NOTES ON RE NFORCED CONCRETE BEAMS & G RDERS

GENERAL NOTES:

- . N THE NTERPRETATION OF THESE DRAW NGS, ND CATED DIMENSIONS SHALL GOVERN AND DISTANCES OR SIZES SHALL NOT BE SCALED FOR CONSTRUCTION PURPOSES.
- B. RE KRORC NO BARS FOR CONCRETE EXPOSED TO WEATHER SHALL BE PROTECTED WITH AT LEAST 75MM CLEAR DISTANCE AND IN NO CASE LESS 40MM CONCRETE. THESE CONDITIONS MAY BEWAIVED WHEN ADEQUATE WATERPROOFING IS PROVIDED.

- C.RE NFORC NG BARS SHALL BE DEFORMED CONFORN NG TO ASTM A615 BLLET STEEL AS FOLLOWS:
 15MM/0 BARS AND LARGER SHALL BEH FISH GRADEW FIRM NIMIM Ft. 414MFA (6) 00PGS ()
 12MM/0 BARS AND BALLER SHALL BE NTERMED NTE GRADEW FIF Ft. 27EMFA (4) 00PGS ()
 12MM/0 BARS AND BALLER SHALL BE NTERMED NTE GRADEW FIF Ft. 27EMFA (4) 00PGS ()
 15MM/0 BARS AND BALLER SHALL BEN DEFORMED BAR SHALL CONFORM TO ASTM A708 LOW ALLOY GRADE 414 STEEL BAR.
- D. ALL CONCRETEWORKS SHALL BE DONE IN ACCORDANCE ACI 1918-BB LID NO CODE FOR REINFORCED CONCRETE AND ALL STRUCTURAL STEEL WORKS SHALL BE DONE IN ACCORDANCE WITH THE ASS SPECE FLATIONS AS IT DOES NOT CONFLICT WITH THE INIT
- IS UAB ON FILMUST NOT BE PLACED UNIESS FIL HAS BEEN PROPERLY COMPACTED. ALL SLAB ON FIL SHALL BE PROVIDED WITH 10MIM THE CAME COMPACTED CLEW COARSE SAND BED EXCEPT IN DRIVEN WHERE IT SHALL BE 150MM, BACK FIL OF ALL EXCAVATED AGEAS NOT THE PREPARATION OF SUB-BASE SANL BEWELL COMPACTED AT LEAST 9%, OF THE STANDARD PROCTOR DENSITY BEFORE WELL COMPACTED CLEWICOARSE SAND ARE LAD.
- . THE CONTRACTOR SHALL COORD NATEW ITH THE AR ,ME ,SE ,AND EE PLAN AS TO THE EXACT SIZES AND LOCATION OF THE HOLES THRU FLOOR SLABS AND WALLS .
- G. CONTRACTOR TO PROVIDE SHOP DRAWINGS + BARICUTTING LIST FOR APPROVAL OF THE STRUCTURAL ENGINEER

NOTES ON CONCRETE M KES & PLAC NG:

A JUNIESS OTHERW BE ND DATED N PLANS OR NOTED N THE STRUCTURAL SPEC FCATONS. THE M NM STRENGTH OF CONCRETE SHALL BE AS POLLOWS:

1. FOR SUSPENDED SLABES, BEAMS, AND G RDERS 21 MPA (3,000 PS)

2. FOR COLLIMIS AND PEDESTAL 21 MPA (3,000 PS)

3. FOR RETAIN NOW ALLS 21 MPA (3,000 PS)

4. FOR FOOT NO TE BEAMS 21 MPA (3,000 PS)

5. FOR PARAPET WALLS, GUTTERS AND OTHER STRUCTURALE LEMANTS 21 MPA (3,000 PS)

5. FOR PARAPET WALLS, CURTAN WALLS, BEDDED SUALS, DEPWALKS 17 MPA (2,500 PS)

7. FOR NON STRUCTURAL ELEMENTS 17 MPA (2,500 PS) NOTED IN THE STRUCTURAL SPECIFICATIONS , THE MINIMUM 28 DAYS COMPRESSIVE CYLINDER

> I. ND // DUAL BARS WITH N A BUNDLE SHALL TERM NATE AT DIFFERENT POINTS WITH AT LEAST 40 TIMES THE BARID WMETER STAGGER H. FOR G RDERS, HOOPS SHALL BE USEDWITH NITHE DISTANCE TWIDE OF THE GIRDER DEPTH. BEYOND IT, STERUPS WITH SEISMID HOOKS MAY BE USED, WITH NITHE SPLICED LENGTH, 100MZ HOOPS SHALL BE PROVIDED AT 0,10MOC.

L28
SEE TABLE B'OF FG.5
LENGTH OF LAP SPLCE

REE BEND PLUS 12 TMES BAR D AMETER

2

. FOR ALL BEAMS, AUVAYS FIT THE RE NFORCEMENTS NONE LAYER WHENEVER POSS BLE, WHENEVER BEAM, IS SUPPORTING A PLANTED COLUMN, BOTTOM BAR ATM DISPANOF THE BEAM SHALL CONTINUE UP TO THE SUPPORTS. NO SPLEE SHALL BE FERM TIED ON BEAMSWHERE CRIT CALBEND NG OCCURS, LENDH OF LAP SPLEEWHERE FERM TIED SHALL BE AS SHOWN N TABLE ZWELD SPLEE SHALL BE DEVICION N TENSON TAKENS THE SPECFEM YELD STREAMTHOFFEM AND THORSE THAN 55% OF THE BARS AT ANY ONE SECT DN SHALL BE ALLOWED TO SPLEE THERE N. A TYP CALWELDED SPLEE DETAL S. SHOWN N FEURE 7.

- . CONCRETE SHALL BE DEPOSITED NITS FINAL POSITION WITHOUT SEGREGATION, REHANDLING OR FLOWING, PLACING SHALL BE DONE PROPERLY WITH BUGG ES, BUCKETS OR WHEEL-BORROWS, NO CHUTES SHALL EXCEED SIX (6) METERS AGGREGATE LENGTH.
- C. NO DEPOSITING OF CONCRETE SHALL BE ALLOWED WITHOUT THE USE OF VIBRATORS UNLESS AUTHORIZED BY THE DESIGNER IN WRITING

L1.5
EXTER DR SUPPORT

NTER DR SUPPORT L16

L2.5 L3.5
NTER DR SUPPORT

EXTER DR SUPPORT L3.5

F.G. 4. TYP CALDETA LOF NTERMED ATE BEAM

GRD L18

GR D

2

GR D

GR D

90 DEGREE BEND PLUS 12 TMES BAR D MMETER

123

SEE TABLE B'OF FG 5
LENGTH OF LAP SPLEE

NOTES ON CONCRETE SLABS:

- B.UNLESS OTHERW SE DETALED IN CONTINUOUS SLABS HAVING SAME RE INFORCEMENTS RUNNING IN ONE DIRECTION, REINFORCING BARS SHALL BE BENT UP OR EXTENDED AS SHOWN IN FIGURE 1. ALL RE NFORCEMENTS SHALL BE PROV DED WITH 20MM CLEAR CONCRETE COVER EXCEPT FOR SLAB ON GRADEWHERE RE NFORCEMENT SHOULD BE PLACED AT THE CENTER OF THE SLAB TH CINIESS.
- OR TWO WAY SUAS, BARS ALOWS THE SHORTER SPAN SHALL BE PLACED BELOW THE LONGER SPAN BARS AT CENTER AND ABOVE THE LONGER SPAN BARS, AT THE SUPPORTS, THE SPAN OF DEARS, AT THE COLUMN STR P SHALL BE 15 TMES THE SPAC NG N THEM DDLE STR P, BUT N ANY CASE GREATER THAN 25 THE SUAB TH CKNESS OR 455MM.
- D. TEMPERATURE BARS OF SUSPENDED SLABS SHALL BE PLACED ABOVE THE MAIN REINFORCEMENT AT MIDSPAN AND SHALL BE BELOW THE MAIN REINFORCEMENT AT THE SUPPORTS.
- E. UNIESS OTNERW SE NOTED ,ALL BENDS SHALL BE RE NFORCED WITH 10MM2 AT 0.25MOC EW AT CENTER OF SLAB SLAB CONSTRUCT ON ONTS SHALL NOT BE MORE THAN 3.0M.

EXTER DR COLUMN

NTER DR COLUMN

NTER DR COLUMN

L3/3

EXTER DR COLUMN

FG.5. TYP CALDETAL OF GRDER

TABLE 2. DEVELOPMENT LENGTH

FOR Fy = 275MPA

 fc=35MPA
 fc=21
 fc=28
 fc=35
 fc=21
 fc=28

 ASE 1 CASE 2
 MPA
 MPA
 MPA
 MPA
 MPA

MPA

- G.EXTRARENFORCEMENTS SHALL BE PROVIDED AT CORNER SLABIAS SHOWN IN FIGURE 3. F.WHENEVER REQUIRED, DROP SLAB SHALL BE ADDITIONALLY REINFORCED AS SHOWN IN FIGURE 2
- H. UNLESS NOTED IN THE PLAN, ALLOPENNINGS. SHALL BEIRE NFORCED ALL AROUND BY 2-184M2 BAR AT THE TOP AND BOTTOM OF THE SLAB.

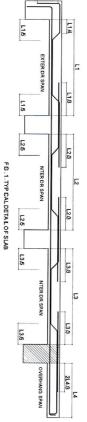




FIG. 2. TYPICAL DETAIL OF DROP SLAB

DISTANCE S



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ENG NEER

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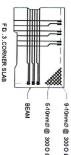
PRC NO .: 0068944
PTR NO .: 3804382
TN NO .: 175-764-161

SSUED ON: FEB. 16, 1994
SSUED ON: JAN. 05, 2017
SSUED AT: QUEZON C ITY

LOCAT DN :M MAROPA REG DN CAMPUS OD DNGAN ROMBLON

CONSTRUCT DN OF ACADEM C BU LD NG 1

STRUCTURAL ENG NEER NG SPEC ALIST NO .99 RUEL B.RAM REZ, MSCE, M. ASEP



5-10mm∅@ 300 O C. 9-10mmØ@ 300 O C.

NOTE: "X" SHALL BE THE LARGER OF 6 T MES BAR D WMETER OR 75MM

40MM CLEAR DISTANCE

- FLEXURAL BAR

FIG. 6. TYPICAL SECTION OF BEAM









NOTES ON RE NFORCED CONCRETE COLUMN:

- A BEMI-COLLMN LONTS SHALL BE PROVIDED BY A HOOP AT 0.1MOC. THE NUMBER OF SETS FOR SUCH HOOPS SHALL BE THE SAME IN THE CONFINED REGION AS SCHEDULED.
- WHERE COLUMN CHANGES N SZE JERT DAL RE NFORCEMENT SHALL BE OFFSET AT A SLOPE OF NOT MORE THAN 1 54 MID EXTRA 10AM/2 HOOPS AT 0.10A/OC SHALL BE PROVIDED THROUGHOUT THE OFFSET REGIDN.
- C. SPLDE SHALL BE ALLOWED ONLYW ITH IN THE CENTER HALF OF THE CLEAR COLUMN HE GHT.

 SPLDE LENGTH SHALL BE FROUDED WITH A THOOP SPACED AT 0.10MOC. SPLDE LENGTH SHALL

 BE CONSIDERED AS TENSION SPLDE AS PRESENTED IN TABLE 2.
- D. COLUMIN TES AND SP RAL SHALL BE PROVIDED WITH IN MUM CLEAR CONCRETE COVER OF 40MM. VERT TCAL BAPAS SHALL HAVE A CLEAR D STANCE OF 15 T MES BAR D AMETER OR 40MM WHICHEVER IS LARGER.

D. FTHERE ARE TWO OR MORE LAYERS OF RENFORCING BARS, USE SEPARATIORS OF SIZE EQUAL TO THE BAR DIMMETER BUT NOT LESS THAN 29MM SPACED AT 500MM ON CENTERS, NINO CASE SHALL BE LESS THAN TWO SEPARATIORS BETWEEN LAYERS OF BARS. C. F BEAM RENFORCEMENTENDS IN AWALL, THE CLEAR DISTANCE FROM THE BAR TO THE FARTHEST FACE OF THE WALL SHALL NOT BE LESS THAN SIMM .M NIMUM EMBEDMENT LENGTH SHALL BE AS SHOWN IN TABLE 2.

E WHEN BEAM CROSSES AG RDER, REST BEAM BARS ON TOP OF THE G RDE BARS. RE NFORC NO BARS SHALL BE SYMMETR CAL ABOUT THE CENTERL NEW HENEVER POSS BLE, UPPER BARS SHALL BE PLACED D RECTLY ABOVE THOSE BARS. IN THE BOTTOM LAYERS.

B TYPEAL BAR BEND NG AND CUTTNG DETA LS FOR INTERNED NTE BEANS AND GROERS ARE SHOWN IN FEURE 4 AND FEURE 6 RESPECTIVELY MAIN REINFORCING BARS SHALL HAVE A STANDARD HOOK OF 90 DEGREE BEND PLUS 12 TIMES THE DIMMETER OF THE BAR EXTENSION AT ITS FREE END .

LINLESS OTHERW BE NOTED NITHE SPECE EAT DNS, CAMBER ALL BEAUS AND GROERS AT LEAST BAM FOR EVERY 4 5M OF SPAN EXCEPT CAN'T LLEAST FORWHOLD CAMBERS SHALL BE NOTED NITHE PLANS OR AS ORDERED BY THE DESIGNER BUT NICASE LESS THAN ZOAM FOR EVERY 3M OF SPAN.

- E. CONF NED REG DN SHALL BE EQUAL TO THE LARGER OF THE FOLLOW NG: 10 450MM 2.0 B GEOR COLLMIN D MENS DN 3.0 (CLEAR COLLMIN HE BHT). //6

NOTES ON STRUCTURAL STEEL:

A ALL MATER BLS AND WORKMANSH P SHALL CONFORM TO THE LATEST EDIT DIN OF AMERICAN INSTITUTE OF STEEL CONSTRUCT DIN MANUAL UNLESS OTHERWISE SHOWN OR NOTED.

F.G. 8. BEAM COLUMN JOINT

16MAX SLOPE

- C.ALL BOLTS AND THREADED FASTENERS SHALL B.ALL STRUCTURAL STEEL NCLUDING THAT OF GUSSET PLATES SHALL BE ASTM A38 STEELW ITH YELD STRENGTH OF Fy= 248 MPA.
- D. ALLWEIDS SHALL BE E70XX ELECTRODE AND SHALL DEVELOP AT LEAST 100% OF THE STRENGTH OF THE CONNECTED MEMBERS
- E.THE CONTRACTOR SHALL SUBMIT TO THE STRU SHALL COMMENCE. UCTURAL ENG NEER THE SHOP FABR CATION DRAWINGS FOR APPROVAL BEFORE ANYWORKS
- F.ALL DOUBLE ANGLE STRUCTURAL MEMBERS MUST BE PROVIDED WITH FILLER PLATES AT 0.30MOC MAX MUM SPACING.
- G .ALL EXPOSED STRUCTURAL STEELMEMBERS SHALL HAVE AT LEAST TWO COATS OF RED LEAD OR ZNC CHROMATE PRIMER PAINT.
- H.ALL TRUSSES, BEAMS, AND G RDERS, MUST BE PARABOLD LAYOUT. PROVIDED WITH A CAMBER AT THE RATE OF 3MM FOR EVERY 3.0M OF CLEAR SPANIN A
- ALL FOOT NGSWERE DES BNED BASED ON THE ALLOWABLE SO LBEAR NG CAPACITY OF 150 (PA). THE CONTRACTOR SHALL REPORT NWRIT NG TO THE DES DIMER THE ACTUAL SO L CONDIT DN AT THE LEVEL OF THE FOOT NG AND CONFRM THE ACTUAL SO L BEAR NG CAPACITY BEFORE DEPOSITING CONCRETE.

NOTES ON FOUNDATIONS:

- B. NO FOOTING SHALL REST ON UNCOMPACTED FILL NOR LOOSE SO L. ALL FOOTINGS SHOULD REST AT LEAST 1.0 BELOW THE GROUND. THE MINIMM CONCRETE PROTECT DN FOR REINFORCEMENTS SHALL BE 73MM CLEAR.
- C. ALL COLUMN RE NFORCEMENTS SHALL REST ABOVE THE BOTTOM RE NFORCEMENTS OF THE FOOT NGW ITH 90 DEGREE BEND PLUS 12 TMES BAAD DIMETERS EXTENSION AT THE FREE END BUT NOT LESS THAN 300MM. HOOPS IN THE COLUMN SHALL CONTINUE BELOW THE TOP OF THE FOOTING AT 0.10MOC.

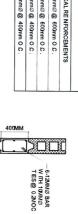
NOTES ON CHBWALLS:

- ALL CHBWALLS SHALL HAVE AM N MUM COMP RESSIVE STRENGTH OF 450 PS IAND SHALL BE REINFORCED AS PRESENTED IN TABLE 3
- B.M IMUM LAP LENGTH OF SPLICE SHALL BE 250MN

C.PROVIDER GITH ANGLED REINFORCEMENT AT CORNERS, 900MM LONG.

- D. PROVIDE BEAMS BLOCKS AT EVERY 10TH LAYER OF CHB AND A POST AT EVERY 3.0M . SEE FIGURE 9 AND FIGURE 10.
- E.WHERE CHBWALLS AD JON COLLMANS, RC BEAMS, AND RCWALLS, DOWELS WITH THE SAMES ZE AS THE VERTICAL OR HOR ZONTAL REINFORCEMENTS SHALL BE PROVIDED.

BLOCK TH CKNESS	HOR ZONTAL RE NFORCEMENTS	VERTICAL RE NFORCEMENTS
100mm	10mm⊘@ 600mm O C.	10mmØ@ 600mm O.C.
125mm	10mm Ø @ 600mm O C .	10mm∅@ 600mm O.C.
150mm	10mm∅@ 400mm O.C.	10mmØ@ 400mm O €.
200mm	10mmØ@ 400mm O.C.	10mmØ@ 400mm O €.



DESIGN CODES AND REFERENCES:

A.NAT DNAL STRUCTURAL CODE OF THE PHILPPINES (NSCP C101-01 AND NSCP C102-97)

FG.9.TYPEALDETALOFPOST

-2.12MMØ BARW TH 10MMØ STRRUP@ 0.2MOC

SQUARE CUT END
FULL PENETRATION
BUTTWELD

- B.BU LD NG CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, AC 1318-05
- C.DES GN OF CONCRETE BULD NGS FOR EARTHQUAKE AND WIND FORCES 2ND ED IT DN., S.K.GOSH, A.W. DOMEL, D. A. FANELLA.
- D.AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL
- E.HANDBOOK OF STRUCTURAL STEEL CONNECT DN DES EN AND DETA LS BY A.R.TAMBOLI

.10.TYP CAL DETA L OF BEAM BLOCK

CHBWALL

- F.DES GN OF RE NFORCED CONCRETE , F FTH ED IT DN BY MC CORMAC
- E.PC IDES IGN HANDBOOK, PRECAST AND PRESTRESS CONCRETE, FOURTH ED IT DN

1	
SCALE	CAMPUS D RECTOR
DATE	EDWARD C.ALBARAC N
APPRO	flance.
CHEC	
ENCO	

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