

STEELWORK NOTES

ALL ELEMENTS OF THE STRUCTURAL STEELWORK SHOULD MEET THE REQUIREMENTS OF THE BCSA NATIONAL STRUCTURAL STEELWORK SPECIFICATION FOR BUILDING CONSTRUCTION, 5TH EDITION, CE MARKING VERSION. ANY DISCREPANCIES SHOULD BE REPORTED TO JMS IMMEDIATELY. WHERE DISCREPANCIES OCCUR THE MOST ONEROUS CONDITION SHOULD BE ASSUMED TO APPLY

1. MATERIALS

- A. STEEL SECTIONS SHALL BE OF GRADE S275 OR S355 TO BS EN 10025 AS SPECIFIED ON THE DRAWINGS.
- B. STEEL FOR CONNECTIONS AND FITTINGS SHALL BE GRADE S275. THE MINIMUM THICKNESS SHALL BE 6mm.
- C. WELDS SHALL BE OF MINIMUM THROAT THICKNESS OF 6mm. ALL WELDS SHALL BE CONTINUOUS UNLESS NOTED OTHERWISE. ALL WELDS TO HAVE FULL PENETRATION. BUTT WELDED JOINTS TO BE GROUND FLUSH.
- D. ALL BOLTS SHALL BE GRADE 8.8 TO BS 3692 WITH DIMENSION TOLERANCE AND THREAD LENGTH TO BS 4190 UNLESS SPECIFIED OTHERWISE. ALL ORDINARY FASTENER ASSEMBLIES SHALL CONFORM WITH BS EN 15048-1.
- E. ALL WELDING CONSUMABLES SHOULD BE MANUFACTURED TO HARMONISED BS EN 13479. WELDING CONSUMABLES SHALL COMPLY WITH BS EN 756, BS EN 760, BS EN ISO 2560, BS EN ISO 14341 OR BS EN ISO 17632 AS APPROPRIATE. WELDING SHALL BE CARRIED OUT IN ACCORDANCE WITH BS EN 1011-1 & BS EN 1011-2.
- F. THE PREFERRED BOLT DIAMETER IS 20mm, 16mm OR 24mm DIAMETER BOLTS MAY BE ALLOWED UNDER SPECIAL CIRCUMSTANCES. HIGH STRENGTH FRICTION GRIP BOLTS WILL NOT BE REQUIRED UNO.
- G. ALL SHS, RHS AND CHS SECTIONS SHALL BE HOT FORMED AND NOT COLD FORMED UNLESS AGREED WITH STRUCTURAL ENGINEER OR NOTED ON DRAWINGS.
- H. STRUCTURAL ENGINEER SHALL BE SUPPLIED WITH ALL INSPECTION CERTIFICATES TO BS EN 10204 3:1 PRIOR TO ERECTION OF STEELWORK ON SITE.
- I. ALL FABRICATED STEEL SHOULD BE CE MARKED IN ACCORDANCE WITH CURRENT LEGISLATION.
- J. THE PROJECT SHOULD BE FABRICATED IN ACCORDANCE WITH EXECUTION CLASS EXC1.

CONSEQUENCE CLASS - CC1

SERVICE CATEGORY - SC2

PRODUCTION CATEGORY - PC2

2. SURFACE TREATMENT

- A. THE STEELWORK FINISH FOR EACH SECTION WILL BE AS SHOWN ON THE DRAWINGS.
- B. ALL STEELWORK SHALL BE BLAST CLEANED TO SA 2½.
- C. INTERNAL STEELWORK SHALL BE BLAST CLEANED TO SA 2½. PAINT SYSTEM SHALL BE HIGH BUILD ZINC PHOSPHATE MODIFIED POST FABRICATION PRIMER, BS 5493 PRODUCT REFERENCE TYPE FP 3A. MINIMUM DRY FILM THICKNESS 75µm (75 MICRONS).
- D. INTERNAL STEELWORK THAT BEARS ONTO THE OUTER LEAF OF AN EXTERNAL WALL SHALL BE BLAST CLEANED TO SA 2 ½. ONE COAT OF SOLVENT FREE EPOXY TO BE SHOP APPLIED. (MINIMUM DRY FILM THICKNESS OF 450µm) (SCI SYSTEM PW-C2-A)
- E. EXTERNAL STEELWORK SHALL BE BLAST CLEANED TO SA 2 ½. SHOP APPLIED ZINC PRIMER (MINIMUM DRY FILM THICKNESS 40µm) FOLLOWED BY A 60µm SEALER COAT AND HIGH BUILD EPOXY MIO (MINIMUM DRY FILM THICKNESS 100µm). SITE APPLIED HIGH BUILD EPOXY MIO FINISH (MINIMUM DRY FILM THICKNESS 100µm).
- F. "GALVANIZED" STEELWORK SHALL MEAN HOT DIP GALVANIZED TO BS 729 OR BS EN ISO 1461 WITH A MINIMUM AVERAGE COATING THICKNESS OF 85µm. POSITIONS OF ALL VENT HOLES SHALL BE AGREED WITH JMS PRIOR TO FABRICATION.
- G. BOLTS MAY BE LEFT UNPAINTED WHERE THE STEELWORK IS PAINTED.
- H. WHERE STEELWORK IS GALVANIZED THE BOLTS NUTS AND WASHERS MUST BE ZINC PLATED IN ACCORDANCE WITH BS EN 22063.
- J. HOLDING DOWN BOLTS TO TOP OF CONCRETE PLINTHS SHALL BE ZINC PLATED AND WRAPPED IN DENSO TAPE UNTIL AFTER CONSTRUCTION IS COMPLETED AT WHICH POINT DENSO TAPE SHALL BE REMOVED.
- K. GROUT TO BE FOSROC CONBEXTRA GP OR SIMILAR APPROVED AND IS TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. THE GROUT NEEDS TO CURE FOR A MINIMUM OF 5 DAYS PRIOR TO LOADING.

4. FIRE PROTECTION

- A. WHERE FIRE PROTECTION IS SPECIFIED THE MEANS OF PROTECTION SHALL BE AGREED WITH THE MAIN CONTRACTOR.
- B. WHERE INTUMESCENT COATINGS ARE TO BE USED THE NEED OR OTHERWISE FOR PREVIOUSLY APPLIED PRIMER SHALL BE ESTABLISHED BY THE FABRICATOR AND MAIN CONTRACTOR BEFORE THE PRIMER IS APPLIED.
- C. OFF SITE INTUMESCENT COATINGS MAY BE PERMITTED PROVIDED THEY FOLLOW THE PRINCIPLES LAID DOWN IN THE MODEL SPECIFICATION CONTAINED IN THE STEEL CONSTRUCTION INSTITUTE PUBLICATION P160.

5. SECONDARY STEELWORK

- A. ALL COLD ROLLED STEELWORK WILL BE METSEC OR A SIMILAR APPROVED SUPPLIER.
- B. ALL HOT ROLLED STEELWORK WILL BE PAINTED AS 2C.
- C. ALL END CONNECTIONS FOR COLD ROLLED SECONDARY STEELWORK WILL BE DESIGNED BY THE FABRICATOR FOR A FACTORED SHEAR FORCE OF 25kN.
- D. ALL CONNECTIONS FOR HOT ROLLED SECONDARY STEELWORK SHALL BE DESIGNED FOR A MINIMUM FACTOR SHEAR FORCE OF 75kN OR AS SHOWN ON THE DRAWING.
- E. A MINIMUM OF TWO BOLTS WILL BE USED. MINIMUM BOLT SIZE TO BE M10.
- F. WHERE BOLT HEADS CLASH WITH BLOCKWORK, STONEMWORK OR RENDER COUNTERSUNK BOLTS WILL BE USED. WHERE BOLTS HEADS CLASH WITH INSULATION, THE NECESSITY OR OTHERWISE FOR COUNTERSUNK BOLTS MUST BE AGREED BETWEEN THE FABRICATOR AND MAIN CONTRACTOR
- G. ALL COLD ROLLED STEELWORK SHALL BE PROVIDED WITH ALL NECESSARY SAG RODS, BARS AND SO ON, AS REQUIRED BY THE MANUFACTURER
- H. DIMENSIONS SHOWN ON THE ELEVATION SHOULD BE CAREFULLY ASSESSED AS TO WHETHER THEY APPLY TO THE CENTRELINE OR FACE OF THE STEEL.
- I. ALL HORIZONTAL HOT ROLLED STEELWORK SHALL BE PROVIDED WITH SAG RODS OR SIMILAR AT MID-SPAN BRACED BACK TO SUITABLE MAIN STEELWORK. THE FABRICATIONS DETAILED PROPOSALS ARE TO BE AGREED WITH THE STRUCTURAL ENGINEER.

6. LOADINGS

THE PROJECT HAS BEEN DESIGNED FOR THE FOLLOWING UNFACTORED LOADS IN kN/m²:

FIRST FLOOR	
DEAD	5.5
IMPOSED	SEE DRAWING
PITCHED ROOFS	
DEAD	0.85
IMPOSED	0.75
FLAT ROOFS	
DEAD	0.6
IMPOSED	0.75

THE PROJECT HAS BEEN DESIGN AS A CLASS 2A STRUCTURE IN ACCORDANCE WITH THE DISPROPORTIONATE COLLAPSE REQUIREMENTS OF PART A OF THE BUILDING REGULATIONS.

7. CONNECTION DESIGN

- A1. ALL BEAM AND COLUMN CONNECTIONS SHALL BE MADE WITH A MINIMUM OF 4 BOLTS AND ALL BRACING CONNECTIONS WITH A MINIMUM OF 2 BOLTS.
- A2. SLOTTED CONNECTORS WILL GENERALLY NOT BE PERMITTED UNLESS AGREED IN WRITING WITH THE STRUCTURAL ENGINEER.
- A3. ALL CONNECTION DESIGN TO BE CARRIED OUT BY THE FABRICATOR UNLESS NOTED OTHERWISE.

B. BEAM CONNECTIONS

- B1. ALL BEAMS TO BE DESIGNED TO RESIST A MINIMUM HORIZONTAL LOAD OF ±75 kN. THIS IS TO INCLUDE COLUMN AND FLANGE BENDING TOGETHER WITH BEAM AND COLUMN WEB BENDING AS APPROPRIATE. HIGHER LOADS MAY BE REQUIRED AS SHOWN ON THE DRAWINGS.
- B2. ALL BEAM CONNECTIONS TO BE DESIGNED USING FULL DEPTH END PLATES UNLESS SHOWN OTHERWISE ON THE DRAWINGS. FIN PLATES WILL GENERALLY NOT BE USED.

C. COLUMN SPLICES

- C1. COLUMN SPLICES WILL NOT BE PERMITTED TO EXTERNAL STEELWORK.
- C2. COLUMN SPLICES ARE NOT GENERALLY REQUIRED AS PART OF THE DESIGN BUT MAY BE USED FOR PRACTICAL REASONS WHERE AGREED WITH THE STRUCTURAL ENGINEER. COMPRESSION LOADS MAY BE CARRIED BY DIRECT BEARING ON DIVISION PLATES. TENSION LOADS MAY BE CARRIED BY EITHER DIVISION PLATES OR COVER PLATES.
- C3. WHERE SHOWN ON THE DRAWINGS PROJECTIONS FROM THE FACE OF THE COLUMN WILL NOT BE PERMITTED THUS AVOIDING ENCRDACHING ON PARTITIONS. IN SUCH INSTANCES COLUMN SPLICES MUST BE EFFECTED BY FLUSH DIVISION PLATES OR BY INTERNAL FLANGE COVER PLATES UTILIZING COUNTERSUNK BOLTS.
- C4. THE CENTRE OF THE SPLICES MUST BE LOCATED WITHIN 500mm OF THE CENTRE OF THE BEAM BELOW OTHERWISE STRUT ACTION MUST BE TAKEN INTO ACCOUNT IN THE DESIGN.
- C5. WHERE TENSION OR COMPRESSION LOADS AND MOMENTS ARE SPECIFIED THEY ARE TAKEN TO ACT SIMULTANEOUSLY.

D. BRACING CONNECTIONS

- D1. DUE TO THEIR COMPLEXITY IT IS LIKELY THAT BRACING CONNECTION BAYS REQUIRE INDIVIDUAL DESIGNS. IN THIS INSTANCE, TO FACILITATE THE ERECTION, KIDNEY SHAPED HOLES WILL BE PERMITTED SUBJECT TO SATISFACTORY DETAILED CALCULATION.
- D2. BRACING CONNECTIONS SHOULD BE EFFECTED USING GUSSET PLATES WELDED TO EXTENDED END PLATES TO BEAMS.
- D3. THE CENTRE LINES OF BRACING, BEAMS AND COLUMNS SHOULD INTERSECT AT A SINGLE NODE POINT. AS AN ALTERNATIVE OFFSET NODES MAY BE PERMITTED SUBJECT TO:
- A) THE BEAM TO COLUMN CONNECTION BEING DESIGNED FOR THE ECCENTRIC MOMENT.
- B) THE BEAM AND/OR COLUMN ARE STIFFENED TO CATER FOR THE ADDITIONAL MOMENTS CAUSED BY THE ECCENTRICALLY APPLIED BRACING LOAD.
- D4. WHERE BRACING MEMBERS CONNECT TO FLANGES THE BEAM CONNECTION SHOULD BE DESIGNED FOR THE MOMENT INDUCED BY THE VERTICAL COMPONENT ACTING AT THE FACE OF THE COLUMN TRANSPOSED TO ITS CENTRE LINE. THIS DESIGN IS TO INCLUDE COLUMN FLANGE AND END PLATE BENDING AS WELL AS BOLT TENSION.
- D5. WHETHER IN TENSION OR COMPRESSION GUSSET PLATES SHALL BE DESIGNED FOR A COMPRESSION LOAD EQUAL TO THE FORCE IN THE BRACE TO ENSURE ADEQUATE ROBUSTNESS. THE EFFECTIVE LENGTH SHALL BE 1.5 X THE DISTANCE FROM THE BEAM/COLUMN FLANGE TO THE CENTRE OF THE BOLTED CONNECTION.
- D6. GUSSET PLATE WELDS SHALL BE DESIGNED FOR THE FULL TENSION LOAD.
- D7. CHS CONNECTIONS SHALL BE EFFECTED WITH SEALING PLATES AND GUSSET PLATES. TEE STALKS OR ANGLES WILL BE PERMITTED.

E. HOLDING DOWN BOLTS

- E1. GROUT FOR FILLING BOLT BOXES AND BENEATH BASEPLATES SHALL HAVE A HAVE A FACTORED COMPRESSIVE STRENGTH EQUAL TO THAT OF THE FOUNDATION IT BEARS ONTO.
- E2. GROUT UNDER BASEPLATES TO BE A MINIMUM OF 25mm UNLESS OTHERWISE STATED.
- E3. ALL WIND POSTS TO BE PAINTED AS PER NOTE 2C. WIND POST END CONNECTIONS TO BE DESIGNED FOR A SHEAR LOAD OF 25kN. CONNECTION TO BE DESIGNED AND DETAILED SO AS TO ALLOW 25mm OF VERTICAL DEFLECTION IN CONSTRUCTION ABOVE TOP CONNECTION.
- E4. HOLDING DOWN BOLTS SHALL BE IN ACCORDANCE WITH BS 7419, NUTS WITH BS EN ISO 4032 (CLASS 8) & WASHERS WITH BS EN ISO 7091 (100HV)

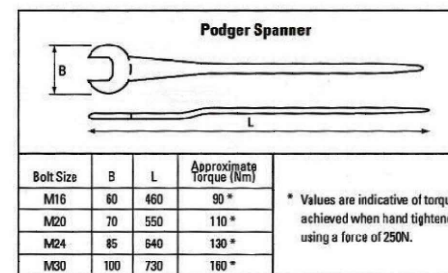
8. GENERAL

- A. ANY VARIATIONS TO THE PROCEDURE LAID DOWN ON THE DRAWINGS OR IN THE SPECIFICATION SHALL ONLY BE ALLOWED AFTER RECEIVING WRITTEN PERMISSION FROM THE STRUCTURAL ENGINEER.
- B. WHERE PFC AND RSA ARE USED THE CENTRE LINE IS THE CENTRE LINE OF THE OVERALL WIDTH AND NOT THE WEB.
- C. WHERE STEEL DECKING SPANS ONTO BEAMS WHICH CONNECT TO COLUMN FLANGES A 90x90x6mm BEARING ANGLE SHOULD BE PROVIDED ACROSS THE TOES OF THE FLANGES OF THE COLUMN.
- D. THE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION AND OTHER CONTRACT DOCUMENTATION. WHERE THERE IS CONFLICT BETWEEN THE TWO THE MOST ONEROUS CONDITIONS SHALL APPLY. ANY CONFLICT TO BE REPORTED TO JMS.
- E. THE CONCRETE FLOOR HAS BEEN DESIGNED TO PROVIDE STABILITY TO THE FRAME. THE FRAME MAY REQUIRE TEMPORARY BRACING IF DETERMINED BY THE CONTRACTOR
- F. WHERE NOT SPECIFIED HOLDING DOWN BOLTS AND BASEPLATES SIMILAR TO THOSE SHOWN ON THE DRAWINGS WILL BE REQUIRED.
- G. WHERE STEEL BEAMS ARE CONNECTED TO CONCRETE WALLS OR FLOORS THE CONNECTORS SHALL BE DESIGNED BY THE FABRICATOR FOR THE LOADS GIVEN USING HILTI RESIN ANCHORS. THE HOLES WILL BE PREDRILLED BY THE MAIN CONTRACTOR. THE BOLTS SHALL BE SUPPLIED AND FIXED BY THE FABRICATOR. THE DESIGN SHALL UTILISE THE INDICATIVE DETAILS PREPARED BY THE STRUCTURAL ENGINEER.
- H. WHERE CHEMICAL OR MECHANICAL ANCHOR BOLTS/SCREWS HAVE BEEN SPECIFIED, THE FABRICATOR OR CONTRACTOR IS TO HAVE ANY CHANGES TO THE SPECIFIED FIXINGS APPROVED BY JMS PRIOR TO INSTALLATION.

I. SHEAR STUDS SHALL BE IN ACCORDANCE WITH BS EN ISO 13918.

9. TIGHTENING OF ORDINARY BOLTS

- A. BOLTS MAY BE ASSEMBLED USING POWER TOOLS OR SHALL BE FULLY TIGHTENED BY USING APPROPRIATE SPANNERS IN ACCORDANCE WITH BS2583.
- B. THE BOLTS SHOULD BE AT LEAST SPANNER TIGHT WHETHER THEY BE ASSEMBLED USING IMPACT TOOLS OR HANS SPANNERS BS2583. THIS RECOMMENDATIONS BELOW ARE A USEFUL GUIDE FOR TIGHTENING BOLTS USING A STATED PODGER SPANNER:



Rev	Amendments	Drawn	Approved	Date
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Project
74 FORTUNE GREEN ROAD
NW6 1DS

Drawing Title
STEELWORK NOTES

Client
ENTIRE HOUSE Ltd

Drawn by
KP

Designed by
KP

Approved by
DJS

Checked by
DJS

Scale
AS SHOWN @A3

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