05m OF FREE SPAN.











