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DO NOT SCALE

# GENERAL NOTES

1. THE ENGINEERS DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS, SPECIFICATIONS, REPORTS AND METHOD STATEMENTS.
2. ANY DISCREPANCIES BETWEEN THE INFORMATION GIVEN BY THE ENGINEER AND THAT PROVIDED BY OTHERS MUST BE REFERRED TO THE ARCHITECT AND ENGINEER BEFORE WORK PROCEEDS.
3. ALL DIMENSIONS ARE GIVEN IN MILLIMETRES AND ALL LEVELS ARE GIVEN IN METRES AOD UNLESS NOTED OTHERWISE.
4. DIMENSIONS ARE NOT TO BE SCALED FROM THE DRAWINGS. ONLY FIGURED DIMENSIONS ARE TO BE USED. WHERE DIMENSIONS ARE SUBJECT TO CONFIRMATION BY SITE MEASUREMENT THIS SHALL BE CARRIED OUT BY THE CONTRACTOR PRIOR TO FABRICATION AND CONSTRUCTION.
5. ALL GRIDLINES, BUILDING LINES, ETC. ARE TO BE SET OUT IN ACCORDANCE WITH THE RELEVANT ARCHITECTS DRAWINGS.
6. COLUMNS AND FOUNDATIONS ARE TO BE SET-OUT SYMMETRICALLY ABOUT GRIDLINES OR THEIR CENTRELINES UNLESS NOTED OTHERWISE.
7. ALL BEAMS ARE REFERENCED DEPTH x BREADTH UNLESS NOTED OTHERWISE.
8. WHERE IT IS REQUIRED THAT INSPECTION BE MADE BY THE LOCAL AUTHORITY THIS SHALL BE ARRANGED BY THE CONTRACTOR TO SUIT THEIR PROGRAMME.
9. ALL FOUNDATIONS AND ELEMENTS OF ENCASED WORK ARE TO BE INSPECTED BY THE BUILDING INSPECTOR PRIOR TO BACKFILLING, CONCRETING OR COVERING.
10. ABBREVIATIONS USED:
    UNO: UNLESS NOTED OTHERWISE
    NTS: NOT TO SCALE
    CL: CENTERLINE
    EGL: EXISTING GROUND LEVEL
    PGL: PROPOSED GROUND LEVEL
    BGL: BELOW GROUND LEVEL
    FFL: FINISHED FLOOR LEVEL
    SSL: STRUCTURAL SLAB LEVEL
    TOS: TOP OF STEEL LEVEL
    TOC: TOP OF CONC
    SOP: SETTING OUT POINT
    U/S: UPSTAND
    D/S: DOWNSTAND
    CC: CONCRETE CASED
    WP: WIND POST
    RC: REINFORCED CONCRETE
11. HOLES LESS THAN 300mm x 300mm THROUGH SLABS OR WALLS ARE NOT NECESSARILY SHOWN ON WSP DRAWINGS. FOR POSITIONING OF ALL SUCH HOLES REFER TO ARCHITECTS AND SPECIALISTS DRAWINGS. REINFORCEMENT IS TO BE DISPLACED SYMMETRICALLY ABOUT THESE HOLES.
12. OPENINGS SHOWN ON THE STRUCTURAL DRAWINGS ARE TO BE CHECKED BY THE CONTRACTOR AGAINST ALL OTHER RELEVANT CONTRACTOR'S DRAWINGS INCLUDING APPROVED BUILDERS WORK DRAWINGS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES MUST BE DRAWN TO THE ATTENTION OF THE ENGINEER.
13. GENERALLY THE FOLLOWING INFORMATION WILL NOT BE SHOWN ON WSP DRAWINGS: NON-STRUCTURAL INCLUSIONS OR CAST-IN FIXINGS, E.G. COLUMN GUARDS, LOCATION AND DETAILS OF FIXINGS FOR BRICKWORK, BLOCKWORK, CLADDING, DOORS, WINDOWS ETC. (FIXINGS MAY BE SHOWN IN SITUATIONS OF ABOVE NORMAL COMPLEXITY AND WHERE THEY ARE ESSENTIAL TO THE STRUCTURAL STABILITY), CHAMFERS, ARRISES, , CHASES AND REBATES FOR DRIPS, ASPHALT TUCK-INS, ARCHITECTURAL DETAILS, ETC. CAST-IN SOCKETS, BOLTS OR STUDS FOR FIXING PIPEWORK, DUCTWORK ETC. CONCRETE KERBS, SLOPES, FLOOR DRAINS, DETAILS FOR DAMP-PROOFING AND WATERPROOFING MEMBRANES, SEALANTS, DETAILS OF FIRE PROTECTION SYSTEMS ETC. OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS. THIS INFORMATION MAY BE FOUND ON BUILDERSWORK DRAWINGS PREPARED BY THE ARCHITECT, BUILDING SERVICES ENGINEERS OR SPECIALIST SUPPLIER OR SUBCONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN AND CO-ORDINATE THIS INFORMATION AND TO ENSURE THAT ALL NECESSARY PROVISIONS ARE ACCOMMODATED.
14. NO HOLES, CHASES, CUT-OUTS OR THE LIKE MAY BE FORMED IN ANY BEAM, COLUMN, OR LOADBEARING WALL UNLESS WRITTEN PERMISSION IS OBTAINED FROM THE ENGINEER.
15. REFER TO THE ARCHITECT FOR DETAILS OF NON-LOADBEARING WALLS AND THEIR INTERFACE WITH THE STRUCTURAL FRAME.
16. UNLESS NOTED OTHERWISE ALL NON-LOADBEARING WALLS ARE TO BE TIED TO THE STRUCTURE. WHERE BRICKWORK OR BLOCKWORK ABUTS THE STRUCTURAL FRAME CONSTRUCTION RESTRAINT FIXINGS ARE TO BE PROVIDED AT 450 CRS VERTICALLY AND 900 CRS HORIZONTALLY. A FLEXIBLE JOINT OF 20mm IS TO BE FORMED BETWEEN THE TOP OF THE WALL AND THE STRUCTURE TO ACCOMMODATE VERTICAL MOVEMENT. THE JOINT SHALL BE FILLED WITH AN APPROVED COMPRESSIBLE MATERIAL IN ACCORDANCE WITH THE ARCHITECTS DETAILS.
17. APPROVED DOVETAIL SLOTS ARE TO BE CAST INTO CONCRETE / CONCRETE CASED COLUMNS, SLABS AND BEAM ETC. TO ACCOMMODATE BRICKWORK AND BLOCKWORK RESTRAINT FIXINGS. REFER TO THE ARCHITECTS DETAILS.
18. WHERE CONCRETE OR STEEL MEMBERS ARE IN CONTACT WITH THE EXTERNAL ENVIRONMENT, OR ARE WITHIN 75mm OF THE EXTERNAL SKIN OF BRICKWORK AN APPROVED WATERPROOFING / CORROSION PROTECTION IS TO BE APPLIED.
19. REFER TO THE ARCHITECT FOR FIRE RATINGS TO BE ACHIEVED FOR EACH ELEMENT.

CODES AND STANDARDS

ALL STRUCTURAL ELEMENTS ARE TO BE DESIGNED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS AND RECOMMENDATIONS OF THE RELEVANT CODES AND STANDARDS. THE REQUIREMENTS AND RECOMMENDATIONS OF THE CODES AND STANDARDS ARE REGARDED AS MINIMUM CRITERIA AND THE DESIGN WILL UTILISE THE VALUES SPECIFIED WITHIN THE ENGINEERS DRAWINGS, SPECIFICATIONS OR DOCUMENTS WHERE THESE PROVE MORE ONEROUS.
THE CURRENT SCHEME DESIGN HAS BEEN UNDERTAKEN IN ACCORDANCE WITH THE LATEST ADDITIONS AND AMENDMENTS OF THE CODES AND STANDARDS NOTED BELOW.

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| BS EN 1990 | BASIS OF STRUCTURAL DESIGN |
| BS EN 1991 | ACTIONS OF STRUCTURES |
| BS EN 1992 | DESIGN OF CONCRETE STRUCTURES |
| BS EN 1993 | DESIGN OF STEEL STRUCTURES |
| BS EN 1994 | DESIGN OF COMPOSITE STEEL AND CONCRETE STRUCTURES |
| BS EN 1996 | DESIGN OF MASONRY STRUCTURES |
| BE EN 1997 | GEOTECHNICAL DESIGN |
| BS EN 6472 | EVALUATION OF HUMAN EXPOSURE TO VIBRATION IN BUILDINGS. |
| BS 8102 | PROTECTION OF STRUCTURES AGAINST WATER FROM GROUND |

KEY TO SYMBOLS (GENERAL)

- INDICATES COLUMN OVER (STARTING AT THIS LEVEL)
- INDICATES COLUMN UNDER (STOPPING AT THIS LEVEL)
- INDICATES POST OVER (STARTING AT THIS LEVEL)
- INDICATES POST UNDER (STOPPING AT THIS LEVEL)
- INDICATES HANGER ABOVE (STARTING AT THIS LEVEL)
- INDICATES HANGER BELOW (STOPPING AT THIS LEVEL)
- INDICATES SLIDING JOINT BELOW
- INDICATES STEP IN SLAB
- INDICATES UPSTAND
- INDICATES STEP IN SOFFIT

# FOUNDATIONS

1. FOUNDATIONS ARE TO BE SET OUT SYMMETRICALLY ABOUT COLUMN CENTRE LINES UNLESS NOTED OTHERWISE.
2. BEFORE PROCEEDING WITH THE WORK THE CONTRACTOR SHALL OBTAIN AND REVIEW ALL AVAILABLE RECORD INFORMATION FOR THE SITE AND SHALL UNDERTAKE ADDITIONAL INVESTIGATIONS AS REQUIRED TO DETERMINE THE LOCATION OF ALL EXISTING UNDERGROUND SERVICES.
3. FORMATION LEVELS ARE TO BE INSPECTED AND APPROVED BY THE BUILDING CONTROL OFFICER.
4. FOUNDATIONS ARE TO BE CONSTRUCTED AS SOON AS POSSIBLE AFTER EXCAVATION. UNLESS NOTED OTHERWISE ALL EXCAVATED SURFACES ARE TO BE SEALED WITHIN 12 HOURS WITH A 75mm CONCRETE BLINDING.
5. FOUNDATIONS AND GROUND BEARING SLABS SHALL BE PLACED ON UNDISTURBED, NATURAL SUBGRADE WITH A MINIMUM ALLOWABLE BEARING CAPACITY OF 200 kN/m2. THE FINAL BEARING LEVELS SHALL BE FIELD DETERMINED. THE SOIL SUBGRADE FOR ALL FOOTINGS AND SLABS SHALL BE INSPECTED AND APPROVED BY AN INDEPENDENT TESTING LABORATORY WHO SHALL VERIFY THE SOIL BEARING CAPACITY IMMEDIATELY PRIOR TO PLACING FOUNDATION CONCRETE OR CONCRETE BLINDING. ALL ORGANIC AND / OR OTHERWISE UNSUITABLE MATERIAL SHALL BE REMOVED FROM FOUNDATION AND SLAB SUBGRADES AND BACKFILLED WITH LEAN MIX CONCRETE.
6. NO BLINDING, FOUNDATIONS OR SLABS SHALL BE PLACED AGAINST SUBGRADES CONTAINING FREE WATER, FROST OR ICE. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEASURES TO PREVENT ANY WATER, FROST OR ICE FROM PENETRATING THE SUBGRADE BEFORE AND AFTER PLACING OF CONCRETE AND UNTIL SUCH SUBGRADES ARE FULLY PROTECTED BY THE PERMANENT BUILDING STRUCTURE. SHOULD WATER, FROST OR ICE ENTER AN EXCAVATION AFTER SUBGRADE APPROVAL THE SUBGRADE SHALL BE RE-INSPECTED BY THE INDEPENDENT SOIL TESTING LABORATORY.
7. ALL FOUNDATION AND SLAB BLINDING SHALL BE THOROUGHLY CLEANED IMMEDIATELY PRIOR TO CONCRETE PLACEMENT.
8. GROUND BEARING SLABS SHALL BE PLACED ON A CONTINUOUS 1000 GAUGE SUP MEMBRANE UNLESS NOTED OTHERWISE.
9. SERVICES PASSING THROUGH THE FOUNDATIONS OR SUB-STRUCTURE ARE TO BE ISOLATED AND PROTECTED. REFER TO THE SERVICES CONSULTANT FOR DETAILS.

# TEMPORARY WORKS

CONSTRUCTION NOTES

1. THE STRUCTURE HAS BEEN DESIGNED FOR THE ARRANGEMENT AND LOADING ACHIEVED IN THE FINAL CONDITION. THE CONTRACTOR IS RESPONSIBLE FOR THE CHOICE OF FINAL CONSTRUCTION SEQUENCE AND ANY TEMPORARY WORKS THAT MAY BE REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE STABILITY OF THE STRUCTURE THROUGH HIS CHOSEN CONSTRUCTION SEQUENCE.
2. SHOULD THE PROPOSED CONSTRUCTION SEQUENCE ALTER THE LOAD PATHS OR STRESSES IN THE STRUCTURE IN THE TEMPORARY CONDITION THE CONTRACTOR SHALL BE RESPONSIBLE FOR VALIDATING THE DESIGN. NO BACK PROPPING OF THE STRUCTURE WILL BE PERMITTED WITHOUT THE ENGINEERS APPROVAL.
3. NO SPECIAL ALLOWANCE HAS BEEN MADE IN THE DESIGN OF THE STRUCTURE FOR CRANE OR CONSTRUCTION PLANT LOADING. REFERENCE SHOULD BE MADE TO THE LOADING PLANS FOR THE DESIGN LOADS. SHOULD THE CONTRACTOR PROPOSE TO USE THE PERMANENT STRUCTURE TO SUPPORT OR RESTRAIN CRANES, HOISTS OR OTHER PLANT THE CONTRACTOR SHALL BE RESPONSIBLE FOR VALIDATING THE DESIGN IN THE TEMPORARY CONDITION.

TEMPORARY WORKS

1. THE DESIGN, FABRICATION, ERECTION AND REMOVAL OF ALL TEMPORARY WORKS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. THE DESIGN MUST CONSIDER THE TEMPORARY STABILITY OF THE PARTIALLY COMPLETED STRUCTURE AND ADJACENT INFRASTRUCTURE TAKING DUE ACCOUNT OF ALL EXISTING AND PROPOSED BELOW GROUND SERVICES, BASEMENTS, PAVEMENT VAULTS, TUNNELS, METHODS OF WORKING ETC. THE TEMPORARY WORKS SHALL INCLUDE ALL TEMPORARY RAINWATER PIPES AND DRAINAGE.
3. PRIOR TO COMMENCING THE WORKS THE CONTRACTOR IS TO INSTALL ALL NECESSARY PROPPING AND BRACING TO MAINTAIN STRUCTURAL STABILITY DURING THE WORKS AND TO ENSURE THAT THE STRUCTURE DOES NOT BECOME OVERSTRESSED OR DAMAGED DURING THE WORKS.

# CONCRETE

CONCRETE NOTES

1. ALL CAST-IN-SITU CONCRETE SHALL BE IN ACCORDANCE BS EN 1992 AND BS EN 13670.
2. ELEMENT: DESIGNATED MIX:
   - REINFORCED CONCRETE RC 30/37
   - BLINDING GEN 1
3. FOR WATERPROOFING, DPM, INSULATION AND FINISHES TO SLABS REFER TO THE ARCHITECT'S DRAWINGS.
4. NO CALCIUM CHLORIDE, OR ADMIXTURES CONTAINING CALCIUM CHLORIDE, SHALL BE USED IN ANY CONCRETE. ALL ADMIXTURE DETAILS ARE TO BE SUBMITTED FOR APPROVAL.
5. ALL REINFORCING STEEL BARS SHALL CONFORM TO BS EN 10080. ALL COUPLERS WILL BE OF A TYPE APPROVED BY ENGINEER.
6. ALL WELDED STEEL WIRE FABRIC SHALL CONFORM TO BS EN 10080. WELDED FABRIC IN SLABS SUBJECT TO DE-ICING SALTS SHALL BE GALVANIZED.
7. ALL CONCRETE REINFORCEMENT SHALL BE FABRICATED, LABELLED, SUPPORTED, SPACED IN FORMS, AND SECURED IN PLACE IN ACCORDANCE WITH THE PROCEDURES AND REQUIREMENTS OUTLINED IN THE LATEST EDITION OF BS EN 1992-1-1 "DESIGN OF CONCRETE STRUCTURES" AND BS 8666.
8. THE CONTRACTOR SHALL SUBMIT DRAWINGS SHOWING THE LOCATIONS OF ALL CONSTRUCTION JOINTS, UPSTANDS, SLAB DEPRESSIONS, SLEEVES, OPENINGS, EMBEDMENTS FOR ARCHITECTURAL PRE-CAST PANEL CONNECTIONS, INSERTS FOR HANGERS, ANCHORAGE FOR CLADDING, WATER BARS ETC... FOR THE GENERAL COORDINATION OF ALL TRADES.
9. ALL REINFORCING SPLICES SHALL BE STAGGERED BY AT LEAST A LAP LENGTH AND SHALL CONFORM TO THE REQUIREMENTS OF BS EN 1992-1-1 BUT IN NO CASE SHALL BE LESS THAN 36 BAR DIAMETERS UNLESS NOTED OTHERWISE.
10. ALL WELDED STEEL FABRIC SHALL BE LAPPED TWO (2) FULL MESH PANELS AND TIED SECURELY.
11. WHERE REQUIRED, DOWELS SHALL MATCH THE SIZE, TYPE AND NUMBER OF THE MAIN REINFORCEMENT.
12. ALL WALLS AND STRUCTURAL SLABS SHALL BE REINFORCED WITH AT LEAST B12 BARS SPACED AT 300mm EACH WAY, EACH FACE, UNLESS NOTED OTHERWISE. ALL SLABS-ON-GRADE SHALL BE REINFORCED WITH AT LEAST B16 BARS SPACED AT 200mm EACH WAY, EACH FACE, UNLESS NOTED OTHERWISE. CONCRETE FILL ABOVE THE STRUCTURAL SLAB SHALL BE REINFORCED WITH WELDED MESH; MIN AREA OF REINFORCEMENT EQUIVALENT TO 0.13% OF THE CROSS SECTIONAL AREA OF THE FILL.
13. ADDITIONAL BARS SHALL BE PROVIDED AROUND ALL FLOOR AND WALL OPENINGS. REFER TO THE TYPICAL DETAILS AND REINFORCEMENT REQUIREMENT DRAWINGS.
14. REINFORCEMENT CHAIRS HAVE NOT BEEN DETAILED ON DRAWINGS OR SCHEDULES THE CONTRACTOR IS TO MAKE APPROPRIATE ALLOWANCE FOR PROVISION OF CHAIRS.
15. THE CONTRACTOR SHALL CO-ORDINATE PLACEMENT OF ALL CAST IN ELEMENTS AND EMBEDMENTS IN THE STRUCTURE REQUIRED INCLUDING BUT NOT LIMITED TO CLADDING FIXINGS, SHELF ANGLES, WALL RESTRAINT TIES, SERVICES SUPPORT HANGERS, FIXINGS FOR ARCHITECTURAL METALWORK, COLUMN GUARDS,ETC., REFER TO THE RELEVANT SERVICE ENGINEERS, ARCHITECT'S OR SPECIALIST SUBCONTRACTOR'S DRAWINGS FOR DETAILS.
16. FORMWORK TO SUSPENDED BEAMS AND SLABS SHALL BE CONSTRUCTED SO THAT UPWARD CAMBERS EXIST IMMEDIATELY BEFORE STRIKING IN ACCORDANCE WITH THE SPECIFICATION.
17. ALL EXPOSED COLUMNS AND WALLS TO HAVE 20mm CHAMFER TO CORNERS UNLESS NOTED OTHERWISE.
18. PROVIDE AN APPROVED CURING COMPOUND. SEALER AND HARDENER FOR THE TOP SURFACE OF ALL SLAB WORK. DETAILS TO BE SUBMITTED FOR REVIEW.
19. THE CONTRACTOR SHALL PROVIDE A SITE "MOCK-UP" OF EACH INSITU CONCRETE FINISH SPECIFIED FOR APPROVAL BY THE EMPLOYER PRIOR TO COMMENCEMENT OF CONCRETE WORK.
20. CONCRETE TO BE POURED ONTO METAL DECKING SHALL, UNLESS NOTED OTHERWISE, BE CONSTRUCTED TO THE THICKNESS INDICATED ON THE STRUCTURAL DRAWINGS, AND SHALL FOLLOW THE PROFILE OF THE SUPPORTING STRUCTURE.
21. THE CONTRACTOR SHALL CARRY OUT AND SUBMIT SURVEYS OF ALL FINISHED REINFORCED CONCRETE AND METAL DECK CONCRETE SLAB SURFACES, BOTH BEFORE AND AFTER REMOVAL OF FORMWORK AND SHORING SYSTEMS.
22. NO CUTTING OR REMOVAL OF PLACED CONCRETE IS PERMITTED WITHOUT AGREEMENT OF THE ENGINEER.
23. WHERE IT IS NECESSARY TO DRILL INTO CONCRETE ELEMENTS FOR FIXINGS, THE CONTRACTOR SHALL PROPOSE A METHOD FOR ACCEPTANCE BY THE ENGINEER. THE CONTRACTOR SHALL LOCATE ALL REINFORCEMENT USING A COVER METER TO AVOID ANY REINFORCEMENT.

CONSTRUCTION JOINTS

1. CONSTRUCTION JOINTS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS, AS DESCRIBED IN THE SPECIFICATION, OR OTHERWISE AGREED WITH THE ENGINEER. WHERE JOINTS ARE NOT INDICATED THE CONTRACTOR SHALL SUBMIT PROPOSALS FOR APPROVAL.
2. THE LOCATION AND DISTANCE BETWEEN ALL CONSTRUCTION JOINTS IS TO BE IN ACCORDANCE WITH THE CONCRETE SPECIFICATION AND THE NATIONAL STRUCTURAL CONCRETE SPECIFICATION.
3. CONSTRUCTION JOINTS IN ALL WALLS, SLABS AND BEAMS SHALL NOT BE FURTHER APART THAN 30 METRES IN ANY DIRECTION.
4. SPLICES IN REINFORCEMENT HAVE NOT BEEN DETAILED IN ACCORDANCE WITH ANY PREDETERMINED CONSTRUCTION JOINT POSITION. IF THE CONTRACTOR WISHES TO ALTER POSITIONS OF SPLICES HE WILL BE REQUIRED TO SUBMIT FULL DETAILED REINFORCEMENT DRAWINGS & SCHEDULES FOR APPROVAL.
5. COLUMN AND WALL KICKERS ARE NOT PERMITTED UNLESS NOTED OTHERWISE.
6. ALL CONSTRUCTION JOINTS SHALL BE WIRE BRUSHED, CLEANED AND MOISTENED IMMEDIATELY PRIOR TO PLACING NEW CONCRETE.
7. ALLOW A MINIMUM OF THREE (3) HOURS BETWEEN PLACEMENT OF CONCRETE FOR COLUMNS, WALLS OR PIERS AND PLACEMENT OF CONCRETE ON THE ADJACENT FLOOR.
8. GROUND SLABS AND EXTERNAL WALLS ARE TO BE WATERPROOFED AS INDICATED ON THE DRAWINGS. WATERPROOFING TO BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
9. ALL CONSTRUCTION JOINTS BELOW GROUND LEVEL TO HAVE EXTERNAL PVC WATER BARS AND HYDROPHILIC STRIPS. THE CONTRACTOR IS TO PREPARE FULL WATER BAR LAYOUTS FOR ACCEPTANCE AT LEAST FOUR (4) WEEKS BEFORE PROGRAMMED INSTALLATION.
10. ALL CONCRETE ON GROUND TO BE PLACED ON 1000 g/m2/ POLYTHENE SEPARATING MEMBRANE UNLESS NOTED OTHERWISE.
11. GROUND SLABS TO BE PLACED IN A CHECKERBOARD FASHION BETWEEN CONSTRUCTION JOINTS OR IN STRIP POURS OF MAXIMUM 5m WIDTH. MINIMUM CURE TIME BEFORE CASTING ADJOINING BAYS IS THREE (3) DAYS.

# STEELWORK

1. ALL STRUCTURAL STEELWORK SHALL BE DESIGNED AND DETAILED IN ACCORDANCE WITH BS EN 1993 AND BS EN 1994 AND EXECUTED IN ACCORDANCE WITH BS EN 1090.
2. ALL STEELWORK TO BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE NSSS FOR BUILDING CONSTRUCTION.
3. UNLESS NOTED OTHERWISE STRUCTURAL STEELWORK SHALL BE GRADE S355 TO BS EN 10 025, BS EN 10 113 AND BS EN 10 210. ALL STEEL SHALL BE OF WELDABLE QUALITY. ALL BOLTS SHALL BE GRADE 8.8 UNLESS NOTED OTHERWISE.
4. ALL INTERNAL STEELWORK TO SUPPLIED WITH 2 COAT EPOXY ZINC PHOSPHATE PRIMER & UNDERCOAT. MIN. TOTAL DFT OF 100 MICRONS. PAINT SYSTEM TO BE COMPATIBLE WITH THE PROPOSED INTUMESCENT COATING. CONTRACTOR TO MAKE PROPOSALS FOR APPROVAL BY THE ENGINEER.
5. ALL STEELWORK BUILT INTO EXTERNAL SOLID WALLS TO BE GALVANISED (MIN. 85 MICRONS).
6. ALL STRUCTURAL STEEL SHALL BE FIREPROOFED TO ACHIEVE THE APPLICABLE FIRE-RESISTANCE RATINGS. FOR DETAILS OF FIRE PROTECTION REFER TO THE ARCHITECTS DRAWINGS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF ALL ERECTION PROCEDURES AND SEQUENCES ESPECIALLY IN RELATION TO TEMPERATURE DIFFERENTIALS, ERECTION TOLERANCES AND TEMPORARY STABILITY.
8. THE CONTRACTOR SHALL SUBMIT THE FOLLOWING INFORMATION TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.
   - ERECTION SEQUENCE METHOD STATEMENT INCLUDING PROPOSALS FOR MAINTAINING STRUCTURAL STABILITY DURING ALL PHASES OF CONSTRUCTION.
   - DETAILS OF ERECTION LOADS APPLIED TO THE STRUCTURE
   - DETAILS OF ANY TEMPORARY WORKS OR PROPPING PROPOSED
   - DETAILED, CO-ORDINATED AND CHECKED SHOP DRAWINGS FOR ALL STRUCTURAL STEEL
   - CONNECTION DETAIL DRAWINGS AND CALCULATIONS (PRIOR TO SUBMISSION OF SHOP DRAWINGS) FOR STANDARD AND TYPICAL CONNECTIONS INCLUDING THOSE FULLY DETAILED ON THE ENGINEERS DRAWINGS
   - DETAIL DRAWINGS AND CALCULATIONS FOR METAL DECK FLOOR SLABS
9. NO REMEDIAL WORK WILL BE PERMITTED WITHOUT PRIOR APPROVAL
10. ALL ADDITIONAL STEEL REQUIRED BY THE CONTRACTOR FOR ERECTION PURPOSES SHALL BE PROVIDED AT NO COST TO THE EMPLOYER. ALL SUCH ADDITIONAL STEEL SHALL BE REMOVED BY THE CONTRACTOR UNLESS APPROVED BY THE ENGINEER.
11. ALL BEAMS, JOISTS AND TRUSSES SHALL BE FABRICATED WITH THE NATURAL CAMBER UP. ADDITIONAL CAMBERS ARE AS INDICATED ON THE STRUCTURAL DRAWINGS.
12. CANTILEVER BEAMS SHALL BE FABRICATED SO THAT NATURAL CAMBER RAISES THE CANTILEVER END.
13. ALL BEAMS ARE ASSUMED TO BE UNPROPPED UNLESS NOTED OTHERWISE.
14. SOME STEELWORK ELEMENTS MAY BE OF AESTHETIC IMPORTANCE AND REQUIRE SPECIAL ARCHITECTURAL TREATMENT. ANY SUCH STEELWORK NOT FULLY COMPLIANT WITH THE SPECIFIED REQUIREMENTS WILL BE REJECTED FROM THE WORKS. REFER TO THE DRAWINGS FOR LOCATION OF SUCH STEELWORK.
15. CONTRACTOR TO CARRY OUT MEASURED SURVEY EXISTING/NEW STRUCTURES (INCLUDING WALLS FOR PADSTONES) PRIOR TO FABRICATION OF STEELWORK.
16. ALL STEEL BEAMS TO HAVE 150mm MIN. BEARING LENGTH ON PADSTONES, EXCEPT WHEN BEAM IS AT 90 DEGREES TO PADSTONE, WHERE BEARING SHOULD BE FULL WIDTH OF PADSTONE AND WHERE SPECIFIED OTHERWISE.
17. CONCRETE PADSTONES: MIN. STRENGTHEN GRADE RC25/30 (PRE-CAST CONCRETE)

CONNECTION DESIGN

1. THE CONTRACTOR SHALL DESIGN AND SUBMIT CALCULATIONS FOR ALL CONNECTIONS INCLUDING THOSE FULLY DETAILED ON THE ENGINEERS DRAWINGS. CALCULATIONS SHALL CONFORM TO THE REQUIREMENTS OF BS EN 1993-1-8.
2. THE CONTRACTOR SHALL DESIGN CONNECTIONS FOR THE LOADS AND CRITERIA GIVEN ON THE DRAWINGS. THE CONTRACTOR SHALL CALCULATE TIE FORCES REQUIRED IN ACCORDANCE WITH BS EN 1991.
3. ANY CONNECTIONS INDICATED ON THE ENGINEERS DRAWINGS SHOULD BE CONSIDERED AS INDICATIVE ONLY AND SHOULD BE VALIDATED BY THE CONTRACTOR AT TENDER STAGE. DETAILS INDICATING THE NUMBER OF BOLTS, WELD SIZES AND PLATE THICKNESS SHALL BE CONSIDERED TO REPRESENT THE MINIMUM REQUIREMENTS.
4. IF FOR ANY REASON THE CONNECTION NEEDS TO BE CHANGED, THE CONTRACTOR SHALL REDESIGN THE CONNECTION TO DEVELOP THE REQUIRED CAPACITY. THE REVISIONS SHALL BE MADE AT NO ADDITIONAL COST AND WITH NO DELAY TO THE PROJECT.
5. BEAM END REACTIONS SHOWN ON THE DRAWINGS ARE ULTIMATE LIMIT STATE LOADS. UNLESS NOTED OTHERWISE THE CONNECTIONS SHALL BE DESIGNED FOR THE FORCES AND MOMENTS SHOWN ACTING CONCURRENTLY.
6. ALL BOLTED BEAM END CONNECTIONS ARE TO BE OF A CONFIGURATION WHICH INHERENTLY PROVIDES LOAD REVERSAL CAPACITY e.g. FIN PLATES OR END PLATES.
7. CONNECTION SHALL BE DESIGNED FOR THE GREATEST OF THE FOLLOWING:
   a - REACTIONS INDICATED ON THE DRAWINGS. IF UNAVAILABLE REACTIONS SHOULD BE CALCULATED FROM UNIFORM LOAD CAPACITIES x 1.2.
   b - TIE FORCES IN ACCORDANCE WITH BS EN 1991-1-7 FOR LOCALISING ACCIDENTAL DAMAGE
8. ALL BOLTED CONNECTIONS SHALL USE A MINIMUM GRADE OF 8.8 BOLTS UNLESS NOTED OTHERWISE.
9. THE FOLLOWING MINIMUM REQUIREMENTS SHALL BE ASSUMED UNLESS NOTED OTHERWISE:
10. a - MEMBERS SUPPORTING OTHER MEMBERS - 4 No. M16 GRADE 8.8 BOLTS.
    b - MEMBERS NOT SUPPORTING OTHER MEMBERS - 2 No. M16 GRADE 8.8 BOLTS.
11. BOLTED MOMENT CONNECTIONS WHERE SHOWN SHALL UTILISE HIGH-STRENGTH FRICTION GRIP BOLTS FOR BOTH FLANGE AND WEB BOLTS.
12. ALL CONTACT SURFACES FOR HSFG BOLTS ARE TO BE LEFT UNPAINTED.
13. SPLICE LOCATIONS WHERE SHOWN ON THE DRAWINGS ARE INDICATIVE ONLY. FINAL LOCATION IS TO BE AGREED WITH THE ENGINEER. SPLICE LOADS ARE TO BE DETERMINED BY THE CONTRACTOR.
14. ALL BOLT HOLES SHALL BE PRE-DRILLED AND WHERE REQUIRED, REAMED. UNLESS NOTED OTHERWISE PROVIDE STANDARD CLEARANCE HOLES. PROVIDE OVERSIZED HOLES WHERE REQUIRED FOR ERECTION OR WHERE SHOWN.
15. UNLESS NOTED OTHERWISE 8mm THICK HARDENED WASHERS ARE TO USED OVER ALL SLOTTED HOLES.

# STEELWORK (CONTINUED)

WELDING

1. ALL WELDING TO BE IN ACCORDANCE WITH BS EN 1090 AND THE STEELWORK SPECIFICATION AND THE LATEST VERSION OF THE NATIONAL STRUCTURAL STEELWORK SPECIFICATION (NSSS).
2. NO SITE WELDING IS PERMITTED WITHOUT PRIOR APPROVAL.
3. MINIMUM WELD SIZE:

| MINIMUM SIZE FILLET WELD | | |
|---|---|---|
| MATERIAL THICKNESS OF THICKER PART JOINED (mm) | MINIMUM SIZE OF LEG (mm) | MINIMUM SIZE OF THROAT (mm) |
| TO 6 INCLUSIVE | 3 | 2.1 |
| OVER 6 TO 12 | 5 | 3.5 |
| OVER 12 TO 19 | 6 | 4.2 |
| OVER 19 | 8 | 5.6 |

STRUCTURAL WELDS SHALL NOT BE LESS THAN 6mm

ALL BUTT WELDS SHALL BE FULL PENETRATION, FULL STRENGTH WELDS

ALL WELDED CONNECTIONS SHALL BE FULLY SEALED AGAINST INGRESS OF WATER USING 4mm CONTINUOUS FILLET WELDS WHERE STRUCTURAL WELDS ARE NOT REQUIRED.

ELECTRODES FOR ALL FILLET WELDS SHALL BE IN ACCORDANCE WITH BS EN ISO 2560, 14171, 14341, 17632 & 21952.

ELECTRODES USED FOR ALL BUTT WELDS TO PROVIDE A MINIMUM YIELD & TENSILE STRENGTH NOT LESS THAN THOSE SPECIFIED FOR THE PARENT METAL.

4. SHOP AND FIELD TESTING AND INSPECTION OF STRUCTURAL STEEL FABRICATION AND ERECTION WORK, INCLUDING WELDED AND BOLTED CONNECTIONS, SHALL BE AS FOLLOWS:
   a - ALL STRUCTURAL STEEL FABRICATIONS AND ERECTION SHALL BE VISUALLY INSPECTED AS PER BS EN ISO 17637
   b - ALL WELDERS SHALL BE QUALIFIED AS PER BS EN ISO 9606-1
   c - ALL WELDS SHALL CONFORM TO BS EN 1011-01 & 1011-02.
   d - ALL WELDS SHALL BE VISUALLY INSPECTED. WELD MEASUREMENTS SHALL BE PERFORMED FOR 15% OF ALL WELDS ON A RANDOM BASIS.
   e - MAGNETIC PARTICLE TESTING IN ACCORDANCE WITH BS EN 1290 SHALL BE PERFORMED FOR A MINIMUM OF: 10 % OF ALL FILLET WELDS U.N.O.
   f - ULTRASONIC TESTING, IN ACCORDANCE WITH BS EN 17640 SHALL BE PERFORMED FOR A MINIMUM OF: 100 % OF ALL BUTT WELDS U.N.O.
   g - REFER TO STRUCTURAL STEELWORK SPECIFICATION FOR ADDITIONAL TESTING AND INSPECTION REQUIREMENTS.

WELD TESTING

1. SHOP AND FIELD TESTING AND INSPECTION OF STRUCTURAL STEEL FABRICATION AND ERECTION WORK, INCLUDING WELDED AND BOLTED CONNECTLONS, SHALL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST VERSION OF THE NATIONAL STRUCTURAL STEELWORK SPECIFICATION (NSSS) AND AS FOLLOWS:

BOLTED JOINTS

a - ALL BOLTED CONNECTIONS SHALL BE VISUALLY INSPECTED. IN ADDITION, HIGH - STRENGTH, FRICTION GRIP BOLTED CONNECTIONS SHALL BE TESTED BY A CALIBRATED TORQUE WRENCH FOR A MINIMUM OF 25% OF THE BOLTS IN EACH CONNECTION, BUT NOT LESS THAN 2 BOLTS IN EACH CONNECTION. CHECK FIT AND TIGHTNESS OF 5% OF ORDINARY BOLTED CONNECTIONS.

b - THE REQUIRED CONTACT SURFACE CONDITION OF ALL CONNECTIONS SHALL BE VISUALLY INSPECTED IMMEDIATELY PRIOR TO BOLT TIGHTENING. THE TRADE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REMEDIA