

## NOTES FOR REINFORCED CONCRETE

- ALL STRUCTURAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECT'S/PSM'S/BSE'S DRAWINGS. INFORM THE ENGINEER ANY DISCREPANCIES WHICH MAY BE FOUND AMONG THESE DRAWINGS.
- ALL LEVELS SHOWN ARE IN METRES REFERRED TO PRINCIPAL DATUM AND OTHER DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
- ALL CONCRETE WORKS ARE DESIGNED IN ACCORDANCE WITH "CODE OF PRACTICE FOR STRUCTURAL USE OF CONCRETE 2004" AND "THE CODE OF PRACTICE ON WIND EFFECTS IN HONG KONG 2004" AND "BUILDING CONSTRUCTION REGULATIONS CHAPTER 123".
- SUBSOIL UNDERNEATH ALL FOUNDATIONS SHALL BE INSPECTED BY THE PROJECT STRUCTURAL ENGINEER BEFORE LAYING OF BLINDING LAYER.
- NO REINFORCEMENT SHALL BE CUT OR BENT FOR FOUNDATION WORKS BEFORE LAYING OF BLINDING LAYER.
- 50mm THICK BLINDING LAYER OF GRADE 10/20 CONCRETE SHALL BE PROVIDED TO THE UNDERSIDE OF ALL FOUNDATION AND GROUND BEAMS/SLABS IN CONTACT WITH EARTH.
- CONCRETE MIXES SHALL BE AS FOLLOWS :-  

GRADES	ELEMENTS
40 D/20	BEAMS, SLABS, COLUMNS, WALLS & FOOTINGS
10/20	BLINDING LAYER
200/20	MASS CONCRETE FILL

THE CONCRETE SHALL COMPLY TO CONSTRUCTION STANDARD 1:1990.
- STRUCTURAL CONCRETE SHALL COME FROM A SUPPLIER REGISTERED UNDER THE QUALITY SCHEME FOR THE PRODUCTION AND SUPPLY OF CONCRETE.
- CONCRETE MIX WITH A NOMINAL SLUMP LESS THAN 75mm SHALL NOT BE USED UNLESS THE CONTRACTOR CAN DEMONSTRATE THAT PROPER COMPACTION CAN BE ACHIEVED WITH A LOWER SLUMP WHICH SHALL IN NO CASE BE LESS THAN 50mm.
- IN THE DESIGN MIXES OF CONCRETE, THE CEMENTITIOUS CONTENT SHALL NOT BE LESS THAN 300 Kg/m<sup>3</sup>.
- MINIMUM COVER (mm) TO OUTER MOST REINFORCEMENT (mm) TO BE AS FOLLOWS UNLESS OTHERWISE STATED IN THE REINFORCEMENT DRAWINGS. ALL STRUCTURES ARE WITH ONE HOUR FRP EXCEPT THE SWITCH ROOM.

ELEMENTS	1 Hr FRP	2 Hr FRP
1. TIE BEAM	30	50
2. COLUMN	30	35
3. WALL	25	25
4. WORK IN CONTACT WITH BLINDING LAYER	50	50

NOTES :

- MINIMUM COVER TO REINFORCEMENT SHALL BE THE VALUES AS SHOWN IN THE ABOVE TABLE OR THE BAR DIAMETER WHICHEVER IS THE GREATER.
  - VALUES IN THE BRACKET ARE FOR SINGLE SPAN ELEMENT.
  - MINIMUM COVER TO REINFORCEMENT OF ELEMENT CAST DIRECTLY AGAINST SOIL OR ROCK TO BE 75mm.
  - MINIMUM COVER TO REINFORCEMENT OF WATER-TANK ELEMENT OR WATERTIGHT CONSTRUCTION IS 40mm.
  - FOR ALL ELEMENTS EXPOSED DIRECTLY TO WEATHER. MINIMUM COVER TO REINFORCEMENT SHALL BE 35mm.
  - REINFORCEMENT CONSISTING OF EXPANDED METAL LATH OR WIRE FABRIC NOT LIGHTER THAN 0.5 kg/m<sup>2</sup> WITHIN 2mm DIAMETER WIRE AT NOT MORE THAN 100mm CENTRES TO A CONTINUOUS ARRANGEMENT OF LINKS AT NOT MORE THAN 200mm CENTRES SHALL BE INCORPORATED IN THE CONCRETE COVER AT A DISTANCE NOT EXCEEDING 200mm FROM THE FACE.
  - FOR CANTILEVER PROJECTIONS EXPOSED TO WEATHERING. THE MINIMUM COVER TO THE OUTERMOST REINFORCEMENT SHOULD NOT BE LESS THAN 40mm.
  - ALL CONCRETE COVER REQUIREMENT SHALL COMPLY WITH "CODE OF PRACTICE FOR FIRE RESISTING CONSTRUCTION 1996".
- STEEL BARS SHALL BE HOT ROLLED PLAIN ROUND BARS (DENOTED BY R) OR DEFORMED HIGH YIELD BARS (DENOTED BY T) TO CONSTRUCTION STANDARD 2:1995. ALL REINFORCEMENT SHALL BE CUT OR BENT TO COMPLY WITH BS 8666:2000.
  - ALLOW SUFFICIENT STEEL CHAIRS TO SUPPORT TOP REINFORCEMENT IN SLABS, STAIR FLIGHTS AND RAFTING EXCEEDING 150 THICK AND U-BARS TO KEEP VERTICAL WALL REINFORCEMENT IN THEIR CORRECT ALIGNMENT.
  - HOLES AND POCKETS IN STRUCTURAL ELEMENTS SHALL NOT BE ALLOWED UNLESS AGREED BY THE ENGINEER.
  - NO TROPICAL HARDWOOD PROPPING SHALL BE USED TO SUPPORT ALL FORMWORK FOR CONCRETE WORK EXCEPT AGREED OTHERWISE BY THE ENGINEER.
  - THE DESIGN OF FORMWORK OR FALSEWORK SHALL BE SUCH THAT NO PART OF THE FORMWORK OR FALSEWORK WHICH FORMS THE MOULD FOR THE CONCRETE TO BE CAST SHALL PROJECT INTO THE FINISHED SURFACE OF THE CONCRETE.
  - THE DESIGN OF FORMWORK OR FALSEWORK INCLUDING SUPPORTS AND FOUNDATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF ANY SUCH CONSTRUCTION ACTIVITY. THE METHOD STATEMENT FOR DISMANTLING OF FALSEWORK AND FORMWORK SHALL BE SUBMITTED TO THE ENGINEER FOR AGREEMENT BEFORE WORKS COMMENCE.
  - ALL WATERSTOPS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION AND BE SECURELY HELD IN POSITION. MAKE ALL JOINTS PROPERLY, USING HOT OR COLD VULCANISING. PREVENT EDGE-BULBS FROM MOVING DURING CONCRETING. SPECIAL CARE SHALL BE TAKEN TO COMPACT CONCRETE AROUND WATER STOPS SUCH THAT NO VOIDS OR POROUS AREAS RESULT.

- THE POSITION AND METHOD OF FORMING CONSTRUCTION JOINTS INCLUDING SAMPLE TREATMENT SHALL BE SUBMITTED AND APPROVED PRIOR TO WORK ON SITE.
- NON STRUCTURAL CONCRETE WALLS ARE NOT SHOWN ON STRUCTURAL FRAMING PLANS. REFER TO ARCHITECTURAL DRAWING FOR LOCATIONS.
- DO NOT SCALE DRAWINGS.
- THE CONTRACTOR SHALL PREPARE THE COMBINED BUILDER WORKS DRAWING FOR THE ENGINEER'S APPROVAL PRIOR TO CONSTRUCTION.
- FOR ALL WATERPROOFING DETAILS, REFER RELEVANT ARCHITECTURAL DRAWINGS.
- THE REACTIVE ALKALINE CONTENT OF CONCRETE EXPRESSED AS THE EQUIVALENT TO SODIUM OXIDE CONTENT/CUBIC METER OF CONCRETE SHOULD NOT EXCEED 3kg WHERE DETERMINE IN ACCORDANCE WITH THE SPECIFICATION ITEM GIVEN IN APPENDIX A OF PNAP APP-T4.
- THE FOOTING FOUNDATION IS DESIGNED IN ACCORDANCE WITH "CODE OF PRACTICE FOR FOUNDATIONS 2004" AND THE ULTIMATE ALLOWABLE BEARING (WITH/WITHOUT WIND) PRESSURE IS 60KPa. THE GROUND COMPRESSES APPROX. 800mm THK. COMPACTED FILL OVERLYING GEOTEXTILE & BARRIER DRUM LAYER WITH MIN 500 THK COMPACTED FILL LAYER AND WHITE LAYER BELOW. DESIGN GROUNDWATER TABLE SHALL BE +127.47mPD.

## NOTES ON EXISTING UTILITIES

- THE POSITION OF UTILITIES INDICATED IS APPROXIMATE ONLY. EXACT LOCATION AND DEPTH OF THE UTILITIES MUST BE ASCERTAINED BY TRIAL PITS ON SITE. EXTREME CARE MUST BE TAKEN WHEN EXCAVATIONS ARE CARRIED OUT IN THE PROXIMITY OF THE UTILITIES. PRECAUTIONS SHALL BE TAKEN TO PREVENT DAMAGE TO ANY OF THE UTILITIES.
- THE INFORMATION INDICATED IS GIVEN IN GOOD FAITH AND NO GUARANTEE IS GIVEN AS TO ITS ACCURACY OR COMPLETENESS. THE USE OF THIS INFORMATION BY THE CONTRACTOR OR ANY OTHER PARTY SHALL NOT RELIEVE HIM OF ANY OF HIS OBLIGATIONS OR RESPONSIBILITIES UNDER THE CONTRACT.
- THE CONTRACTOR SHALL IDENTIFY AND ESTABLISH HIMSELF THE TYPES AND EXACT LAYOUT/LOCATION OF THE EXISTING UNDERGROUND SERVICES BEFORE CARRYING OUT ANY CONSTRUCTION WORKS ON SITE. HE SHALL ALSO PLAN AND ARRANGE HIS WORKS TAKING INTO ACCOUNT THE EXISTING UNDERGROUND UTILITIES OR ANY OTHER SOURCES THAT MAY AFFECT THE CONSTRUCTION SEQUENCE OF HIS WORKS.
- SHOULD ANY UNDERGROUND SERVICES FALL WITHIN THE WALL ALIGNMENT, THE CONTRACTOR SHALL PROPOSE AND SUBMIT A METHOD STATEMENT ON THE PROTECTION OF THE EXISTING UNDERGROUND SERVICE TO THE AP/RSE/RGE FOR APPROVAL.
- IF NECESSARY, THE CONTRACTOR SHALL MODIFY THE DESIGN OF ELS WORKS AND / OR PROVIDE ADEQUATE TEMPORARY SUPPORTS FOR THE UNDERGROUND SERVICES AND SUBMIT THE METHOD STATEMENT TO AP/RSE/RGE FOR APPROVAL. ALL COSTS SO INCURRED SHALL BE BORNE BY THE CONTRACTOR. SHOULD ANY DAMAGE OCCUR, NOTIFY THE AP/RSE/RGE AND RELEVANT AUTHORITIES CONCERNED IMMEDIATELY AND RECTIFY THE DAMAGE BY THE CONTRACTOR AT NO EXTRA COST AND TIME.

## NOTES ON EARTHWORKS AND HEAVY RAINFALL PRECAUTIONS

- SURFACE WATER FLOWING INTO THE SITE SHALL BE INTERCEPTED AND CONDUCTED FROM THE SITE TO AN INDICATED SAFE DISCHARGE POINT.
- ALL EARTHWORKS SHALL BE GRADED AND SEALED TO ENSURE RUN-OFF AND TO AVOID PONDING.
- A METHOD OF WORKING SHALL BE ADOPTED IN WHICH THE MINIMUM OF BARE SOIL IS EXPOSED AT ANY TIME. EARTHWORK TO FORM THE FINAL FACE SHALL BE FOLLOWED UP IMMEDIATELY WITH SURFACE PROTECTION AND DRAINAGE WORKS, AND THE FACE PANEL SIZE SHALL BE SMALL ENOUGH TO PERMIT THIS.
- WHERE TEMPORARY BARE EARTH SLOPE FACES ARE UNAVOIDABLE, THEY SHALL BE PROTECTED WITH SHEETING WELL-SECURED AGAINST THE WIND. WHERE SLOPE FACES ARE TO BE TEMPORARILY EXPOSED FOR MORE THAN TWO WEEKS, TEMPORARY HARD SURFACING SHALL BE PROVIDED AND TEMPORARY DRAINS SHALL BE INSTALLED.
- THE CONTRACTOR SHALL DESIGN AND CONSTRUCT THE TEMPORARY DRAINAGE SYSTEM TO CONVEY THE WATER WITHIN THE SITE.
- THE CONTRACTOR SHALL NOT STOCKPILE ANY MATERIAL WHERE IT MAY CAUSE A LANDSLIDE OR DAMAGE EXISTING UTILITIES OR ENDANGER THE PUBLIC OR ADJACENT PROPERTY.
- EXCAVATED FACE FOR ALL PROPOSED PERMANENT STRUCTURAL ELEMENTS SHALL BE COVERED AND PROTECTED AGAINST FROM WATER PONDING BY TARPULIN OR EQUIVALENT.

## NOTES ON PLACING AND COMPACTING FILL

- ALL FILLING WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH PNAP APP 15.
- ALL TOP SOILS ARE TO BE REMOVED PRIOR TO THE COMMENCEMENT OF FILLING.
- GENERAL FILL SHALL BE PLACED IN HORIZONTAL LAYERS OF NOT MORE THAN 300mm THICK (UNCOMPACTED). EACH LAYER SHALL BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY STANDARD COMPACTION TEST, GEOSPEC 3.
- IN-SITU DENSITY DETERMINATION TESTS COMPLYING WITH GEOSPEC 3 SHALL BE CARRIED OUT AS DIRECTED BY THE AP/RSE/RGE.
- STANDARD COMPACTION TESTS AND ANY OTHER TESTS REQUIRED BY THE AP/RSE/RGE SHALL BE CARRIED OUT BY AN INDEPENDENT AND HOKLAS TESTING LABORATORY APPROVED BY THE AP/RSE/RGE.

EVA/SKOI