DOCUMENT ISSUE SHEET

Project Information		Issue Status and Date														
Project Title: 227 SHEPHERDS BUSH RD		**Status**		Latest Rev	P	P	P									
Project No.: 10428560		**Date Issued**	D		16	20	05									
Sheet No.: Structural Drawings - 1 of 1			M		01	01	02									
Office: 240 Blackfriars, London			Y		26	26	26									
Document Title	**Document Number**				**Revision**											
GENERAL NOTES - SHEET 1	10428560-HDR-XX-XX-DR-S-000001			P01	P01											
EXISTING & DEMO WORKS - FOURTH FLOOR GA	10428560-HDR-ZZ-04-DR-S-152105			P01	P01											
EXISTING & DEMO WORKS - FIFTH FLOOR GA	10428560-HDR-ZZ-05-DR-S-152106			P01	P01											
PROPOSED WORKS - FOURTH FLOOR GA	10428560-HDR-ZZ-04-DR-S-202105			P02	P01		P02									
PROPOSED WORKS - FIFTH FLOOR GA	10428560-HDR-ZZ-05-DR-S-202106			P02	P01		P02									
PROPOSED WORKS - ROOF LEVEL GA	10428560-HDR-ZZ-RF-DR-S-202107			P02	P01		P02									
PROPOSED WORKS - BUILDING SECTIONS	10428560-HDR-ZZ-ZZ-DR-S-214001			P01	P01											
PROPOSED WORKS - TYPICAL DETAILS - SHEET 1	10428560-HDR-ZZ-ZZ-DR-S-21010			P01	P01											
SPECIFICATION FOR STEELWORK	SBR-HDR-XX-XX-RP-S-000206			P01	P01											
STAGE 3 CIVIL & STRUCTURAL REPORT	SBR-HDR-XX-XX-RP-S-000010			P01		P01										

Distribution		Recipient List											
Architect - Space Agent	Matthias Hamm	x	x	x									
Client - 227 SBR LTD, London	Jeremy Sutton	x	x	x									

Status: A - Approval D - Draft F - Final I - Information P - Preliminary T - Tender C - Construction R - Record Copy

A - GENERAL NOTES

1. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECT'S, SERVICE ENGINEER'S, SPECIALIST'S AND HDR DRAWINGS AND SPECIFICATIONS. SEE ARCHITECT'S DRAWINGS FOR SETTING-OUT OF THE BUILDING AND GRID LINES. WHEREVER DIMENSIONS DIFFER FROM THOSE SHOWN ON THE ARCHITECT'S DRAWINGS, VERIFICATION IS TO BE OBTAINED FROM THE ARCHITECT / ENGINEER PRIOR TO CONSTRUCTION.
2. UNLESS NOTED OTHERWISE ALL DIMENSIONS ARE GIVEN IN MILLIMETRES (mm). ALL LEVELS ARE IN METRES (m) ABOVE ORDNANCE DATUM, INDICATING STRUCTURAL SLAB LEVEL (S.S.L.), TOP OF CONCRETE (T.O.C.), TOP OF UPSTAND (T.O.U.), TOP OF STEEL (T.O.S.), FINISHED FLOOR LEVEL (F.F.L.) TOP OF FOUNDATION (T.O.F.) OR FINISHED GROUND LEVEL (F.G.L.).
3. DO NOT SCALE FROM THE DRAWINGS. WORK TO FIGURED DIMENSIONS ONLY. ALL DIMENSIONS & LEVELS TO BE CHECKED ON SITE. ANY DISCREPANCIES ARE TO BE REFERRED TO THE STRUCTURAL ENGINEER BEFORE WORK IS PUT IN HAND. ALL DRAWINGS ARE PRODUCED ELECTRONICALLY AND MAY HAVE BEEN PHOTO REDUCED OR ENLARGED WHEN COPIED. HENCE, DO NOT RELY ON ANY SCALES QUOTED. WORK ONLY TO FIGURED DIMENSIONS (DO NOT SCALE). ALL DIMENSIONS ARE TO BE CHECKED ON SITE. ANY ERRORS OR OMISSIONS ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL SITE AND SETTING OUT DIMENSIONS, INCLUDING "AS BUILT" POSITIONS OF TEMPORARY WORKS, BEFORE COMMENCING THE WORKS.
5. ANY DISCREPANCIES BETWEEN THE ARCHITECTS & ENGINEERS DRAWINGS MUST BE VERIFIED WITH THE ARCHITECT.
6. ANY DISCREPANCIES OR AMBIGUOUS INFORMATION CONTAINED WITHIN THE DRAWINGS OR ASSOCIATED DOCUMENTS SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY.
7. THE "CONTRACTOR" REFERRED TO IN ALL NOTES SHALL APPLY TO THE MAIN CONTRACTOR OR ANY OF THEIR APPOINTED SUB-CONTRACTORS.
8. BEFORE ANY NEW CONSTRUCTION COMMENCES THE CONTRACTOR IS TO SET OUT THE NEW GRIDS ON SITE, AS SHOWN ON THE ARCHITECT'S SETTING-OUT DRAWING, TO ALLOW A CHECK OF THE PROPOSED GRID LAYOUT TO BE MADE BY THE CONTRACTOR. THE STRUCTURAL ENGINEER AND THE ARCHITECT SHALL BE INFORMED OF ANY DISCREPANCY IMMEDIATELY. IT SHOULD BE NOTED THAT SOME CHANGES TO THE DESIGN MAY BE REQUIRED AND THEREFORE IT IS IMPERATIVE THAT THE CONTRACTOR ALLOWS AMPLE PROGRAMME TIME FOR THIS ELEMENT OF WORKS.
9. THE CONTRACTOR MUST ENSURE THAT ALL THEIR SUB-CONTRACTORS ARE AWARE OF THEIR RESPONSIBILITIES TO THE PROJECT, PARTICULARLY AT ANY INTERFACE WITH OTHER SUB-CONTRACTORS.
10. THE CONTRACTOR IS TO PROVIDE METHOD STATEMENTS AND RISK ASSESSMENTS PRIOR TO COMMENCING ANY WORKS FOR APPROVAL BY THE CONTRACT ADMINISTRATOR, THE LOCAL BUILDING SAFETY REGULATOR AND ALL OTHER INTERESTED PARTIES AND STATUTORY AUTHORITIES. THE CONTRACTOR IS TO PROVIDE DETAILS OF ALL TEMPORARY WORKS REQUIRED BY THE BUILDING METHOD, AND SUBMIT THEM FOR REVIEW AND COMMENT BY THE STRUCTURAL ENGINEER.
11. THE PROVISION OF ANY CRANES AND HOIST BASES ARE DESIGNED BY THE CONTRACTOR TO SUIT THE PERMANENT WORKS. ANY ADDITIONAL WORK THAT THE CONTRACTOR REQUIRES ARE TO BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND COMMENT.
12. FOR CONSTRUCTION, THE CONTRACTOR SHALL REFER TO THE SERVICE ENGINEER'S / SPECIALIST'S DRAWINGS FOR ALL BUILDERS WORK DETAILS AND LOCATIONS RELATED TO HOLES, SERVICES, PUDDLE FLANGES, MANHOLES, SUMPS, DRAINAGE etc. ANY HOLES THROUGH NEW SLABS SMALLER THAN 200mm X 200mm ARE NOT, GENERALLY SHOWN ON HDR DRAWINGS. FOR BUILDERS WORK DETAILS FOR LIGHTNING PROTECTION REFER TO SERVICES DRAWINGS. THE POSITIONS OF ALL HOLES ON THESE DRAWINGS ARE TO BE CROSS CHECKED BY THE CONTRACTOR, AND THE STRUCTURAL ENGINEER INFORMED PRIOR TO CONSTRUCTION IF ANY OF THE DETAILS RELATING TO HOLES THROUGH THE STRUCTURE DIFFER BETWEEN THOSE SHOWN ON THE ARCHITECT'S, SERVICE ENGINEER'S AND STRUCTURAL ENGINEER'S DRAWINGS.
13. ON NO ACCOUNT SHALL HOLES OR OTHER OPENINGS, IRRESPECTIVE OF SIZE BE CUT OR PLACED IN ANY PART OF THE STRUCTURE WITHOUT PRIOR APPROVAL BY THE ENGINEER IN WRITING.
14. FOR TYPES OF FIRE PROTECTION AND FIRE RATINGS SEE THE ARCHITECT 'S SPECIFICATIONS AND DRAWINGS. THE FIRE PROTECTION PERIOD TO THE NEW STRUCTURE SHALL BE 60 MINUTES UNLESS NOTED OTHERWISE ON THE DRAWINGS AS SPECIFIED IN THE FIRE STRATEGY BY THE SPECIALIST. THE FIREFIGHTING STAIR CORE WALLS ARE TO HAVE A FIRE PROTECTION PERIOD OF 120 MINUTES.
15. FOR ALL CLADDING AND CURTAIN WALLING DETAILS REFER TO THE ARCHITECT'S AND/OR SPECIALIST'S DRAWINGS.
16. FOR RESTRAINTS AND FIXINGS TO NON-LOAD BEARING PARTITIONS REFER TO THE ARCHITECT'S DRAWINGS.
17. ALL WORK BY THE CONTRACTOR MUST BE CARRIED OUT IN SUCH A WAY THAT ALL REQUIREMENTS UNDER THE HEALTH AND SAFETY ACT, BUILDING SAFETY ACT, AND CDM REGULATIONS ARE SATISFIED.
18. BOUNDARY LINES SHOWN ON HDR DRAWINGS HAVE BEEN TAKEN FROM ARCHITECTURAL DRAWINGS AND ARE INDICATIVE ONLY. HDR TAKE NO RESPONSIBILITY FOR THE ACCURACY OF THIS INFORMATION.
19. FOR ALL ABOVE GROUND DRAINAGE DETAILS REFER TO THE SERVICE ENGINEER 'S DRAWINGS.
20. ALL WATERPROOFING AND DAMP PROOFING DETAILS SHALL BE TO ARCHITECT 'S REQUIREMENTS EXCEPT FOR THE STRUCTURAL WATERPROOFING DETAILS FOR THE SUB-STRUCTURE WORKS SHOWN ON THE ENGINEER 'S DRAWINGS.
21. FOR DETAILS OF ASPHALT TUCKS, DRIP NOTCHES etc. REFER TO ARCHITECT 'S DRAWINGS.
22. THE STRUCTURE HAS NOT BEEN DESIGNED FOR ANY FUTURE EXTENSIONS.

B - SITE PREPARATION / TEMPORARY WORKS

1. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY CALCULATIONS FOR ANY TEMPORARY STRUCTURE AND, WHERE NECESSARY, DETAILED MEMBER CHECKS AND STABILITY CHECKS FOR ALL RELEVANT MEMBERS IN THE PERMANENT STRUCTURE. ALL ADDITIONAL WORK REQUIRED FOR THE TEMPORARY STABILITY OF THE STRUCTURE SHALL BE DEEMED TO BE INCLUDED BY THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE ON THE COMPLETION OF THE PERMANENT STRUCTURE. IT IS THE CONTRACTORS RESPONSIBILITY TO CHECK THE PERMANENT WORKS FOR ANY LOADS APPLIED BY THE TEMPORARY WORKS TO ENSURE THAT THE PERMANENT STRUCTURE DOES NOT BECOME OVERSTRESSED OR DAMAGED DURING THE WORKS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DIVERSION OF ALL BELOW GROUND SERVICES. THE CONTRACTOR SHALL IDENTIFY ALL SERVICES AND CONFIRM THEIR LOCATIONS.
3. THE STRUCTURAL ENGINEER SHALL BE INFORMED IMMEDIATELY OF ANY BURIED SERVICES ENCOUNTERED, SUCH AS OLD SEWERS, DRAINS, WELLS, FOUNDATIONS ETC. THAT HAVE NOT BEEN PREVIOUSLY NOTED.
4. IF ANY ELEMENT OF THE PERMANENT WORKS IS TO BE USED AS SUPPORT FOR EXCAVATIONS THEN THE CONTRACTOR IS TO SUBMIT A SEQUENCE OF WORKS TO EXCAVATIONS, CONSTRUCTION AND BACKFILLING.
5. ALL DIMENSIONS AND LEVELS OF EXISTING STRUCTURE ARE AS SHOWN ON SURVEY DRAWINGS AND MAY NOT BE AS CONSTRUCTED ON SITE. CONTRACTOR TO VERIFY THE ACCURACY OF THE INFORMATION.

C - EARTHWORKS & EXCAVATIONS

1. THE EXCAVATIONS SHALL BE KEPT FREE FROM WATER BY PUMPING, BAILING OR OTHER APPROVED MEANS. THE CONTRACTOR SHALL PROVIDE, MAINTAIN AND OPERATE SUITABLE PUMPING EQUIPMENT AND PLANT AND SHALL, IF NECESSARY, CONSTRUCT SUCH DRAINS AND SUMPS, ETC. AS MAY BE REQUIRED TO REMOVE WATER FROM THE EXCAVATIONS OR PREVENT ENTRY THERETO. WATER IN THE EXCAVATIONS SHALL BE DEALT WITH IN SUCH A MANNER SO AS TO PREVENT THE DETERIORATION OF THE SURFACE ON WHICH FOUNDATIONS OR OTHER WORK WILL BE CONSTRUCTED.
2. THE CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER IMMEDIATELY IF ANY AREAS OF SOFT OR UNSUITABLE MATERIAL ARE ENCOUNTERED.
3. ALL SOFT SPOTS AND OVER DIG BELOW THE FORMATION LEVEL OF THE FOUNDATIONS ARE TO BE BACKFILLED WITH MASS CONCRETE.
4. THE STRUCTURAL ENGINEER AND LOCAL AUTHORITY ARE TO BE GIVEN AMPLE OPPORTUNITY TO INSPECT FORMATION LEVELS AND TEMPORARY SURFACES. SUCH FORMATIONS ARE TO BE PROTECTED FROM DETERIORATION. NO CONCRETE SHALL BE PLACED ON FROST, ICE, SNOW OR WATER.
5. THE CONTRACTOR IS TO TAKE PRECAUTIONS TO CONTROL NOISE AND VIBRATION BEING TRANSMITTED TO THE SURROUNDING BUILDINGS AND SHALL AVOID DISTURBANCE TO THE EXISTING FOUNDATIONS TO THE NEIGHBOURING BUILDINGS AND ADJACENT INFRASTRUCTURE. REFER TO HDR DEMOLITION SPECIFICATION & DEMOLITION & ENABLING WORKS DRAWINGS.
6. THE STABILITY OF ALL EXCAVATIONS IS THE RESPONSIBILITY OF THE CONTRACTOR. THE DESIGN OF SLOPES AND TEMPORARY WORKS SHOULD MAKE REFERENCE TO THE S.I. INFORMATION AND ANY OTHER INVESTIGATION WORKS AND TESTING CONSIDERED NECESSARY BY CONTRACTOR.
7. EXCAVATIONS MUST NOT UNDERMINE OR DISTURB THE FOUNDATIONS OF NEIGHBOURING BUILDINGS, ROADS OR PAVEMENTS.

D - BACKPROPPING OF REINFORCED CONCRETE SLABS

1. ON ANY GIVEN FLOOR, PROPS OF DIFFERENT MATERIALS (E.G. STEEL AND ALUMINIUM) MUST NOT BE MIXED.
2. PROPS MUST BE SET OUT IN SUCH A WAY THAT A UNIFORM LOAD IS PRODUCED ON ANY SUPPORTING SLAB.
3. PROPS ARE TO BE INSTALLED WITH ZERO PRE-LOAD.
4. THE MAXIMUM ALLOWABLE CONSTRUCTION LOAD ON ANY FLOOR IS 1.5kN/m² (UNO)
5. ALL BACKPROPPING MUST BE INSTALLED IMMEDIATELY AFTER THE 'NEW' SLAB HAS BEEN STRUCK.
6. NO BACKPROPPING IS TO BE REMOVED UNTIL THE FORM WORK TO THE 'NEW' SLAB HAS BEEN STRUCK.
7. DESIGN OF BACKPROPPING AND OTHER RELATED TEMPORARY WORKS TO SPECIALIST DETAILS.

E - SITE CONSTRAINTS

1. THERE ARE EXISTING UTILITIES AROUND THE SITE. REFER TO ALL EXISTING UTILITIES DRAWINGS FOR DETAILS OF THE UTILITIES ON AND AROUND THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR THE MANAGEMENT OF THE EXISTING UTILITIES THROUGHOUT THE WORKS.
2. POTENTIAL CLOSE EXISTING UTILITIES ON AND AROUND THE SITE REQUIRE A FULL SITE SURVEY. REFER TO THE EXISTING UTILITIES DRAWINGS FOR DETAILS OF THE UTILITIES ON AND AROUND THE SITE.

CLOSE PROXIMITY OF BUILDING SITE TO:

- ADJACENT STRUCTURES INCLUDING HAMMERSMITH LIBRARY.

F - CDM

1. THE ENGINEER'S ROLE IN THIS PROJECT IS THAT OF DESIGNER AS DEFINED BY THE CDM REGULATIONS 2015 (REGULATON 10 – DUTIES OF DESIGNERS). IN CARRYING OUT DESIGN WORK, ENGINEERING JUDGEMENT HAS BEEN APPLIED TO ELIMINATE OR WHERE NOT REASONABLY PRACTICABLE, TO REDUCE DESIGN HAZARDS AND RISKS ASSOCIATED WITH THE CONSTRUCTION AND SUBSEQUENT PHASES OF THE STRUCTURE.

   THE CONTRACTOR IS REMINDED OF THEIR RESPONSIBLILITIES UNDER THE CDM REGULATIONS 2015 AND THEIR OBLIGATIONS UNDER OTHER APPLICABLE HEALTH AND SAFETY LEGISLATION WHEN UNDERTAKING CONSTRUCTION OPERATIONS BOTH ON AND OFF SITE. THIS ALSO APPLIES TO ALL SUB-CONTRACTORS AND SUPPLIERS.

   REFER TO THE PROJECT RISK REGISTERS INCLUDING THE HDR DESIGN RISK REGISTER "HSE - SAFETY IN DESIGN".
2. FOR CDM PURPOSES, THE DESIGN ASSUMES THE WORKS WILL BE UNDERTAKEN BY A COMPETENT CONTRACTOR CO-OPERATING WITH OTHER CONTRACTORS AND OPERATING IN ACCORDANCE WITH AGREED METHOD STATEMENTS.
3. H&S COORDINATION & RISK REGISTER SHALL BE SOUGHT FROM THE APPOINTED PRINCIPAL DESIGNER PRIOR TO CARRYING OUT WORK ON SITE.

G - CLADDING

1. LOADING TO THE PRIMARY STRUCTURE FROM THE CLADDING HAS BEEN DESIGNED BASED ON THE ARCHITECT'S DRAWINGS. LOADINGS ARE TO BE CROSS REFERENCED AGAINST THE DESIGN DETAILS PROVIDED BY THE RELEVANT SPECIALIST SUB-CONTRACTOR.
2. REFER TO HDR MOVEMENT & TOLERANCES REPORT FOR SLAB EDGE DEFLECTION LIMITS.
3. TYPICALLY, THE STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE CLADDING ON EVERY FLOOR **U.N.O**.
4. SEE LOAD PLANS FOR LOCATION & INTENSITY OF COORDINATED CLADDING & LOADING.
5. REFER TO THE SPECIALIST CLADDING DESIGNERS INFORMATION FOR CONNECTIONS DETAILS TO THE PRIMARY STRUCTURE, INCLUDING CAST IN CHANNELS TO THE SLAB EDGE.

H - CODES

1. THE STRUCTURAL DESIGN COMPLIES WITH THE BUILDING REGULATIONS 1991. THIS IS ACHIEVED BY COMPLYING WITH THE BRITISH STANDARD CODES OF PRACTICE AS 'APPROVED DOCUMENTS.' THE CODES OF PRACTICE USED IN THE DESIGN ARE AS FOLLOW:

BS EN 1990	BASIS OF STRUCTURAL DESIGN.
BS EN 1991-1-1	ACTIONS ON STRUCTURES. GENERAL ACTIONS. DENSITIES, SELF WEIGHT, IMPOSED LOADS FOR BUILDINGS.
BS EN 1991-1-2	ACTIONS ON STRUCTURES. GENERAL ACTIONS. ACTIONS ON STRUCTURES EXPOSED TO FIRE.
BS EN 1991-1-3	ACTIONS ON STRUCTURES. GENERAL ACTIONS. SNOW LOADS.
BS EN 1991-1-4	ACTIONS ON STRUCTURES. GENERAL ACTIONS. WIND ACTIONS
BS EN 1992-1-1	DESIGN OF CONCRETE STRUCTURES. GENERAL RULES AND RULES FOR BUILDINGS.
BS EN 1992-1-2	DESIGN OF CONCRETE STRUCTURES. GENERAL RULES- STRUCTURAL FIRE DESIGN.
BS EN 1993-1-1	DESIGN OF STEEL STRUCTURES. GENERAL RULES AND RULES FOR BUILDINGS.
BS EN 1997-1	GEOTECHNICAL DESIGN. GENERAL RULES.
BS EN 1996-1-1	DESIGN OF MASONRY STRUCTURES - GENERAL RULES FOR REINFORCED AND UNREINFORCED MASONRY STRUCTURES.
BS EN 13670	EXECUTION OF CONCRETE STRUCTURES.

BS EN 1990:2002	BASIS OF STRUCTURAL DESIGN.
BS EN 1991-1-1:2002	ACTIONS ON STRUCTURES. GENERAL ACTIONS. DENSITIES, SELF WEIGHT, IMPOSED LOADS FOR BUILDINGS.
BS EN 1991-1-2:2002	ACTIONS ON STRUCTURES. GENERAL ACTIONS. ACTIONS ON STRUCTURES EXPOSED TO FIRE.
BS EN 1991-1-3:2003	ACTIONS ON STRUCTURES. GENERAL ACTIONS. SNOW LOADS.
BS EN 1991-1-4:2005	ACTIONS ON STRUCTURES. GENERAL ACTIONS. WIND ACTIONS
BS EN 1992-1-1:2004	EUROCODE 2. DESIGN OF CONCRETE STRUCTURES. GENERAL RULES AND RULES FOR BUILDINGS.
BS EN 1992-1-2:2004	EUROCODE 2. DESIGN OF CONCRETE STRUCTURES. GENERAL RULES - STRUCTURAL FIRE DESIGN.
BS EN 1993-1-1:2005	EUROCODE 3. DESIGN OF STEEL STRUCTURES. GENERAL RULES AND RULES FOR BUILDINGS.
BS EN 1996-1-1	EUROCODE 6. DESIGN OF MASONRY STRUCTURES. GENERAL RULES FOR REINFORCED AND UNREINFORCED MASONRY STRUCTURES.
BE EN 1997-1:2004	EUROCODE 7. GEOTECHNICAL DESIGN. GENERAL RULES.

K - CONTRACTOR DESIGN ITEMS

THE FOLLOWING IS A LIST OF SUB-CONTRACTOR DESIGN ITEMS WITH RESPECT TO THE STRUCTURAL ASPECTS OF THE PROJECT PERMANENT WORKS:

1. TEMPORARY WORKS, INCLUDING TOWER CRANE FOUNDATIONS, LOCATION, AND INTEGRATION WITH PRIMARY BUILDING FOUNDATIONS.
2. CONCRETE MIXES.
3. PRE-STRESSED AND PRE-CAST CONCRETE ELEMENTS.
4. STEEL STAIRS/PRECAST STAIRS.
5. STRUCTURAL STEELWORK CONNECTIONS.
6. MASONRY/ CLADDING SUPPORT SYSTEMS, WIND POSTS AND SUPPORT ANGLES AND COLD ROLLED CLADDING METAL STUD BACKING SYSTEMS. DESIGN AGAINST PROGRESSIVE COLLAPSE ASSOCIATED WITH CLADDING.
7. SECONDARY STEELWORK INCLUDING THAT ASSOCIATED WITH THE FORUM SEATING, PLANT/ACOUSTIC ENCLOSURE SCREENS (AND ASSOCIATED PLINTHS), PV PLATFORMS (AND ASSOCIATED PLINTHS), FLUE EXTRACT SUPPORT STRUCTURE, AND CLADDING AND ROOF BUILD-UPS AND SUPPORT SYSTEMS.
8. ARCHITECTURAL METALWORK, HANDRAILS, BALUSTRADES, GLAZING AND GLAZING SYSTEMS AND ASSOCIATED FIXINGS TO STRUCTURES, MEP PLANT SUPPORTS.
9. LIFTING BEAMS AND SUPPORT CONSTRAINTS FOR STRUCTURAL LOADING BY LIFT GUIDE STEELWORK.
10. BALCONY ARCHITECTURAL METALWORK, TIMBER CARCASSING, ACM PANELS AND DRAINAGE PROPOSALS.
11. PROPRIETARY FIRE AND CORROSION PROTECTION SYSTEMS.
12. STRUCTURAL TIMBER TO TIMBER CONNECTIONS.

L - STEELWORK

1. ALL STEELWORK, DETAILING, FABRICATION AND ERECTION TO BE IN ACCORDANCE WITH BS EN 1993 AND THE HDR SPECIFICATION
2. STEELWORK GRADES TO BE IN ACCORDANCE WITH BS EN 10025, GRADE S355, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
3. THE DESIGN AND FABRICATION DETAILS FOR ALL NEW CONNECTIONS, FIXING BRACKETS, SPLICES AND STANCHION BASE PLATES SHALL BE BY THE STEELWORK SUB-CONTRACTOR TO THE LOADS AND CONCEPT DETAILS INDICATED ON THE DRAWINGS AND SHALL BE TO THE APPROVAL OF THE CONTRACT ADMINISTRATOR AND LOCAL AUTHORITY.
4. EXCEPT AS NOTED, ALL CONNECTIONS SHALL BE MADE USING A MINIMUM OF 4no. M16, GRADE 8.8 BOLTS, OR AN EQUIVALENT 6mm FILLET WELD. CONNECTIONS TO BRACING ELEMENTS SHALL BE MADE WITH 2no. NON SLIP TENSION CONTROL BOLTS. ALL BEAM CONNECTIONS SHALL BE DESIGNED FOR A MINIMUM FACTORED ULTIMATE SHEAR CONNECTION OF 75kN AND CONNECTIONS FOR BRACING MEMBERS FOR A MINIMUM AXIAL FORCE OF 50kN UNLESS NOTED OTHERWISE. TIE FORCES FOR CONNECTION DESIGN SHALL COMPLY WITH STRUCTURAL INTEGRITY REQUIREMENTS OF BS EN 1993 WITH ALL HORIZONTAL MEMBERS CAPABLE OF RESISTING A MINIMUM TENSILE LOAD OF 75kN UNO.
5. THE STEELWORK SUB-CONTRACTOR IS TO ALLOW FOR THE MINIMUM FACTORED ULTIMATE AXIAL TENSILE FORCE, IN ALL PRIMARY AND SECONDARY BEAM CONNECTIONS, AS SPECIFIED IN BS EN 1993.
6. ALL BRACING CONNECTIONS AND ASSOCIATED BEAM CONNECTIONS ARE TO BE MADE USING M20 HSFG BOLTS. A MINIMUM OF TWO BOLTS IS REQUIRED AT EACH CONNECTION.
7. ALL TEMPORARY BRACING IS TO BE SET OUT ON THE CENTROIDS OF THE BRACING MEMBERS AND ON THE CENTRE LINES OF BEAMS.
8. DETAILS AND CALCULATIONS OF CONNECTIONS TO BE SUBMITTED TO THE BUILDING CONTROL OFFICER, THE STRUCTURAL ENGINEER AND, WHERE REQUIRED, THE ARCHITECT AND SERVICE ENGINEER, FOR APPROVAL PRIOR TO THE FABRICATION OF THE STEELWORK.
9. ALL MEMBER LOADS, FORCES AND END REACTIONS INDICATED ON THE DRAWINGS ARE FACTORED AND ULTIMATE (IN kN AND kNm).
10. COLUMN SHAFTS TO BASEPLATES AND TOP SURFACES TO BASEPLATES SHALL BE MACHINED FOR BEARING. LENGTH AND THICKNESS SHOWN AFTER MACHINING. ALL TOLERANCES FOR MACHINING ARE TO BE ALLOWED FOR BY THE STEELWORK SUB-CONTRACTOR. THE AIR GAP BETWEEN BEARING SURFACES MEASURED IN ANY DIRECTION SHALL NOT EXCEED :-
    a) OVER 50% OF THE LENGTH MEASURED; 0.5mm.
    b) OVER 10% OF THE LENGTH MEASURED; 0.1mm.
11. ALL PERMANENTLY EXPOSED STEEL SHALL BE FIRE PROTECTED, AS REQUIRED, AND PREPARED AND PAINTED IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS. ALL UNPAINTED STEELWORK TO BE CLEANED BY WIRE BRUSHING TO REMOVE ALL LOOSE MILLSCALE AND GREASE, ALL IN ACCORDANCE WITH HDR SPECIFICATION.
12. ALL EXTERNAL / EXPOSED STEELWORK TO BE GALVANISED. GALVANISED STEELWORK SHALL BE HOT DIPPED GALVANISED TO BS EN ISO 1461 THICKNESS 85 MICRONS AND SHALL BE PASSIVATED USING 'TWASH' TO BS 5493 PRIOR TO ANY SUBSEQUENT COATINGS.
13. THE STEELWORK SUB-CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STEELWORK STRUCTURE DURING ALL STAGES OF ERECTION, I.E. IT'S TEMPORARY CONDITION, INCLUDING THE EFFECTS FROM WIND, TOWER CRANES AND HOISTS WHERE THESE ARE SUPPORTED AND/OR RESTRAINED BY THE STRUCTURE. THE STEELWORK SUB-CONTRACTOR MUST TAKE INTO ACCOUNT THE ERECTION PROGRAMME BY THE CONTRACTOR, AND BE RESPONSIBLE FOR THE DESIGN, DETAILING AND SUPPLY OF ALL NECESSARY TEMPORARY BRACING, etc. THAT MAY BE REQUIRED TO ENSURE THE STABILITY OF THE STRUCTURE DURING ERECTION AND UNTIL THE CONCRETE SHEAR WALLS AND SLABS HAVE MATURED. THESE DETAILS ARE TO BE SUPPLIED TO THE STRUCTURAL ENGINEER FOR REVIEW BEFORE FABRICATION COMMENCES. ALL TEMPORARY BRACING, etc. TO REMAIN IN PLACE UNTIL THE CONCRETE SLABS HAVE FULLY MATURED SUFFICIENTLY TO FORM A HORIZONTAL DIAPHRAGM CARRYING ALL TEMPORARY LOADS BACK TO THE CONCRETE SHEAR WALLS.
14. NO PENETRATIONS THROUGH STEEL MEMBERS ARE PERMITTED WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.
15. FOR DETAILS OF SIZES AND POSITIONS OF ALL BRACKETRY REQUIRED BY OTHER TRADES, E.G. LIFTS, CLADDING, STAIRS, LIGHTNING PROTECTION, etc. SEE RELEVANT SPECIALIST'S DRAWINGS. THESE DRAWINGS ARE TO BE ISSUED FOR APPROVAL TO THE STRUCTURAL ENGINEER PRIOR TO ISSUING FOR CONSTRUCTION.
16. ALL BOLTS IN DIRECT TENSION TO BE PROVIDED WITH LOCK NUTS.
17. BUTT WELDS SHALL BE ULTRASONICALLY TESTED BY AN INDEPENDENT TESTING AUTHORITY. FILLET WELDS SHALL BE EXAMINED BY MAGNETIC PARTICLE TESTING. ULTRASONIC TESTING OF WELDS TO BE IN ACCORDANCE WITH BS EN 1714. MAGNETIC TESTING TO BE IN ACCORDANCE WITH BS EN ISO 9934. VISUAL INSPECTION OF WELDS TO BE IN ACCORDANCE WITH BS EN 970.
18. IN ADDITION TO THE VISUAL INSPECTION OF 100% OF ALL WELDS TO THE STEELWORK, ADDITIONAL NON-DESTRUCTIVE TESTING SHALL BE PERFORMED IN ACCORDANCE WITH BS EN 1011.
19. ALL VISIBLE WELDS TO ARCHITECTURALLY EXPRESSED STEELWORK ARE TO BE GROUND SMOOTH TO THE APPROVAL OF THE ARCHITECT AND STRUCTURAL ENGINEER. ADEQUATE NOTICE IS TO BE GIVEN BY THE STEELWORK SUB-CONTRACTOR FOR INSPECTION OF THE FINISH TO SUCH WELDS PRIOR TO PAINTING.
20. THE STEELWORK SUB-CONTRACTOR SHALL ENSURE THAT EVERY SITE CONNECTION IS CORRECTLY TIGHTENED PRIOR TO OFFERING THE STEELWORK FOR INSPECTION. A COLOUR CODING SYSTEM SHALL BE USED ON SITE TO IDENTIFY THOSE CONNECTIONS THAT HAVE BEEN CHECKED AND PASSED FOR INSPECTION.
21. NEW COLUMN SPLICE CONNECTIONS ARE TO ALLOW FOR TENSILE LOADS EQUIVALENT TO 2/3rd's OF LOAD APPLIED TO THE COLUMN FROM THE FLOOR BELOW.
22. THE CONTRACTOR IS TO ALLOW FOR PROBING AND THE USE OF COVER METRES WHEN FORMING CONNECTIONS FOR THE NEW STEELWORK INTO THE CONCRETE. NO REINFORCEMENT IS TO BE CUT OR DRILLED WITHOUT THE EXPRESS PERMISSION OF THE STRUCTURAL ENGINEER.
23. FOR STEEL TO CONCRETE CONNECTIONS, THE CONTRACTOR SHALL CONSIDER AND ALLOW FOR SITE DRILLED HOLES THROUGH BASEPLATES AND END PLATES TO SUIT THE ACTUAL BOLT POSITIONS POSTDRILLED INTO THE CONCRETE AND LOCATED TO AVOID REINFORCEMENT.
24. STEEL STIFFENERS SHALL BE PROVIDED WHERE REQUIRED TO SUIT THE FORCES, END REACTIONS AND BENDING MOMENTS INDICATED ON THE DRAWINGS.
25. ALL BOLTS SHALL BE GRADE 8.8 UNLESS NOTED OTHERWISE ON DRAWINGS.
26. ALL WELDS SHALL BE CONTINUOUS 6mm FILLETS MINIMUM, UNLESS NOTED OTHERWISE ON THE DRAWINGS, ALL SHELF ANGLES TO BE INTERMITTENT 6mm FILLET WELD 150mm HIT/MISS.
27. WHERE STANCHION BASE PLATES ARE FOUNDED ON CONCRETE BASES OR SLABS, SUITABLE STEEL SHIMS SHALL BE USED TO LEVEL AND PLUMB THE STANCHION. GROUT TO STANCHION BASE PLATES SHALL BE 25mm DEEP PROPRIETARY NON-SHRINK CEMENTITIOUS GROUT SUCH AS CONBEXTRA HF BY FOSROC OR SIMILAR APPROVED. ALL BASE PLATES SHALL BE PROVIDED WITH 25mm DIAMETER GROUT HOLES.
28. UNLESS NOTED OTHERWISE ON THE DRAWINGS, THE CENTRE LINES OF STANCHIONS AND BEAMS SHALL ALIGN AND ALL BRACING MEMBERS SHALL HAVE NODE POINTS ON THE INTERSECTIONS OF THE MEMBER CENTRE LINES.
29. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPILING AND SUBMITTING STRUCTURAL CALCULATIONS AND DETAILS FOR THE ELEMENTS NOTED IN 3 ABOVE TO THE ENGINEER, LOCAL AUTHORITY FOR BUILDING CONTROL AND OTHER STATUTORY APPROVALS PRIOR TO COMMENCING ANY FABRICATION OF STEELWORK OR WORK ON SITE.
30. ALL SECONDARY STEELWORK AND BRACKETS AND FIXINGS REQUIRED FOR THE INSTALLATION OF LIFTS, CLADDING, WINDOWS, M & E SERVICES AND OTHER TRADES SHALL BE DESIGNED, FABRICATED, SUPPLIED AND INSTALLED BY THE RELEVANT TRADE CONTRACTOR UNLESS SPECIFICALLY AGREED WITH THE MAIN CONTRACTOR. METHOD OF FIXING TO THE MAIN STRUCTURE SHALL BE AGREED WITH THE CONTRACT ADMINISTRATOR AT AN EARLY STAGE DURING THE DESIGN DEVELOPMENT OF THE STEELWORK DETAILS.
31. FOR DETAILS OF SIZES AND POSITIONS OF ALL BRACKETRY AND FIXINGS REQUIRED BY OTHER TRADES SUCH AS CLADDING, LIFTS etc. REFER TO RELEVANT TRADE CONTRACTORS' DRAWINGS.

M - MASONRY

1. GENERALLY, NOT STRUCTURAL. SEE ARCHITECT'S DRAWINGS AND SPECIFICATIONS FOR GENERAL GUIDANCE, WHEN DEVELOPED.
2. ALL NON-LOADBEARING BLOCKWORK IS TO HAVE A MINIMUM 20mm GAP TO THE SOFFIT OF ALL CONCRETE SLABS AND IS TO BE FIXED TO SLAB USING "FHR HEAD RESTRAINTS" BY ANCON FIXED AT 900mm C/C. THE LAST COURSE MUST BE UNCUT UNIT.
3. ALL CAVITY TIES TO BE STAINLESS STEEL AND FIXED AT 900mm C/C HORIZONTALLY AND 450mm C/C VERTICALLY. ALL TIES TO BE AT 225mm C/C VERTICALLY AND HORIZONTALLY AROUND WINDOWS, DOORS AND CONTROL JOINTS, AND NOT MORE THAN 225MM FROM OPENING OR JOINT.
4. ALL MASONRY WALLS ARE TO BE PROPPED TO RESIST WIND AND ACCIDENTAL FORCES UNTIL HEAD RESTRAINTS ARE IN PLACE.
5. BRICKWORK WITHIN THE GROUND OR WITHIN 150 OFF GROUND LEVEL SHOULD BE LAID WITH SULPHATE RESISTING MORTAR.
6. DETAILS FOR SUBSTATION ALLOW BRICKWORK TO BE MIN. 10kN/mm² WITH MORTAR STRENGTH CLASS M4. REFER TO PROJECT SPECIFIC SUBSTATION SPECIALIST DRAWINGS WHEN AVAILABLE FOR SETTING OUT.

N - LINTELS

1. PROVIDE PROPRIETARY LINTELS OVER ALL OPENINGS OR RECESSES IN NON-LOAD BEARING MASONRY WALLS, INCLUDING THOSE FOR MECHANICAL OR ELECTRICAL SERVICE OR EQUIPMENT IN ACCORDANCE WITH THE TABLE BELOW.
2. REFER TO THE ARCHITECTS DRAWINGS FOR INTERNAL WALLS LAYOUTS AND LOCATIONS OF OPENINGS
3. REFER TO THE ARCHITECTS DRAWINGS FOR FIRE STRATEGY AND FIRE RESISTANCE PERIOD OF NON-LOADING BEARING WALLS

TABLE 2

WALL TYPE	WALL FIRE RATING	CLEAR OPENING	LINTEL REFERENCE
140mm BLOCK	UP TO 90 MINUTES	UP TO 1500mm	140x100 DEEP, NAYLORS FIRE R3
140mm BLOCK	UP TO 90 MINUTES	UP TO 1800mm	140x100 DEEP NAYLORS FIRE S5
250mm BLOCK	UP TO 90 MINUTES	UP TO 1200mm	140x100 DEEP NAYLORS FIRE R3 + 100x100 DEEP NAYLORS XFS4
140mm BLOCK	120 MINUTES	UP TO 1800mm	140x140 DEEP NAYLORS XFS5
250mm BLOCK	120 MINUTES	UP TO 1500mm	140x140 DEEP NAYLORS XFS5 + 100x140 DEEP NAYLORS XFR6

O - APPROVALS

1. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE S106 CONSENT TO DISCHARGE AGREEMENT FROM THAMES WATER.
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING LONDON UNDERGROUND APPROVAL PRIOR TO ANY PILING WORKS.
3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING TFL APPROVAL FOR WORKS IMPACTING THE PUBLIC FOOTPATH.

P - LOADING

1. THE PRIMARY STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE LOADING REQUIREMENTS OF BS EN 1991, DESIGN LOADING FOR BUILDINGS. FOR FLOOR LOADINGS REFER TO THE HDR LOADING PLANS.
2. PERMANENT (DEAD) LOADS HAVE BEEN CALCULATED BASED ON THE ARCHITECTURAL BUILD UP DRAWINGS
3. VARIABLE (LIVE) LOADS HAVE BEEN ASSIGNED BASED ON BS EN 1991 AND THE UK NATIONAL ANNEX ACCORDING THE THE USES SHOWN ON THE ARCHITECTURAL LAYOUTS.

REV	DATE	REVISION DESCRIPTION
P01	16/01/26	STAGE 3 ISSUE.

SUITABILITY STATUS:

A3 - STAGE 3 AUTHORISED / ACCEPTED

HDR

240 Blackfriars Road
London
SE1 8NW
United Kingdom

t: +44 (0)20 7429 3333
e: info@hdrinc.com
w: www.hdrinc.com

CLIENT:
227 SBR LTD, LONDON

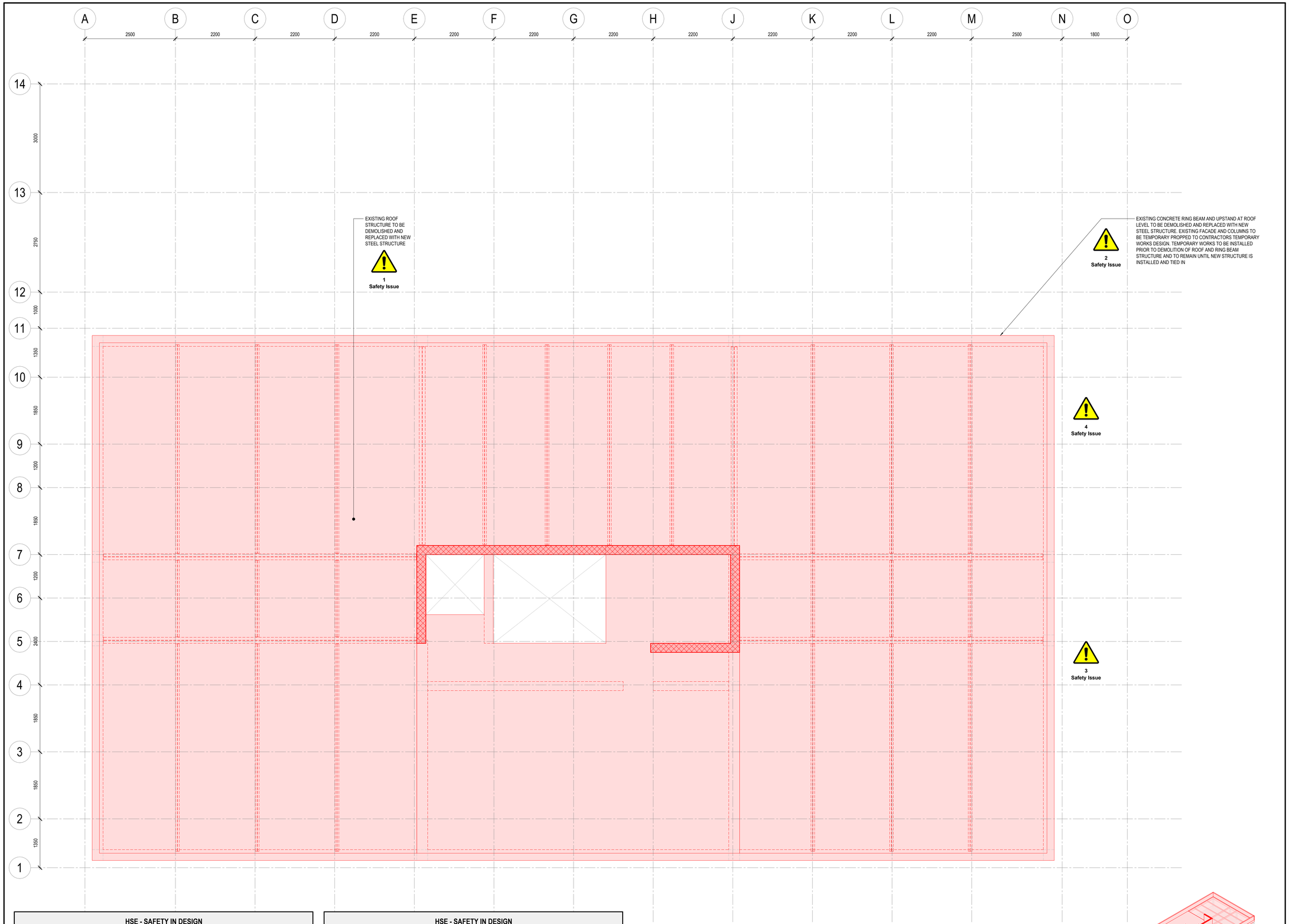
PROJECT:
227 SHEPHERDS BUSH ROAD

TITLE:
GENERAL NOTES

HDR NUMBER:	REV DRAWN BY:	REV CHKD/APPD BY:
10428560	SM	DS/GLC
MODEL NAME:	REV DATE:	SCALE @ A1:
10428560-HDR-ZZ-XX-M3-S-209100	16/01/26	1 : 1

DRAWING NUMBER: **10428560-HDR-XX-XX-DR-S-000010**
REVISION: **P01**

cm 0 1 2 3 4 5 Plot Check v.24.2

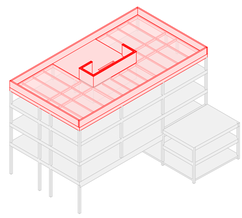


HSE - SAFETY IN DESIGN

RISK NAME	RISK CATEGORY (OPTIONAL)	RISK DESCRIPTION	LEVEL OF RISK (OPTIONAL)
1	Safety Issue	COLLAPSE OF EXISTING ROOF STRUCTURE DURING DEMOLITION. CONTRACTOR TO ENSURE TEMPORARY WORKS, WHERE REQUIRED, IS INSTALLED IN ACCORDANCE WITH TEMPORARY WORKS ENGINEER `S DESIGN AND SEQUENCE OF WORKS.	Unknown
2	Safety Issue	COLLAPSE OF EXISTING FACADE DURING RING BEAM DEMOLITION. CONTRACTOR TO ENSURE TEMPORARY WORKS IN PLACE TO FACADE AND EXISTING COLUMNS TO TEMPORARY WORKS ENGINEER `S DESIGN. TO REMAIN IN PLACE UNTIL PERMANENT STRUCTURE IS INSTALLED AND TIED INTO EXISTING FACADE.	Unknown

HSE - SAFETY IN DESIGN

RISK NAME	RISK CATEGORY (OPTIONAL)	RISK DESCRIPTION	LEVEL OF RISK (OPTIONAL)
3	Safety Issue	COLLAPSE OF EXISTING COLUMNS DURING ERECTION OF STEEL FRAME. NEW AND EXISTING COLUMNS TO ALIGN CENTRALLY TO AVOID ECCENTRIC FORCES BEING INDUCED ON EXISTING COLUMNS. TEMPORARY WORKS TO TEMPORARY WORKS ENGINEER `S DETAILS TO BE INSTALLED TO EXISTING COLUMNS TO BRACE THEM UNTIL PERMANENT STEELWORK IS COMPLETELY INSTALLED TO RESIST LATERAL FORCES INDUCED BY RAKING COLUMNS DURING CONSTRUCTION.	Unknown
4	Safety Issue	STABILITY DURING CONSTRUCTION. CONTRACTOR TO ENSURE TEMPORARY STABILITY OF THE FACADE AND FRAME DURING CONSTRUCTION TO TEMPORARY WORKS ENGINEER`S DETAILS.	Unknown



cm 0 1 2 3 4 5 Plot Check v.24.2

LEGEND

CUT	PRO	
		EXISTING STRUCTURE TO REMAIN (MATERIAL VARIES)
		EXISTING STRUCTURE TO BE DEMOLISHED (MATERIAL VARIES)

NOTE:

ALL EXISTING STRUCTURE SHOWN INDICATIVELY. EXISTING STRUCTURAL LAYOUT IS BASED OFF 'MODELLING ARCHITECTURE LTD DRAWINGS A101-A105 ISSUED 12/03/25

REV	DATE	REVISION DESCRIPTION
P01	16/01/26	STAGE 3 ISSUE.

SUITABILITY STATUS:

A3 - STAGE 3 AUTHORISED / ACCEPTED

240 Blackfriars Road
London
SE1 8NW
United Kingdom

t: +44 (0)20 7429 3333
e: info@hdrinc.com
w: www.hdrinc.com

CLIENT:

227 SBR LTD, LONDON

PROJECT:

227 SHEPHERDS BUSH ROAD

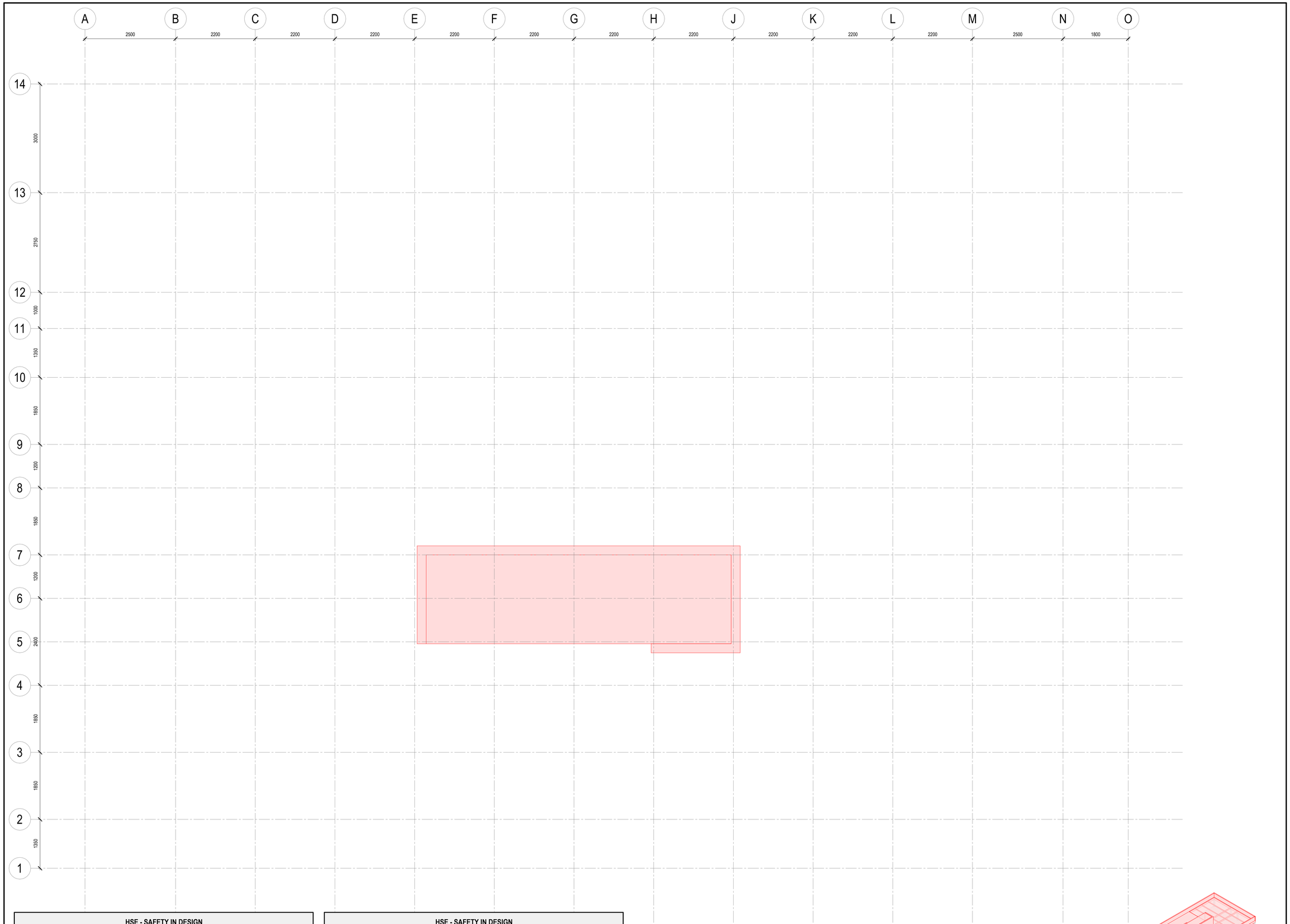
TITLE:

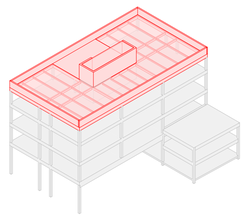
EXISTING & DEMOLITION WORKS FOURTH FLOOR GENERAL ARRANGEMENT

HDR NUMBER:	REV DRAWN BY:	REV CHKD/APPD BY:
10428560	SM	DS/GLC
MODEL NAME:	REV DATE:	SCALE @ A1:
10428560-HDR-ZZ-XX-M3-S-209100	16/01/26	As indicated

DRAWING NUMBER: 10428560-HDR-ZZ-04-DR-S-152105

REVISION: P01





HSE - SAFETY IN DESIGN

RISK NAME	RISK CATEGORY (OPTIONAL)	RISK DESCRIPTION	LEVEL OF RISK (OPTIONAL)
1	Safety Issue	COLLAPSE OF EXISTING ROOF STRUCTURE DURING DEMOLITION. CONTRACTOR TO ENSURE TEMPORARY WORKS, WHERE REQUIRED, IS INSTALLED IN ACCORDANCE WITH TEMPORARY WORKS ENGINEER `S DESIGN AND SEQUENCE OF WORKS.	Unknown
2	Safety Issue	COLLAPSE OF EXISTING FACADE DURING RING BEAM DEMOLITION. CONTRACTOR TO ENSURE TEMPORARY WORKS IN PLACE TO FACADE AND EXISTING COLUMNS TO TEMPORARY WORKS ENGINEER `S DESIGN. TO REMAIN IN PLACE UNTIL PERMANENT STRUCTURE IS INSTALLED AND TIED INTO EXISTING FACADE.	Unknown

HSE - SAFETY IN DESIGN

RISK NAME	RISK CATEGORY (OPTIONAL)	RISK DESCRIPTION	LEVEL OF RISK (OPTIONAL)
3	Safety Issue	COLLAPSE OF EXISTING COLUMNS DURING ERECTION OF STEEL FRAME. NEW AND EXISTING COLUMNS TO ALIGN CENTRALLY TO AVOID ECCENTRIC FORCES BEING INDUCED ON EXISTING COLUMNS. TEMPORARY WORKS TO TEMPORARY WORKS ENGINEER `S DETAILS TO BE INSTALLED TO EXISTING COLUMNS TO BRACE THEM UNTIL PERMANENT STEELWORK IS COMPLETELY INSTALLED TO RESIST LATERAL FORCES INDUCED BY RAKING COLUMNS DURING CONSTRUCTION.	Unknown
4	Safety Issue	STABILITY DURING CONSTRUCTION. CONTRACTOR TO ENSURE TEMPORARY STABILITY OF THE FACADE AND FRAME DURING CONSTRUCTION TO TEMPORARY WORKS ENGINEER`S DETAILS.	Unknown

LEGEND

CUT	PRO	
		EXISTING STRUCTURE TO REMAIN (MATERIAL VARIES)
		EXISTING STRUCTURE TO BE DEMOLISHED (MATERIAL VARIES)

REV	DATE	REVISION DESCRIPTION
P01	16/01/26	STAGE 3 ISSUE.

SUITABILITY STATUS:

A3 - STAGE 3 AUTHORISED / ACCEPTED

240 Blackfriars Road
London
SE1 8NW
United Kingdom

t: +44 (0)20 7429 3333
e: info@hdrinc.com
w: www.hdrinc.com

CLIENT:

227 SBR LTD, LONDON

PROJECT:

227 SHEPHERDS BUSH ROAD

TITLE:

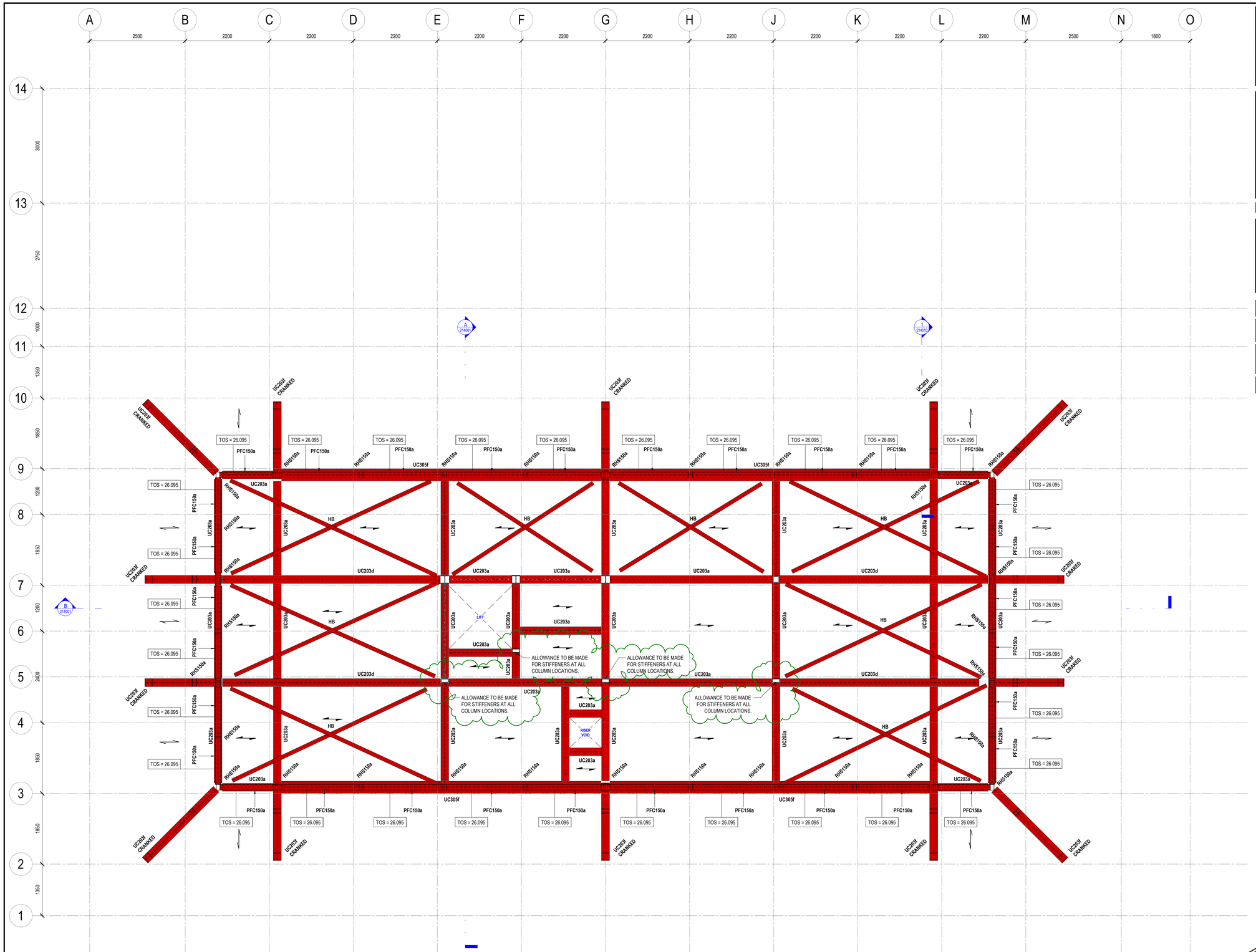
EXISTING & DEMOLITION WORKS FIFTH FLOOR GENERAL ARRANGEMENT

HDR NUMBER:	REV DRAWN BY:	REV CHKD/APPD BY:
10428560	SM	DS/GLC
MODEL NAME:	REV DATE:	SCALE @ A1:
10428560-HDR-ZZ-XX-M3-S-209100	16/01/26	As indicated

DRAWING NUMBER: 10428560-HDR-ZZ-05-DR-S-152106

REVISION: P01

cm 0 1 2 3 4 5 Plot Check v.24.2



STEEL COLUMN SCHEDULE

TYPE MARK	COLUMN SIZE
RHS150a	RHS150x100x4.0
RHS200h	RHS200x100x10.0
SHS150a	SHS150x150x5.0
UC203f	UC203x203x100

STEEL BEAM SCHEDULE

TYPE MARK	BEAM SIZE
PFC150a	PFC150x75x18
PFC200a	PFC200x75x23
UC203a	UC203x203x46
UC203d	UC203x203x71
UC203e	UC203x203x86
UC203f	UC203x203x100
UC254e	UC254x254x167
UC305d	UC305x305x158
UC305f	UC305x305x240

TOS = 25.120 U.N.O

STEEL BRACING SCHEDULE

TYPE MARK	BEAM SIZE
HB	ALLOW FOR 60x60x8 RSA, OR 100x10 FLAT
VB	100X10 FLAT CROSS BRACING

ALL BUILDERS WORK TO BE COORDINATED

ALL NEW STEEL COLUMNS TO BE CENTRED ON EXISTING CONCRETE COLUMNS

EXISTING TOP FACADE TO BE RESTRAINED BY NEW STEEL FRAME. TIE DETAIL TO BE DEVELOPED UPON OPENING UP OF FACADE

PLAN BRACING TO BE COORDINATED WITH BEAMS DURING STAGE 4

NOTES

1. ALL STEEL MEMBERS ARE TO POSITIONED CENTRALLY ON GRIDS UNO.
2. BEAMS TO BE CENTRED ON COLUMNS UNLESS NOTED OTHERWISE.
3. ALL MOMENTS, FORCES AND LOADS SHOWN ARE ULTIMATE VALUES.
4. MOMENT FORCES DO NOT INCLUDE THE ADDITIONAL CONNECTION FORCES DUE TO CONNECTION ECCENTRICITY.
5. ALL STEEL TO STEEL CONNECTIONS TO BE DESIGNED BY STEELWORK FABRICATOR, INCLUDING COLUMN BASEPLATES.
6. PAINTING AND PREPARATION AND PROTECTIVE COATINGS OF STEELWORK TO BE IN ACCORDANCE WITH THE SPECIFICATION.
7. ALL BOLTS TO BE GRADE 8.8 (UNO).
8. REFER TO THE SPECIFICATION FOR FULL DETAILS.
9. STEEL GRADE AND SUBGRADE SHALL BE AS SHOWN ON THE DESIGN DRAWINGS.
10. ALLOWANCE TO BE MADE FOR HORIZONTAL BRACING TO BE SUSPENDED FROM FLOOR PURLINS AT REGULAR INTERVALS (1/3) SPAN. CONNECTION TO BE A BOLT ON SLOTTED CONNECTOR AND PURLINS TO HAVE STIFFENERS AT BRACING LOCATIONS.

LEGEND

CUT	PRO	
		EXISTING STRUCTURE TO REMAIN (MATERIAL VARIES)
		PRIMARY STRUCTURAL STEEL FRAME
		SECONDARY STEEL FRAME
		PROPOSED 150 DP COLD FORMED STEEL JOISTS TO KINGSPAN (OR SIMILAR APPROVED) DETAILS
		STEEL FRAMING SYSTEM AND EXTERNAL CLADDING (TO BE CONFIRMED BY ARCHITECT)

NOTE:

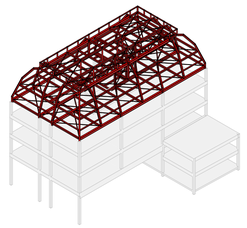
ALL EXISTING STRUCTURE SHOWN INDICATIVELY. EXISTING STRUCTURAL LAYOUT IS BASED OFF 'MODELLING ARCHITECTURE LTD DRAWINGS A101-A105 ISSUED 12/03/25

HSE - SAFETY IN DESIGN

RISK NAME	RISK CATEGORY (OPTIONAL)	RISK DESCRIPTION	LEVEL OF RISK (OPTIONAL)
1	Safety Issue	COLLAPSE OF EXISTING ROOF STRUCTURE DURING DEMOLITION. CONTRACTOR TO ENSURE TEMPORARY WORKS, WHERE REQUIRED, IS INSTALLED IN ACCORDANCE WITH TEMPORARY WORKS ENGINEER 'S DESIGN AND SEQUENCE OF WORKS.	Unknown
2	Safety Issue	COLLAPSE OF EXISTING FACADE DURING RING BEAM DEMOLITION. CONTRACTOR TO ENSURE TEMPORARY WORKS IN PLACE TO FACADE AND EXISTING COLUMNS TO TEMPORARY WORKS ENGINEER 'S DESIGN. TO REMAIN IN PLACE UNTIL PERMANENT STRUCTURE IS INSTALLED AND TIED INTO EXISTING FACADE.	Unknown

HSE - SAFETY IN DESIGN

RISK NAME	RISK CATEGORY (OPTIONAL)	RISK DESCRIPTION	LEVEL OF RISK (OPTIONAL)
3	Safety Issue	COLLAPSE OF EXISTING COLUMNS DURING ERECTION OF STEEL FRAME. NEW AND EXISTING COLUMNS TO ALIGN CENTRALLY TO AVOID ECCENTRIC FORCES BEING INDUCED ON EXISTING COLUMNS. TEMPORARY WORKS TO TEMPORARY WORKS ENGINEER 'S DETAILS TO BE INSTALLED TO EXISTING COLUMNS TO BRACE THEM UNTIL PERMANENT STEELWORK IS COMPLETELY INSTALLED TO RESIST LATERAL FORCES INDUCED BY RAKING COLUMNS DURING CONSTRUCTION.	Unknown
4	Safety Issue	STABILITY DURING CONSTRUCTION. CONTRACTOR TO ENSURE TEMPORARY STABILITY OF THE FACADE AND FRAME DURING CONSTRUCTION TO TEMPORARY WORKS ENGINEER 'S DETAILS.	Unknown



REV	DATE	REVISION DESCRIPTION
P02	05/02/26	ARCHITECTURAL COORDINATION UPDATES.
P01	16/01/26	STAGE 3 ISSUE.

SUITABILITY STATUS:

A3 - STAGE 3 AUTHORISED / ACCEPTED

240 Blackfriars Road
London
SE1 8NW
United Kingdom

t: +44 (0)20 7429 3333
e: info@hdrinc.com
w: www.hdrinc.com

CLIENT:

227 SBR LTD, LONDON

PROJECT:

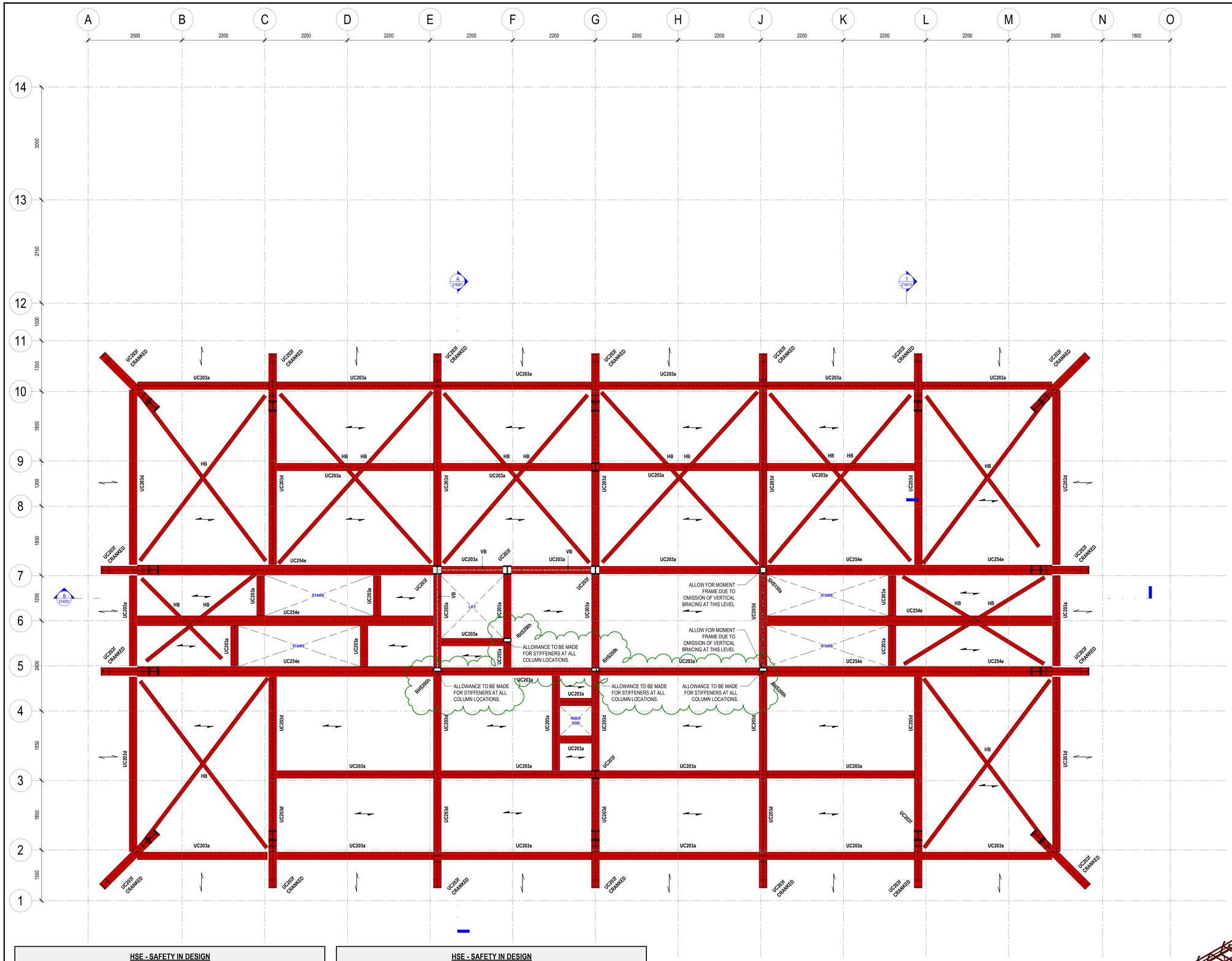
227 SHEPHERDS BUSH ROAD

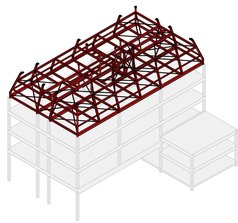
TITLE:

PROPOSED WORKS
ROOF LEVEL

HDR NUMBER:	REV DRAWN BY:	REV CHKD/APPD BY:
10428560	SM	DS/GLC
MODEL NAME:	REV DATE:	SCALE @ A1:
10428560-HDR-ZZ-XX-M3-S-209100	05/02/26	As indicated

DRAWING NUMBER: **10428560-HDR-ZZ-RF-DR-S-202107** REVISION: **P02**





STEEL COLUMN SCHEDULE	
TYPE MARK	COLUMN SIZE
RHS150a	RHS150x100x4.0
RHS200h	RHS200x100x10.0
SHS150a	SHS150x150x5.0
UC203f	UC203x203x100

STEEL BEAM SCHEDULE	
TYPE MARK	BEAM SIZE
PFC150a	PFC150x75x18
PFC200a	PFC200x75x23
UC203a	UC203x203x46
UC203d	UC203x203x71
UC203e	UC203x203x86
UC203f	UC203x203x100
UC254e	UC254x254x167
UC305d	UC305x305x158
UC305f	UC305x305x240

TOS = 22.220 U.N.O

STEEL BRACING SCHEDULE	
TYPE MARK	BEAM SIZE
HB	ALLOW FOR 60x60x8 RSA, OR 100x10 FLAT
VB	100X10 FLAT CROSS BRACING

ALL BUILDERS WORK TO BE COORDINATED

ALL NEW STEEL COLUMNS TO BE CENTRED ON EXISTING CONCRETE COLUMNS

EXISTING TOP FACADE TO BE RESTRAINED BY NEW STEEL FRAME. TIE DETAIL TO BE DEVELOPED UPON OPENING UP OF FACADE

PLAN BRACING TO BE COORDINATED WITH BEAMS DURING STAGE 4

NOTES

1. ALL STEEL MEMBERS ARE TO POSITIONED CENTRALLY ON GRIDS UNO.
2. BEAMS TO BE CENTRED ON COLUMNS UNLESS NOTED OTHERWISE.
3. ALL MOMENTS, FORCES AND LOADS SHOWN ARE ULTIMATE VALUES.
4. MOMENT FORCES DO NOT INCLUDE THE ADDITIONAL CONNECTION FORCES DUE TO CONNECTION ECCENTRICITY.
5. ALL STEEL TO STEEL CONNECTIONS TO BE DESIGNED BY STEELWORK FABRICATOR, INCLUDING COLUMN BASEPLATES.
6. PAINTING AND PREPARATION AND PROTECTIVE COATINGS OF STEELWORK TO BE IN ACCORDANCE WITH THE SPECIFICATION.
7. ALL BOLTS TO BE GRADE 8.8 (UNO).
8. REFER TO THE SPECIFICATION FOR FULL DETAILS.
9. STEEL GRADE AND SUBGRADE SHALL BE AS SHOWN ON THE DESIGN DRAWINGS.
10. ALLOWANCE TO BE MADE FOR HORIZONTAL BRACING TO BE SUSPENDED FROM FLOOR PURLINS AT REGULAR INTERVALS (1/3) SPAN. CONNECTION TO BE A BOLT ON SLOTTED CONNECTOR AND PURLINS TO HAVE STIFFENERS AT BRACING LOCATIONS.

LEGEND

CUT	PRO	
		EXISTING STRUCTURE TO REMAIN (MATERIAL VARIES)
		PRIMARY STRUCTURAL STEEL FRAME
		SECONDARY STEEL FRAME
		PROPOSED 150 DP COLD FORMED STEEL JOISTS TO KINGSPAN (OR SIMILAR APPROVED) DETAILS
		STEEL FRAMING SYSTEM AND EXTERNAL CLADDING (TO BE CONFIRMED BY ARCHITECT)

NOTE:

ALL EXISTING STRUCTURE SHOWN INDICATIVELY. EXISTING STRUCTURAL LAYOUT IS BASED OFF 'MODELLING ARCHITECTURE LTD DRAWINGS A101-A105 ISSUED 12/03/25

HSE - SAFETY IN DESIGN

RISK NAME	RISK CATEGORY (OPTIONAL)	RISK DESCRIPTION	LEVEL OF RISK (OPTIONAL)
1	Safety Issue	COLLAPSE OF EXISTING ROOF STRUCTURE DURING DEMOLITION. CONTRACTOR TO ENSURE TEMPORARY WORKS, WHERE REQUIRED, IS INSTALLED IN ACCORDANCE WITH TEMPORARY WORKS ENGINEER 'S DESIGN AND SEQUENCE OF WORKS.	Unknown
2	Safety Issue	COLLAPSE OF EXISTING FACADE DURING RING BEAM DEMOLITION. CONTRACTOR TO ENSURE TEMPORARY WORKS IN PLACE TO FACADE AND EXISTING COLUMNS TO TEMPORARY WORKS ENGINEER 'S DESIGN. TO REMAIN IN PLACE UNTIL PERMANENT STRUCTURE IS INSTALLED AND TIED INTO EXISTING FACADE.	Unknown

HSE - SAFETY IN DESIGN

RISK NAME	RISK CATEGORY (OPTIONAL)	RISK DESCRIPTION	LEVEL OF RISK (OPTIONAL)
3	Safety Issue	COLLAPSE OF EXISTING COLUMNS DURING ERECTION OF STEEL FRAME. NEW AND EXISTING COLUMNS TO ALIGN CENTRALLY TO AVOID ECCENTRIC FORCES BEING INDUCED ON EXISTING COLUMNS. TEMPORARY WORKS TO TEMPORARY WORKS ENGINEER 'S DETAILS TO BE INSTALLED TO EXISTING COLUMNS TO BRACE THEM UNTIL PERMANENT STEELWORK IS COMPLETELY INSTALLED TO RESIST LATERAL FORCES INDUCED BY RAKING COLUMNS DURING CONSTRUCTION.	Unknown
4	Safety Issue	STABILITY DURING CONSTRUCTION. CONTRACTOR TO ENSURE TEMPORARY STABILITY OF THE FACADE AND FRAME DURING CONSTRUCTION TO TEMPORARY WORKS ENGINEER 'S DETAILS.	Unknown

REV	DATE	REVISION DESCRIPTION
P02	05/02/26	ARCHITECTURAL COORDINATION UPDATES.
P01	16/01/26	STAGE 3 ISSUE.

SUITABILITY STATUS:

A3 - STAGE 3 AUTHORISED / ACCEPTED

240 Blackfriars Road
London
SE1 8NW
United Kingdom

t: +44 (0)20 7429 3333
e: info@hdrinc.com
w: www.hdrinc.com

CLIENT:

227 SBR LTD, LONDON

PROJECT:

227 SHEPHERDS BUSH ROAD

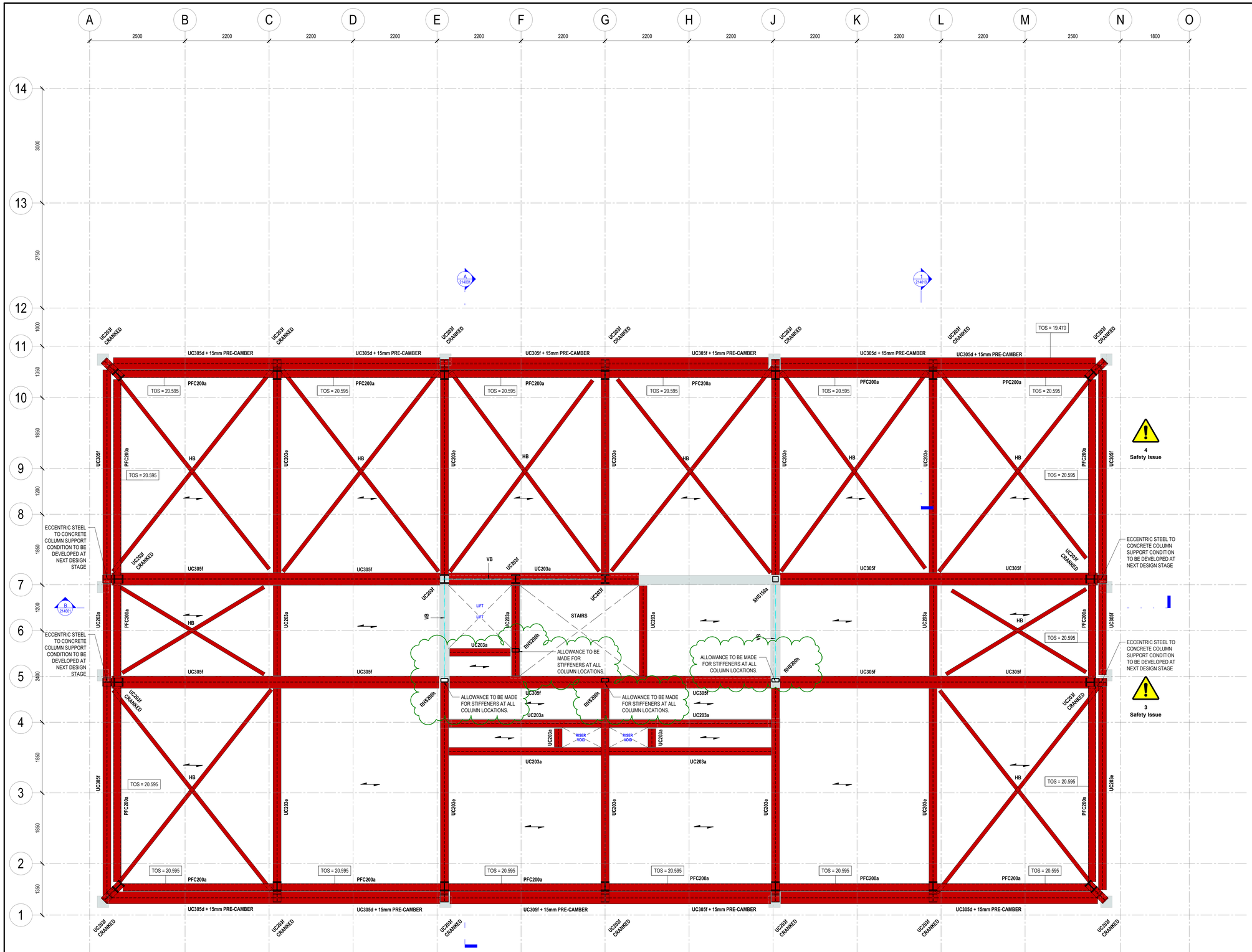
TITLE:

PROPOSED WORKS
FIFTH FLOOR

HDR NUMBER:	REV DRAWN BY:	REV CHKD/APPD BY:
10428560	SM	DS/GLC
MODEL NAME:	REV DATE:	SCALE @ A1:
10428560-HDR-ZZ-XX-M3-S-209100	05/02/26	As indicated

DRAWING NUMBER: 10428560-HDR-ZZ-05-DR-S-202106

REVISION: P02



STEEL COLUMN SCHEDULE

TYPE MARK	COLUMN SIZE
RHS150a	RHS150x100x4.0
RHS200h	RHS200x100x10.0
SHS150a	SHS150x150x5.0
UC203f	UC203x203x100

STEEL BEAM SCHEDULE

TYPE MARK	BEAM SIZE
PFC150a	PFC150x75x18
PFC200a	PFC200x75x23
UC203a	UC203x203x46
UC203d	UC203x203x71
UC203e	UC203x203x86
UC203f	UC203x203x100
UC254e	UC254x254x167
UC305d	UC305x305x158
UC305f	UC305x305x240

TOS = 19.470 U.N.O

STEEL BRACING SCHEDULE

TYPE MARK	BEAM SIZE
HB	ALLOW FOR 60x60x8 RSA, OR 100x10 FLAT
VB	100X10 FLAT CROSS BRACING

ALL BUILDERS WORK TO BE COORDINATED

ALL NEW STEEL COLUMNS TO BE CENTRED ON EXISTING CONCRETE COLUMNS

EXISTING TOP FACADE TO BE RESTRAINED BY NEW STEEL FRAME. TIE DETAIL TO BE DEVELOPED UPON OPENING UP OF FACADE

PLAN BRACING TO BE COORDINATED WITH BEAMS DURING STAGE 4

NOTES

1. ALL STEEL MEMBERS ARE TO POSITIONED CENTRALLY ON GRIDS UNO.
2. BEAMS TO BE CENTRED ON COLUMNS UNLESS NOTED OTHERWISE.
3. ALL MOMENTS, FORCES AND LOADS SHOWN ARE ULTIMATE VALUES.
4. MOMENT FORCES DO NOT INCLUDE THE ADDITIONAL CONNECTION FORCES DUE TO CONNECTION ECCENTRICITY.
5. ALL STEEL TO STEEL CONNECTIONS TO BE DESIGNED BY STEELWORK FABRICATOR, INCLUDING COLUMN BASEPLATES.
6. PAINTING AND PREPARATION AND PROTECTIVE COATINGS OF STEELWORK TO BE IN ACCORDANCE WITH THE SPECIFICATION.
7. ALL BOLTS TO BE GRADE 8.8 (UNO).
8. REFER TO THE SPECIFICATION FOR FULL DETAILS.
9. STEEL GRADE AND SUBGRADE SHALL BE AS SHOWN ON THE DESIGN DRAWINGS.
10. ALLOWANCE TO BE MADE FOR HORIZONTAL BRACING TO BE SUSPENDED FROM FLOOR PURLINS AT REGULAR INTERVALS (1/3) SPAN. CONNECTION TO BE A BOLT ON SLOTTED CONNECTOR AND PURLINS TO HAVE STIFFENERS AT BRACING LOCATIONS.

LEGEND

CUT *PRO*

- EXISTING STRUCTURE TO REMAIN (MATERIAL VARIES)
- PRIMARY STRUCTURAL STEEL FRAME
- SECONDARY STEEL FRAME
- PROPOSED 150 DP COLD FORMED STEEL JOISTS TO KINGSPAN (OR SIMILAR APPROVED) DETAILS
- STEEL FRAMING SYSTEM AND EXTERNAL CLADDING (TO BE CONFIRMED BY ARCHITECT)

NOTE:

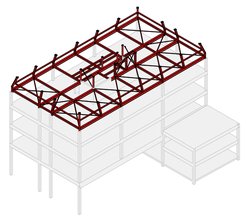
ALL EXISTING STRUCTURE SHOWN INDICATIVELY. EXISTING STRUCTURAL LAYOUT IS BASED OFF 'MODELLING ARCHITECTURE LTD DRAWINGS A101-A105 ISSUED 12/03/25

HSE - SAFETY IN DESIGN

RISK NAME	RISK CATEGORY (OPTIONAL)	RISK DESCRIPTION	LEVEL OF RISK (OPTIONAL)
1	Safety Issue	COLLAPSE OF EXISTING ROOF STRUCTURE DURING DEMOLITION. CONTRACTOR TO ENSURE TEMPORARY WORKS, WHERE REQUIRED, IS INSTALLED IN ACCORDANCE WITH TEMPORARY WORKS ENGINEER 'S DESIGN AND SEQUENCE OF WORKS.	Unknown
2	Safety Issue	COLLAPSE OF EXISTING FACADE DURING RING BEAM DEMOLITION. CONTRACTOR TO ENSURE TEMPORARY WORKS IN PLACE TO FACADE AND EXISTING COLUMNS TO TEMPORARY WORKS ENGINEER 'S DESIGN. TO REMAIN IN PLACE UNTIL PERMANENT STRUCTURE IS INSTALLED AND TIED INTO EXISTING FACADE.	Unknown

HSE - SAFETY IN DESIGN

RISK NAME	RISK CATEGORY (OPTIONAL)	RISK DESCRIPTION	LEVEL OF RISK (OPTIONAL)
3	Safety Issue	COLLAPSE OF EXISTING COLUMNS DURING ERECTION OF STEEL FRAME. NEW AND EXISTING COLUMNS TO ALIGN CENTRALLY TO AVOID ECCENTRIC FORCES BEING INDUCED ON EXISTING COLUMNS. TEMPORARY WORKS TO TEMPORARY WORKS ENGINEER 'S DETAILS TO BE INSTALLED TO EXISTING COLUMNS TO BRACE THEM UNTIL PERMANENT STEELWORK IS COMPLETELY INSTALLED TO RESIST LATERAL FORCES INDUCED BY RAKING COLUMNS DURING CONSTRUCTION.	Unknown
4	Safety Issue	STABILITY DURING CONSTRUCTION. CONTRACTOR TO ENSURE TEMPORARY STABILITY OF THE FACADE AND FRAME DURING CONSTRUCTION TO TEMPORARY WORKS ENGINEER 'S DETAILS.	Unknown



REV	DATE	REVISION DESCRIPTION
P02	05/02/26	ARCHITECTURAL COORDINATION UPDATES.
P01	16/01/26	STAGE 3 ISSUE.

SUITABILITY STATUS:

A3 - STAGE 3 AUTHORISED / ACCEPTED

240 Blackfriars Road
London
SE1 8NW
United Kingdom

t: +44 (0)20 7429 3333
e: info@hdrinc.com
w: www.hdrinc.com

CLIENT:

227 SBR LTD, LONDON

PROJECT:

227 SHEPHERDS BUSH ROAD

TITLE:

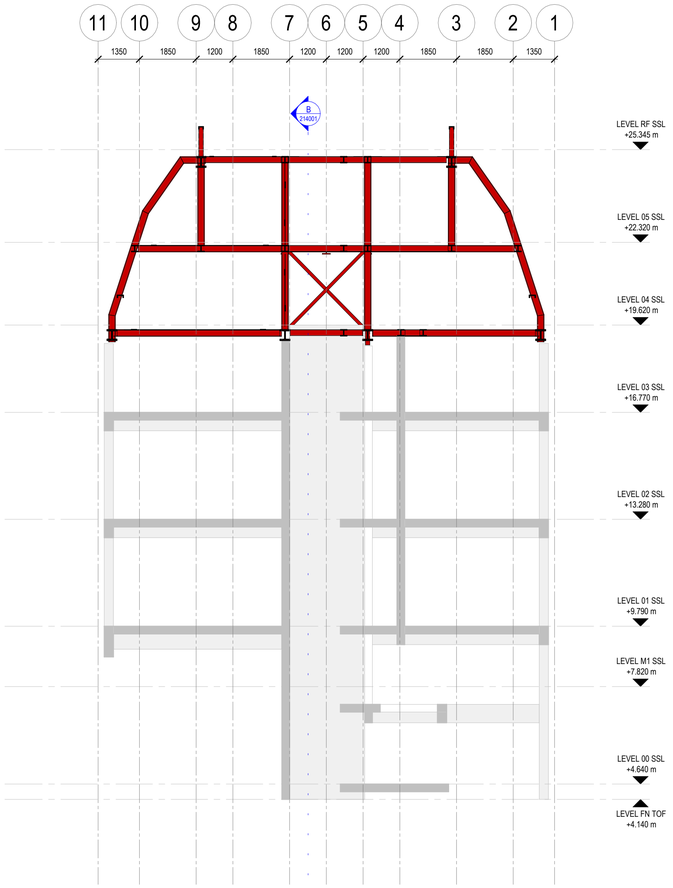
PROPOSED WORKS FOURTH FLOOR

HDR NUMBER:	REV DRAWN BY:	REV CHKD/APPD BY:
10428560	SM	DS/GLC
MODEL NAME:	REV DATE:	SCALE @ A1:
10428560-HDR-ZZ-XX-M3-S-209100	05/02/26	50

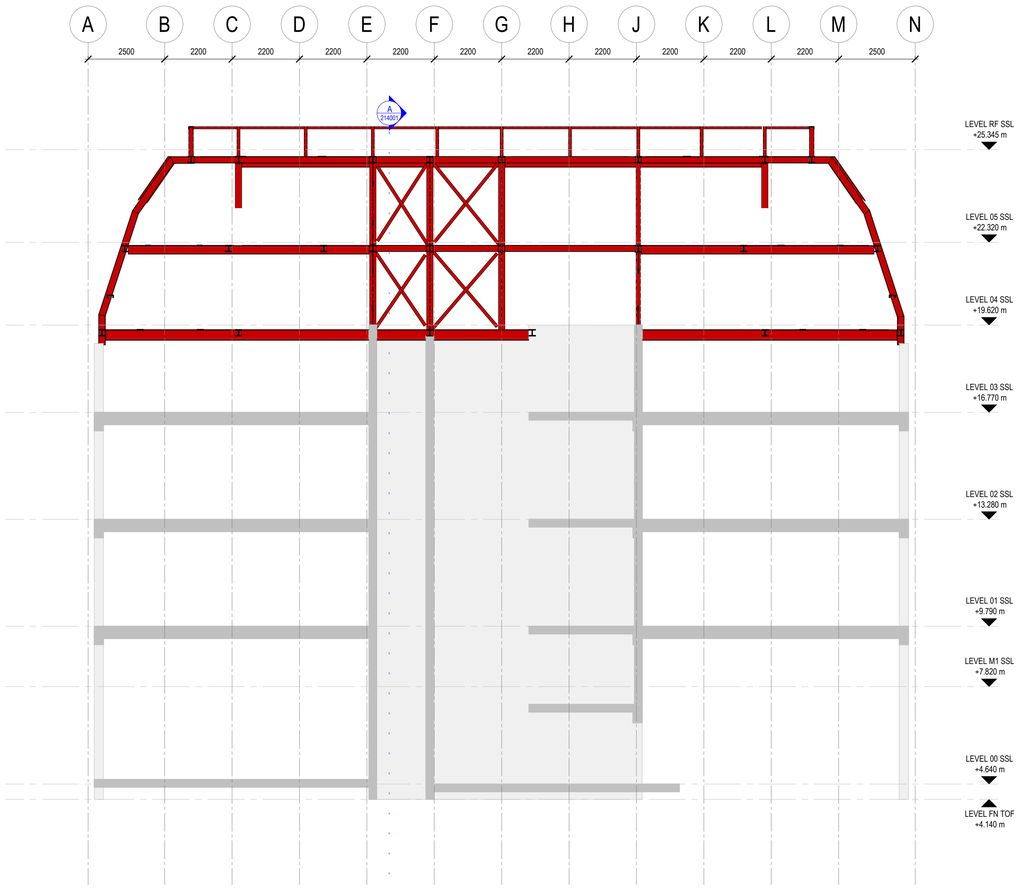
DRAWING NUMBER: 10428560-HDR-ZZ-04-DR-S-202105

REVISION: P02

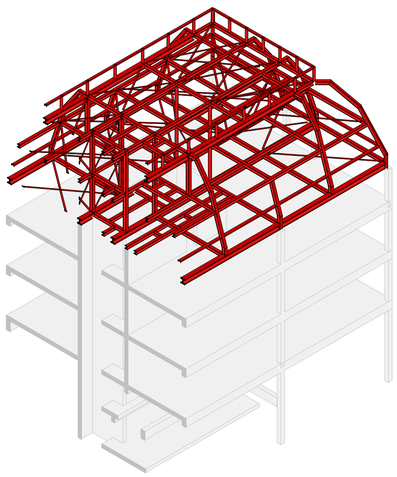
0 1 2 3 4 5 cm Plot Check v.24.2

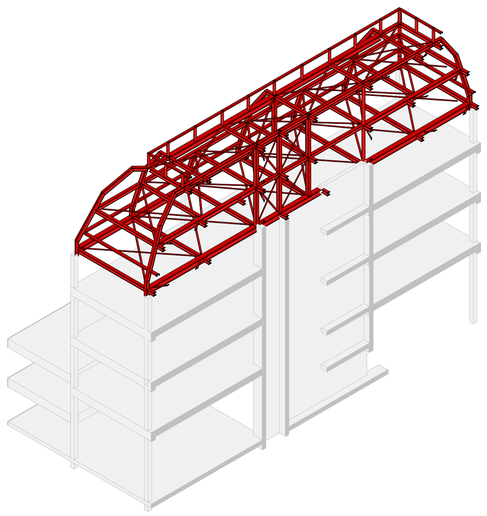


A **BUILDING SECTION A**
1 : 100



B **BUILDING SECTION B**
1 : 100





NOTE:

ALL EXISTING STRUCTURE SHOWN INDICATIVELY. EXISTING STRUCTURAL LAYOUT IS BASED OFF 'MODELLING ARCHITECTURE LTD DRAWINGS A101-A105 ISSUED 12/03/25

REV	DATE	REVISION DESCRIPTION
P01	16/01/26	STAGE 3 ISSUE.

SUITABILITY STATUS:

A3 - STAGE 3 AUTHORISED / ACCEPTED

240 Blackfriars Road
London
SE1 8NW
United Kingdom

t: +44 (0)20 7429 3333
e: info@hdrinc.com
w: www.hdrinc.com

CLIENT:

227 SBR LTD, LONDON

PROJECT:

227 SHEPHERDS BUSH ROAD

TITLE:

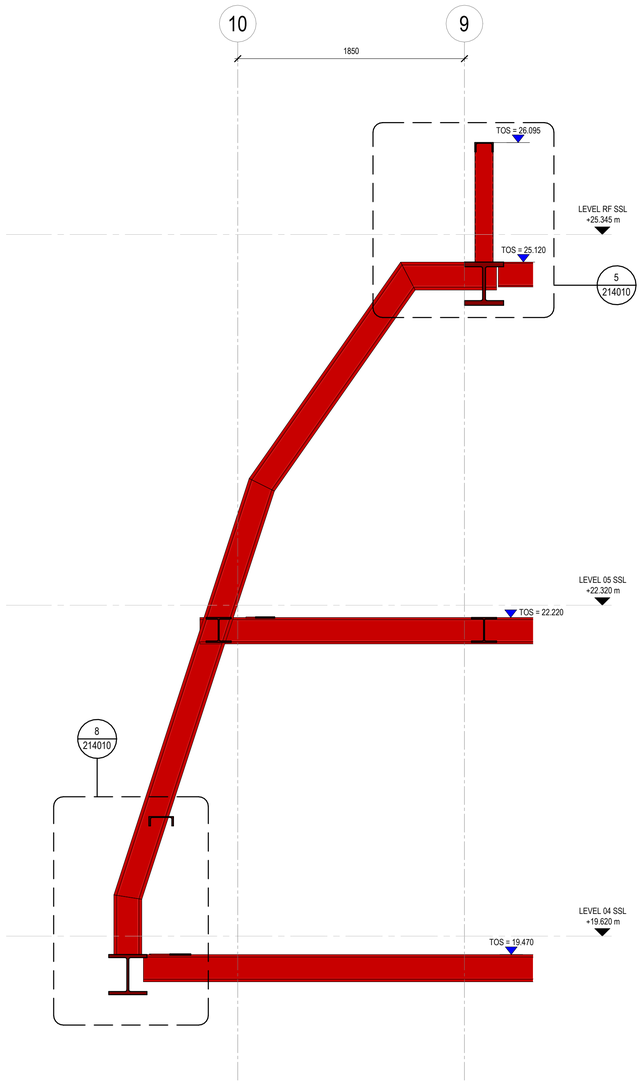
PROPOSED WORKS
BUILDING SECTIONS

HDR NUMBER:	REV DRAWN BY:	REV CHKD/APPD BY:
10428560	SM	DS/GLC
MODEL NAME:	REV DATE:	SCALE @ A1:
10428560-HDR-ZZ-XX-M3-S-209100	16/01/26	1 : 100

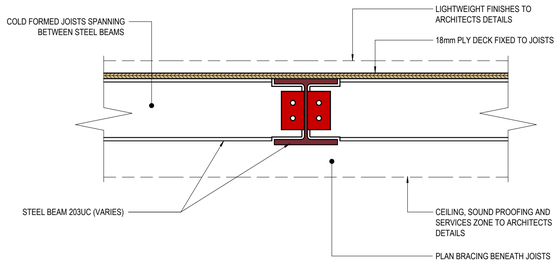
DRAWING NUMBER: 10428560-HDR-ZZ-ZZ-DR-S-214001

REVISION: P01

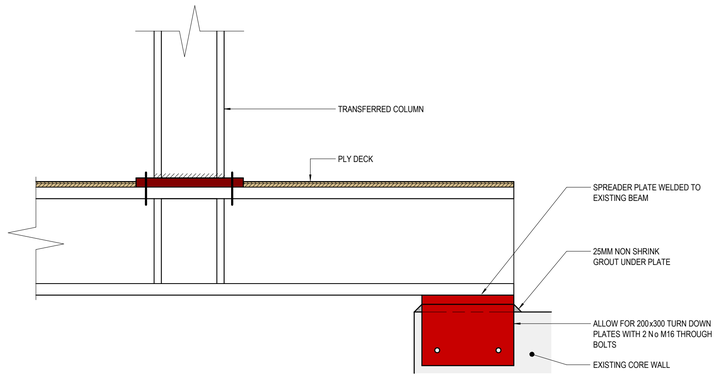
cm 0 1 2 3 4 5 Plot Check v.24.2



1 TYPICAL CRANKED FRAME SECTION
1 : 25

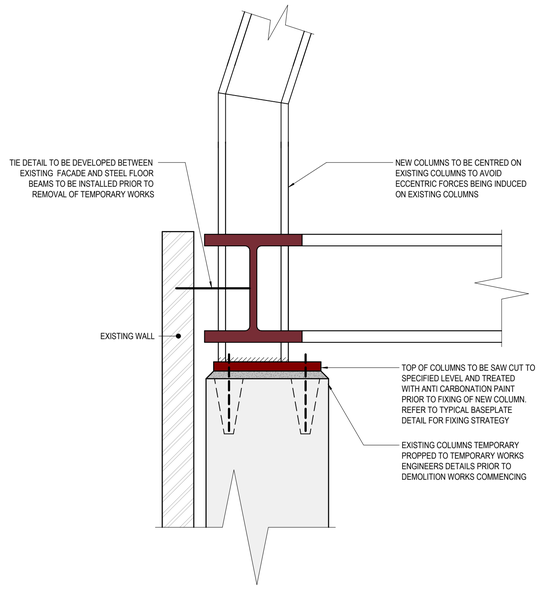


2 TYPICAL FLOOR SECTION
1 : 10

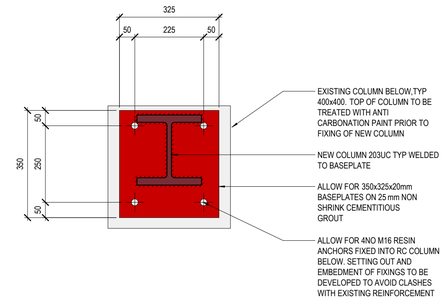


4 TYPICAL STEEL BEAM TO EXISTING RC CORE WALL INTERFACE
1 : 10

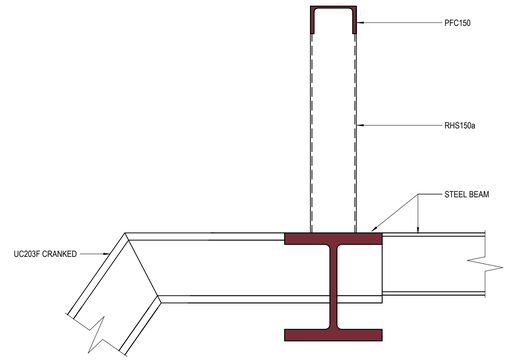
6 TYPICAL TRANSFER BEAM TO COLUMN INTERFACE
1 : 10



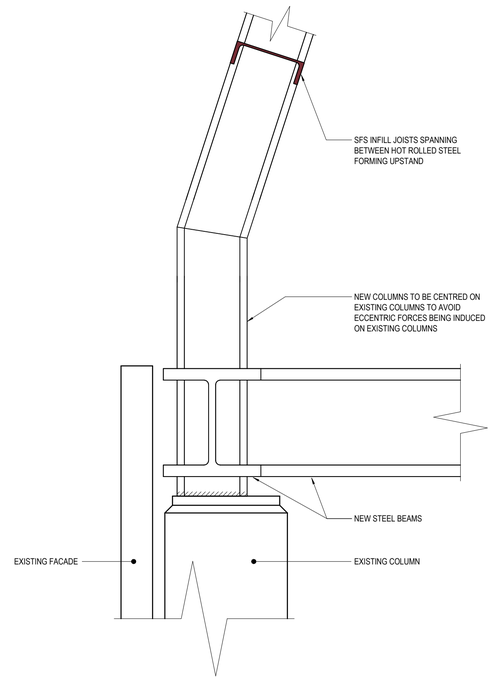
7 TYPICAL RC TO STEEL COLUMN CONNECTION INTENT
1 : 10



3 TYPICAL NEW STEEL COLUMN TO EXISTING RC COLUMN CONNECTION INTENT
1 : 10



5 TYPICAL UPSTAND DETAIL
1 : 10



8 TYPICAL BALCONY BALUSTRADE DETAIL
1 : 10

NOTES

1. ALL STEEL MEMBERS ARE TO POSITIONED CENTRALLY ON GRIDS UNO.
2. BEAMS TO BE CENTRED ON COLUMNS UNLESS NOTED OTHERWISE.
3. ALL MOMENTS, FORCES AND LOADS SHOWN ARE ULTIMATE VALUES.
4. MOMENT FORCES DO NOT INCLUDE THE ADDITIONAL CONNECTION FORCES DUE TO CONNECTION ECCENTRICITY.
5. ALL STEEL TO STEEL CONNECTIONS TO BE DESIGNED BY STEELWORK FABRICATOR, INCLUDING COLUMN BASEPLATES.
6. PAINTING AND PREPARATION AND PROTECTIVE COATINGS OF STEELWORK TO BE IN ACCORDANCE WITH THE SPECIFICATION.
7. ALL BOLTS TO BE GRADE 8.8 (UNO).
8. REFER TO THE SPECIFICATION FOR FULL DETAILS.
9. STEEL GRADE AND SUBGRADE SHALL BE AS SHOWN ON THE DESIGN DRAWINGS.

LEGEND

CUT	PRO	
		EXISTING STRUCTURE TO REMAIN (MATERIAL VARIES)
		PRIMARY STRUCTURAL STEEL FRAME
		SECONDARY STEEL FRAME
		PROPOSED 150 DP COLD FORMED STEEL JOISTS TO KINGSPAN (OR SIMILAR APPROVED) DETAILS
		STEEL FRAMING SYSTEM AND EXTERNAL CLADDING (TO BE CONFIRMED BY ARCHITECT)

REV	DATE	REVISION DESCRIPTION
P01	16/01/26	STAGE 3 ISSUE.

SUITABILITY STATUS:

A3 - STAGE 3 AUTHORISED / ACCEPTED

240 Blackfriars Road
London
SE1 8NW
United Kingdom

t: +44 (0)20 7429 3333
e: info@hdrinc.com
w: www.hdrinc.com

CLIENT:
227 SBR LTD, LONDON

PROJECT:
227 SHEPHERDS BUSH ROAD

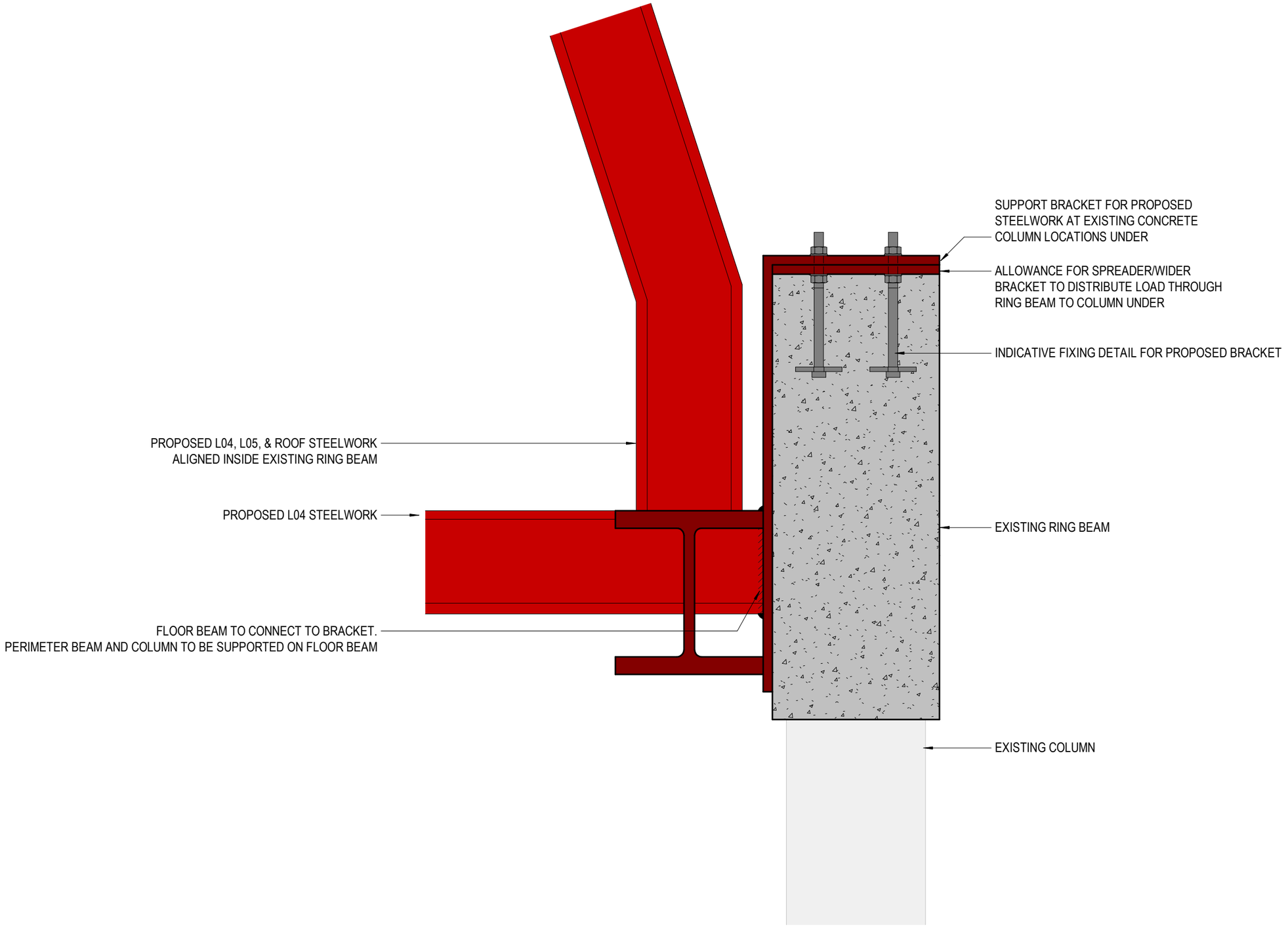
TITLE:
PROPOSED WORKS
TYPICAL DETAILS
SHEET 01

HDR NUMBER:	REV DRAWN BY:	REV CHKD/APPD BY:
10428560	SM	DS/GLC
MODEL NAME:	REV DATE:	SCALE @ A1:
10428560-HDR-ZZ-XX-M3-S-209100	16/01/26	As indicated

DRAWING NUMBER: **10428560-HDR-ZZ-ZZ-DR-S-214010** REVISION: **P01**

cm 0 1 2 3 4 5 Plot Check v.24.2

227SBR-HDR-XX-XX-SK-S-0400005
STEELWORK SUPPORT BRACKET
13/02/26



Ain

Specification for Structural Steelwork

227 Shepherds Bush Road

Date:	16/01/2025	**Issue:**	P01
Reference:	10428560	**Status:**	Issued
Prepared by:	R. Bowden	**Date:**	09/01/2026
Edited by:	-	**Date:**	-
Authorised by:	D. Staddon	**Date:**	16/01/2026
Issuing office:	Blackfriars		

DOCUMENT CONTROL

Issue	Date	Status	HDR Author	HDR Approval	Notes
P01	16/01/26	Issued	R. Bowden	S. Staddon	Issued for Stage 3 Delivery

The findings and opinions provided in this document are given in good faith and are subject to the limitations and constraints imposed by the methods and information sources described in this report. Factual information, including, where stated, a visual inspection of the site, has been obtained from a variety of sources. HDR Consulting assumes the third-party data to be reliable, but has not independently confirmed this; therefore, HDR Consulting cannot and does not guarantee the authenticity or reliability of third-party information it has relied upon.

The findings and opinions presented in this report are relevant to the dates when the assessment was undertaken but should not necessarily be relied upon to represent conditions at a substantially later date. Further information, ground investigation, construction activities, change of site use, or the passage of time may reveal conditions that were not indicated in the data presented and therefore could not have been considered in the preparation of the report. Where such information might impact upon stated opinions, HDR Consulting reserves the right to modify the opinions expressed in this report. Where opinions expressed in this report are based on current available guidelines and legislation, no liability can be accepted by HDR Consulting for the effects of any future changes to such guidelines and legislation.

The limitations of liability of HDR Consulting for the contents of this document have been agreed with the Client, as set out in the terms and conditions of offer and related contract documentation.

CONTENTS:

INTRODUCTION

General

a. This specification should be read in conjunction with all accompanying tender documentation and the contract documents. This specification is to be read in conjunction with the National Structural Steelwork Specification for Building Construction, 7th Edition including such relevant specifications and codes referred to within, except as modified by the following clauses.

b. All clauses in the National Structural Steel Specification not noted below shall apply in their entirety. Should there be a conflict in the specified requirements these shall be brought to the attention of the Engineer for resolution prior to proceeding.

DEFINITIONS

Refer to Page 13 of the National Structural Steelwork Specification for building construction, 7th Edition.

a. The term Employer in this specification shall mean: 227 SBR Ltd

b. The term Project Manager shall mean: 227 SBR Ltd

c. The term Contract Administrator shall mean: N/A

d. The term Engineer shall mean: HDR

e. The term Architect shall mean: Space Agent

f. The term Quantity Surveyor/ Cost Consultant shall mean: TBC

g. The term CDM Principal Designer shall mean: TBC

h. The Services Consultant shall mean: Oakley M&E Design

i. The Local Authority shall mean: London Borough of Hammersmith & Fulham Council

j. The term Main Contractor shall mean: the Contractor responsible for completion of the works

k. The term Demolition Contractor shall mean: TBC

l. The term Asbestos Consultant shall mean: TBC

1 SECTION 1.0 - INFORMATION REQUIRED BY STEELWORK CONTRACTOR

Project Specification for Structural Steelwork

1.1.1 The checklists given in Tables 1.1 to 1.7 set out information which is shown on the design drawings and contained within the project specification.

1.1.2 The structural steelwork is to be provided strictly in accordance with the current edition of BS EN 1993-1-1:2005+A1:2014 Design of steel structures. General rules and rules for buildings (incorporating corrigenda February 2006 and April 2009) and BS EN 1090-2-2018 Execution of steel structures and Aluminium structures, together with the National Structural Steelwork Specification 7th Edition (NSSS), including such relevant specifications and codes referred to within, except as modified by the following clauses.

1.1.3 Should there be a conflict in specified requirements, the project specification takes precedence over other documents.

1.1.4 All current amendments shall be complied with and the National Building Regulations/Local Authority Bye-Laws notwithstanding any omission of such requirements in this specification, and as indicated or implied on the drawings prepared by the Engineer.

1.1.5 The specification should be read in conjunction with all accompanying tender documentation and Conditions of Contract.

Table 1.1 Proposed Works – Checklist

i. The development comprises the following:
   - Construction of an additional 2 storey vertical steel frame extension, creating residential units with step back balconies
   - The proposed extension is to also create a new flat roof level with plant space and photovoltaics proposed at roof level.

ii. The building is proposed for residential use.

iii. Details of the site and the constraints that need to be considered are to be provided in the contract documents.

iv. The building class in accordance with the building regulations is provided in the contract documents.

v. External parts of the structure include balconies, walkways and steel staircases, refer to the contract documents for further details.

vi. No parts of the structure are Execution Class 1

vii. No parts of the structure are Execution Class 3 or 4.

1.2 Design

Only 1 Clause 1.2A is included. Clauses 1.2B and 1.2C are 'Not Used'.

Table 1.2A Design – Checklist

When the Steelwork Contractor carries out detailing of the steelwork based on the member design prepared by the Engineer.

Information Required by the Steelwork Contractor

1.2.1 Connections are to be designed to develop the forces indicated on the design drawings and must be carefully detailed to provide a clean functional appearance. The steelworker is required to discuss and submit conceptual designs of the connections to the Engineer prior to detailing.

Generally connections are simple and only splices or cantilevers are required to develop moments unless noted otherwise on the drawings. The detailing is to avoid stress concentrations particularly in welded sections. The design of all connections and other items associated with fabrication and erection shall be the sole responsibility of the steelworker. The connections should be carefully considered to ensure that they make adequate provision for adjustment to achieve the tolerances laid down in this Specification and elsewhere in the contract documents.

1.2.2 For a list of the contract design drawings refer to the contract documentation available from the Contract Administrator. The steelwork is to be provided in accordance with the Engineer's design as indicated or implied on the Engineer's drawings unless instructed otherwise on further drawings or equivalent electronic data and documents that may be issued as the work proceeds.

1.2.3 Refer to Contract Documentation for specifics of document management systems to be used.

1.2.4 BS EN 1993-1-8:2005 is to be used in design of all connections.

1.2.5 Member forces and end reactions are shown on the drawings. Unless otherwise noted, the loads are expressed as factored ultimate loads in accordance with BS EN 1993-1-1:2005.

1.2.6 There are no adverse environmental conditions to affect detailing. If any exist, they should be stated by the Steelwork Contractor.

1.2.7 Details and locations of any temporary works assumed by the Engineer in the design will be indicated on the contract drawings. However, any temporary bracing required for stability during erection will be the responsibility of the Steelwork Contractor.

1.2.8 The Steelwork Contractor must submit for approval by the Engineer the following information:

i) Calculations covering connection design.
ii) General arrangement drawings.
iii) Steelwork detail drawings.
iv) Q.A. plan.
v) Method statement for erection, including risk assessments.
vi) Material test certificates.
vii) Weld test certificates.

1.2.9 Welding across tension flanges of key elements such as transfer beams.

1.2.10 The steel grade is to be S355 to BS EN 100245 and designation of the steel to be used is shown on the contract drawings.

1.2.11 The Steelwork Contractor shall allow for all cleats, brackets, end plates, stiffeners, gussets, shear plates etc. as and where deemed necessary for fabrication, connection and site erection purposes. The Engineer may indicate some specific stiffeners etc. where the structural design is improved by their inclusion.

1.2.12 Bolts for all shear connections to be Grade 8.8. Preloaded bolts in category C connections (see EN 1993 1-8 cl 3.4.1) should be used in all bracing connections and for splices in beams and trusses.

The use of grade 4.6 bolts is strictly restricted to minor connections as defined by the Engineer, e.g. purlin and sheeting rail connections, and is subject to written agreement.

Holding down bolts may be Grade 4.6 unless in direct tension where Grade 8.8 shall be used.

1.2.13 A foundation plan is provided showing the locations and details of the holding down bolts required to be supplied to the concrete contractor by the steelwork contractor.

The steelwork contractor will issue a dimensioned drawing to enable the sub-structure works contractor to cast these bolts into the structure.

1.2.14 See clause 8.1.6 for type of grout to be used and the contract drawings for the thicknesses.

1.2.15 Refer to the drawings for typical steelwork details.

1.2.16 For details of cut-outs, holes or fittings refer to drawings and also agree the procedure for the integration of interfaces requirements of other trade-contractors. Refer to the contract documentation for details.

1.2.17 For camber requirements refer to the contract drawings as listed in the package documents.

1.2.18 Punched holes may not be used in connections without written approval of the Engineer.

1.2.19 Design and detail connections so as not to encroach upon architectural clearance lines, finishes or other secondary members required for the support of cladding or other 'secondary' structural elements.

1.2.20 Where connections between beams and columns and the like result in a loss of bearing to the metal deck, design and provide support for the metal deck.

1.2.21 Design and provide end bearing connections of inclined members such that the bearing plane between the inclined members and their supporting members is horizontal.

Table 1.3 Building Information Modelling (BIM)- Checklist

1.3.1 For additional requirements regarding BIM refer to the contract documents.

Table 1.4 Workmanship - Checklist

Information required by the Steelwork Contractor.

1.4.1 Hardstamping on exposed Architectural elements shall be as follows:

i) Beams - mark top flange

ii) Columns - mark underside of baseplate or tab plate/cleat for incoming beam connections on the connecting face.

iii) Lifting/Craneage beams to be stamped on web with safe working load capacity.

1.4.2 Weld procedures for all or any site welding will be prepared and submitted to the Engineer in reasonable time for review prior to commencing the work on site. The information shall be presented in a schedule form similar to **TABLE B EXTENT OF ROUTINE SUPPLEMENTARY NDT** identifying material types and procedures in Annex B of NSSS.

The fabricator's job specific Quality Plan shall be made available to the Engineer for inspection.

Procedures for any special welding for plate girders or "made-up" sections must be presented in reasonable time allowing 10 working days for review by the Engineer prior to commencing work in the shops.

Plates behind all major welds shall be free from laminations. The cost of tests to demonstrate this shall be borne by the Steelwork Contractor as part of the fabrication inspection and quality control process.

1.4.3 Temporary holes and attachments are required to be blanked or removed on all Architecturally visible elements of the structure. See drawings for locations.

1.4.4 Test Plates

1.4.4.1 The Steelwork Contractor, when required, shall send test pieces to an approved laboratory with sample pieces as selected and marked by the Engineer being provided free of charge. The costs of all tests shall be borne by the Steelwork Contractor.

1.4.4.2 All important compression flanges as noted on the drawings shall be tested as necessary for laminar defects by ultrasonic methods and shall be replaced if not in accordance with BS EN 10160 to be free from laminar defects . Plates behind all major welds shall be free of laminations.

The cost of these tests shall be borne by the Steelwork Contractor as part of the fabrication inspection and quality control process.

1.4.5 Weld inspection shall be carried out by the fabricator or by an independent specialist consultant. The inspection method shall be as defined in Table B of the National Steelwork Specification. Where weld-sizes are less than tabulated a minimum of 10% of welds shall be inspected using the M.P.I. method.

1.4.6 Special requirements regarding welding acceptance criteria.

1.4.6.1 The Steelwork Contractor shall be solely responsible for ensuring that all work is in accordance with the specification and to good standards of workmanship; no exceptions can be made on the grounds that the Engineers or their representatives may have inspected some part of parts of the work at some stage during production.

1.4.6.2 The costs of any welder's tests, which may be required, shall be at the expense of the Steelwork Contractor, including any specialist fee for witnessing and/or testing the coupon plates.

1.4.6.3 The cost of any remedial measures taken on defective welds shall be borne by the Steelwork Contractor, including the cost of any specialists' fees incurred by the Inspection Authority in additional work on defective welds.

1.4.6.4 All webs forming castellated beams, including those for infill plates shall be full strength butt welds with edge preparation as necessary to ensure the parent web thickness is fully developed along joints.

1.4.6.5 Site welding should be avoided if possible but in the event of special circumstances necessitating the adoption of such connections a method statement, detailing the proposed procedures, should be submitted for comment and written permission must be obtained prior to the commencement of any relevant operations. All site welds are to be subject to non-destructive testing.

Untested site welds will only be permitted for minor connections, with the express permission of the Engineer. These welds shall be designed to a reduced stress of 50% of the normal design stress.

1.4.6.6 The proportion of Magnetic Particle Inspection of fillet welds set out of Annex B: Table B of NSSS shall also apply to welds of less than 10mm leg length

- All welded connections supporting hangers from trusses and transfer girders shall be subjected to 100% NDT.
- All butt welds for splicing the elements of trusses or plates in transfer girders, whether in the shop or on site, shall be subjected to 100% ultrasonic inspection.
- All special or unusual welds, as indicated on the structural drawings, shall be subject to 100% NDT.

Non-destructive testing shall be either MPI for fillet welds or Ultrasonic for butt welds

Table 1.5 Erection - Checklist

Information required by the Steelwork Contractor.

1.5.1 Refer to Contract Documents for all site plan details, logistics and access requirements or restrictions and details of adjacent services and obstructions Erection procedures and erection bracing are the sole responsibility of the Steelwork Contractor.

1.5.2 Refer to 1.4.1.

1.5.3 to 9 Refer to Contract Documentation.

1.5.10 A safe site handling procedure is required in order to comply with clause 8.3.1 of the National Steelwork Specification. The format of this certificate is to be included in the Steelwork Contractor's erection method statement which must be approved by the Engineer prior to erection commencing.

Table 1.6 Protective Treatment - Checklist

Information required by the Steelwork Contractor.

1.6.1 Environmental Protection Act

All paint systems must comply with the Environmental Protection Act (EPA) - 1990 EPA-PG6/23 and any amendments thereof.

As of April 1998, the permitted limits for volatile organic compounds (VOC) emissions into the atmosphere were as follows:

Blast/weldable primer	780g/l
Protective Finishes	420g/l
Primers/Intermediates	250g/l
Finishes	420g/l

A protective finish is defined as a single coat application at works that will receive no further coatings either at works or on site.

Primers or Intermediate coats are defined as individual components applied at works that will be overcoated with a finish coat to provide a complete system.

1.6.2 Handling

Painted steelwork shall not be handled until an adequate drying/curing period has been allowed in accordance with the recommendations of the particular paint supplier.

The methods and equipment used to handle the coated steelwork shall be selected to minimise any damage to the painted components. The steelwork may include such design features as lifting holes and lugs to assist in minimising the potential damage due to handling.

1.6.3 Transportation

Separators shall be provided to prevent steel to steel contact and shall be adequate for intended use. It is essential that coatings are protected from the possible effects of ponded water.

1.6.4 Storage

Coated components shall be stored clear of the ground, separated by timber packers and so that ponding does not occur.

1.6.5 Finished Appearance (Intumescent Paint)

For finished appearance, refer to the Intumescent Paint Specification.

1.6.6 Inspection

The nominated steelwork contractor and site applicator will alert the Engineer and the Paint Supplier 10 working days prior to start of the application programme, both at the works and on site. They will permit them to inspect the work in progress, and prepare inspection reports in accordance with their requirements. The Paint Supplier will forward a copy of any inspection report direct to the Engineer and make his comments known to the applicator and steelwork contractor.

1.6.7 Surface Preparation Prior to Paint Application

1.6.7.1 Blast cleaning shall be by an airless system using ball shot to BS EN ISO 8501 P3. (The use of grit in blast cleaning operations may require variations in type and thickness of prefabrication primer and the steelwork contractor must obtain written agreement to any such Specification variation prior to the commencement of any surface treatment).

1.6.7.2 The blast cleaning and application of the prefabrication primer, if required, is to be carried out as a continuous operation so that the prefabrication primer is applied to a thoroughly clean and dry surface within four hours of the surface being ball blasted and before any deterioration of the surface has taken place.

Note: A pre-fabrication primer is to be used in the preparation of all steelwork unless agreed otherwise in writing by the Engineer. Such agreement will only be provided on production of suitable evidence from the fabricator that a pre-fabrication primer is not required.

1.6.7.3 Particular care must be taken when selecting the correct prefabrication primer and its suitability for any subsequent welding operations. Welds to be blast cleaned to accord with the Specification requirements.

1.6.8 Preparation and Painting

1.6.8.1 The materials used for the various coats shall be manufactured by the same suppliers, and the Steelwork Contractor shall confirm compatibility of all subsequent coats in his method statement see Clause 10.1.2.

1.6.8.2 Sections of the structure noted on the drawings as being encased in concrete are not be painted except for the usual contact and concealed surfaces.

1.6.8.3 Paint should not be applied to the top flange of those beams to which through deck stud welding is to be applied.

1.6.8.4 Where necessary, remove weld spatter and smooth weld seams or sharp edges. The welds and adjacent areas should be thoroughly degreased and cleaned by thorough mechanical hand abrasion to remove contamination and provide a profile. The steel should be 'bright' but not polished.

1.6.8.5 Stripe coating of welds and any other areas of difficult access is to be carried out by brush prior to the spray application of the specified primer.

1.6.8.6 Nominal dry film thickness (dft) is defined as the average of the readings obtained using a dft gauge in a particular scheduled area. These readings should equal or exceed the specified nominal dry film thickness and in no case should any reading be less than 75% of the specified nominal dry film thickness.

Readings should be taken at 2 readings per metre on the web and two per metre on the various flange faces for ordinary paints.

For intumescent paints, refer to the requirements in the Intumescent Paint Specification.

1.6.8.7 Remedial Work

Early degradation of coatings by blistering, peeling, flaking, cracking, or lack of adhesion must be made good by complete removal, preparation, and re-application of all coats as instructed.

Inadequate dry film thickness or surface defects due to inclement weather must be rubbed down and further coats applied as instructed.

Any areas mechanically damaged in transit to be touched up with a surface tolerant epoxy to meet the original works DFT.

1.6.9 Paint System Specifications

For schedule of locations requiring treatment see attached table and refer to the contract drawings. For details of Architectural finishes and intumescent paint locations refer to Appendix attached.

1.6.9.1 Internal Non-Exposed Dry Environment

Life to first maintenance - 20 years.

After abrasive blast cleaning (in works) -

Apply Overall by Airless Spray:

1 coat Two Pack epoxy zinc phosphate/micaceous iron oxide protective finish coating (Grey) @ 75 microns nominal dft

1.6.9.2a Cavity Areas (Atmospheric corrosivity category C2 BSEN ISO 12944)

Design life of building (not exceeding 20 years)
After abrasive blast cleaning (in Works)
Apply Overall by Airless Spray
1 coat Two Pack epoxy zinc phosphate/micaceous iron oxide primer-intermediate compliant coating (Grey) @ 175 microns nominal dft

1.6.9.2b Inaccessible Cavity Areas (Atmospheric Corrosivity Categories C2 or C3 BS EN ISO 12944)

Design life of building (20-60 years without maintenance)
After abrasive blast cleaning SA 2½ (in Works) –
Coats as required of Epoxy Glass Flake Primer-Intermediate coat works applied (White) @ TDFT to achieve performance required but not less than 400microns
The contractor may propose alternative paint systems that meet the performance requirements.
(The paint manufacturer in conjunction with the steelwork contractor shall provide a warranty for the continual durability performance of the product for the stated design life of the building without maintenance)

1.6.9.3 Internal Exposed Steelwork (Option A) – for high architectural finish

Life to first maintenance - 20 years.

After abrasive blast cleaning (in Works) -

Apply Overall by Airless Spray:

1 coat Two Pack epoxy zinc phosphate/micaceous iron oxide primer-intermediate compliant coating (Grey) @ 75 microns nominal dft

On Site (architectural finish coats):

To clean and dry surfaces, after repairs to mechanical damage of the shop applied coating apply to all required areas (colours to Architect's approval):

2 coats Recoatable Polyurethane (to shade) @ 50 microns nominal dft per coat

NB: Dependent on colour requirement and obliteration properties of coating one site coat may be omitted.

Internal Exposed Steelwork (Option B) – for non-architectural finish

Life to first maintenance - 20 years.

After abrasive blast cleaning (in Works) -
Apply Overall by Airless Spray:

1 coat **Two pack epoxy zinc phosphate Protective Finish (**Colour to suit) @ 75 microns nominal dft

1.6.9.4 External Exposed Steelwork (Option A)

Life to first maintenance - 10-15 years Inland.
8-10 years Coastal.

After abrasive blast cleaning (in Works) -

Apply Overall by Airless Spray:

1 coat Two Pack epoxy zinc phosphate/micaceous iron oxide primer-intermediate compliant coating (Grey) @ 175 microns nominal dft

On Site (architectural finish coats):

To clean and dry surfaces, after repairs to mechanical damage of the shop applied coating apply to all required areas (colours to Architect's approval):

2 coats Recoatable Polyurethane (to shade) @ 50 microns nominal dft per coat

NB: Dependent on colour requirement and obliteration properties of coating one site coat may be omitted.

External Exposed Steelwork (Option B – for severe conditions / marine environment)

Life to first maintenance - 20 years Inland
10-15 years Coastal

After abrasive blast cleaning (in Works) -
Apply Overall by Airless Spray:

1 coat Two Pack Epoxy zinc rich coating (Grey) @ 75 microns nominal dft
1 coat Two Pack epoxy zinc phosphate/micaceous iron oxide intermediate compliant coating (Grey) @ 125 microns nominal dft

On Site (architectural finish coats):

To clean and dry surfaces, after repairs to mechanical damage of the shop applied coating apply to all required areas (colours to Architect's approval):

2 coats Recoatable Polyurethane (to shade) @ 50 microns nominal dft per coat
NB: Dependent on colour requirement and obliteration properties of coating one site coat may be omitted.

1.6.9.5 Steelwork to be Treated with Intumescent Fire Protection (Dry Internal Conditions)

Refer to the Intumescent Paint Specification.

1.6.9.6 Steelwork Partially or Fully Immersed in Water or in Damp/Wet Environments

Life to first maintenance - 20 years.

After abrasive blast cleaning (in Works) -

Apply Overall by Airless Spray:

1 coat Hydrocarbon epoxy primer-intermediate compliant coating (Black) @ 500 microns nominal dft or 1 coat epoxy glass flake primer-intermediate compliant coating 400 microns.

1.6.9.7 Galvanising of Steelwork

After abrasive blast cleaning (in works), galvanise in accordance with BS EN ISO 1461 "Hot Dipped Galvanised Coatings on Iron and Steel Articles" with a minimum coating of 85 microns (610 g/m^2).

1.6.9.8 All areas of galvanised steelwork within a masonry cavity in contact with outer leaf are to be additionally protected with 2 coats of bitumastic paint. Min. DFT 200 microns which is compatible with the galvanising.

1.6.9.9 Galvanised Steelwork

To first maintenance - 20 years.

On site painting:

Clean down and degrease using an aqueous detergent solution.
Apply acid etch (T-wash) solution

1 coat surface tolerant epoxy micaceous iron oxide primer @ 75 microns nominal dft

2 coats Recoatable Polyurethane (to shade) @ 50 microns nominal dft per coat

NB: Dependent on colour requirement and obliteration properties of coating one site coat may be omitted.

1.6.9.10 Unpainted Steelwork

Blast clean BS EN ISO 8501 P2

1.6.10 Care and Attention

1.6.10.1 When erection has been completed all steel shall be further inspected and areas marked to indicate where remedial work is required. Areas concerned will be hand or power tool cleaned to BS EN ISO 8501 P2 and treated with the appropriate touch up system.

Areas of damaged paintwork shall be made good and the repair overlap sound paintwork by at least 50mm.

1.6.11 Bolts, nuts and washers shall be class II sherardized for internal use and spun galvanised to give 43 microns minimum coating for external use and only for internal use where specifically stated thus on the drawing. Only bolts up to grade 10.9 shall be galvanised unless agreed otherwise in writing by the Engineer.

Paint Schedule

Paint systems are to be applied in accordance with the schedule below. In addition, reference is to be made to the details of architectural finishes in Appendix C, attached, for the decorative requirements.

		Surface Type (ref. Clause 1.6.9)	Clause
1.	Add description of area with clause reference for appropriate paint system:		
	Steelwork for the external exposed staircase, walkways, balconies		1.6.9.7-9

Table 1.7 Inspections and Tests - Checklist

Information required by the Steelwork Contractor.

1.7.1 Facilities shall be made available at all times to enable inspections and quality monitoring by the Construction Manager or their representative of materials, fabricated items, Quality Plan and Procedures.

Table 1.8 Programme – Checklist

Information required by the Steelwork Contractor.

1.8.1 See Contract documentation for programme.

1.8.2 See Contract documentation for the review periods of any documents and drawings issued by the trade contractor.

1.8.3-4 See construction programme in the contract documentation for all dates.

SECTION 2.0 - MATERIALS

2.1 Material Qualities

Additional Requirement

All the structural steelwork shall be of European manufacture throughout, unless specifically approved, in writing, otherwise, and only from accredited manufacturers. Refer to contract drawings for grade of material.

2.2.3 Dimensions And Tolerances

2.2.3.1 In addition to the standard material and dimensional standards, certain architectural elements as listed in the attached schedule are to be produced to stricter deviations as follows:

Straightness ± 1mm over 2m straight edge on rolled or fabricated section

For clarity, when considering the plumb of the columns, with respect to feature columns, the height of the columns is to be defined as ground floor level to roof.

The section shall be corrected for overall deviation from its nominal centre line on its total length by processing through specialists to achieve an overall straightness of ±1mm end to end.

Hollow sections are to be produced as seamless, where possible. If they are produced with a seam than these are to be concealed in any fabricated section.

Schedule of Architectural Steelwork for Clause 2.2.3.1

Refer to schedule of Architectural finishes in Appendix attached.

SECTION 3.0 – INFORMATION PROVIDED BY THE STEELWORK CONTRACTOR

Add the following to clause 3.5.1.

A drawing register shall be made and used for the control and issue of drawings. It shall incorporate a system so that the erection marks of the components can be readily identified with each drawing.

Add the following to clause 3.8.

"As Erected" Drawings

Add the following:-

The Steelwork contractor shall supply free of charge copies of the finally agreed shop drawings in accordance with the requirements of the Trade Contract Annex.

Where the drawings for fabrication purposes are produced using Strucad or similar, the cost of any alterations to the details due to changes on the Engineer's drawings will be based on the lesser of amending standard individual drawings, or amending the full Strucad model.

SECTION 4 - WORKMANSHIP - GENERAL

Before clause 4.1, add the following

Where any item of this specification is subject to the Engineer's comment the Steelwork Contractor may proceed with this item only after all matters arising from such comment have been fully taken into account by the Steelwork Contractor.

The Engineer's approval of a sample of materials and/or workmanship does not constitute approval of the actual materials and/or workmanship employed in the works but only approval of the particular sample.

Holes are not to be drilled unless otherwise, specifically, agreed in writing by the Engineer and care must be taken to remove burrs to ensure members fit together correctly.

SECTION 5 - WORKMANSHIP – WELDING

Add to the end of clause 5.1

Welding shall be in accordance with the best modern practice and shall be made in such a manner as to minimise distortion and 'locked-in' stresses.

Add clause 5.3.4

5.3.4 Preheating

The steelworker's attention is drawn to the need to pre-heat Grade S355 steel complying with BS EN 10025 and BS EN 10113 as specified in BS EN 1011. Thick grade S275 steel may also require pre-heat.

SECTION 6 - WORKMANSHIP – BOLTING

Add to the end of clause 6.3.2

The preloaded fasteners in friction grip applications shall be used with a 'Coronet' load indicator washer.

Replace clause 6.4.1 with the following

6.4.1 Fit-up

6.4.1.1 Where necessary erection or service bolts are to be provided to secure the mating surfaces prior to inserting the preloaded fasteners and the commencement of torquing operations. Surface areas forming the connection are to be free of oil, paint, loose rust and scale. Manufacturer's markings on rolled sections are to be ground flush where they form part of the contact area of the connection.

6.4.1.2 Provision is to be made in detailing the preloaded fasteners connections for any shims or liners as and when considered necessary to accommodate any lack of fit at site, as excessive straining of members in endeavouring to mate surfaces is not allowed. Connections are to be arranged so as to enable all preloaded fasteners to be correctly fixed and torqued.

6.4.1.3 Connecting surfaces forming preloaded bolted joints shall be in close contact to effectively transfer loads by the induced friction forces generates by the preloaded fasteners. In the event of any joint being considered as unsatisfactory, the Engineer's assessment of the structural adequacy of the joint shall prevail.

Add clause 6.5:

6.5 The Flowdrill Process

The Flowdrill process, as recommended by Corus Plc, Tubes and Pipes, will be considered for joints in simple non-fatigue conditions in rectangular hollow sections up to 12.5mm thick. However, the Steelworker must obtain the prior agreement of the Engineer before adopting this type of connection in the preparation of the fabrication drawings.

SECTION 7 - WORKMANSHIP – ACCURACY OF FABRICATION

Amend clauses 7.2.6, 7.4.9 and 7.5.8.

Delete $\Delta = \frac{L}{500}$ *or* $6mm$
Whichever is greater

Add Deviation = ± 6mm

SECTION 8 - WORKMANSHIP - ERECTION

Add the following paragraph to clause 8.1.6

8.1.6 Column Bases and Slabs

The bases of the steel columns shall be temporarily set to the correct level and positioned using narrow steel packs, steel wedges and the holding down bolts prior to grouting up using SBD Five Star Grout, or a similar non-shrink cementitious grout approved by the Engineers, which shall be used strictly in accordance with the manufacturer's instructions.

SECTION 9 - WORKMANSHIP - ACCURACY OF ERECTED STEELWORK

Amend clause 9.1.3

Delete $\Delta_y or\ \Delta_z = \pm 10mm$
Add $\Delta_y or\ \Delta_z = \pm 5mm$

Also add

The position of the end of the bolt in the concrete shall be set so that any resulting slope of the bolt is not such as to cause difficulties in making the connection to the structural frame. It shall be possible to move the bolt to the full extent of the sleeve provided.

Additional clause

9.3.1 Prior to hand over of steel areas, the steelwork Contractor shall survey all beam ends and beam mid spans to check for level tolerance. Surveys shall be issued to the Design Team in drawing format showing the levels at its' + or – position from true level.

9.5 – Information for Other Contractors

Delete the wording given in the National Steelwork Specification.

Add

The dimensional deviations indicated in clause 9.6 mean only that the Engineer will not reject steelwork as being unstable if the site dimensions of the steelwork are within these noted

deviations. It must be clearly understood that these deviations may not be permitted where and when a higher degree of accuracy could be required as follows:-

(a) As required by the Architect.

(b) As necessary to suit the installation of lifts, escalators or other mechanical plant.

(c) As necessary to suit windows and cladding.

(d) As necessary to suit finishes.

The Trade Contractor shall satisfy himself during the detail drawing period that such items as noted above can be catered for during fabrication and erection. In the event of disagreement over dimensional deviations the Engineers decision will be final, and any costs arising out of such decisions shall be borne by the Trade Contractor.

9.6 – Permitted Deviations of Erected Components

Erected Steelwork Dimensional Deviations; these deviations are to be considered as the maximum normally acceptable for structural stability purposes in accordance with BS EN 1993 or as modified by the specification and are in particular strictly subject to the stipulations of clause 9.5 of the steelwork specification. Rolling tolerances and fabrication tolerances shall be in accordance with the "National Structural Steelwork Specification for Building Construction". Where more than one tolerance may be applied, the most onerous case shall take precedence. **The rolling tolerances, fabrication tolerances and all erected tolerances indicated shall not be considered cumulative.**

Amend clause 9.6.1

Delete $\Delta = \pm 10mm$
Add $\Delta = \pm 5mm$

Amend clause 9.6.3.1

Add maximum = ± 15mm

Amend clause 9.6.4

Add $\Delta = \pm 15mm\ maximum$

Also add

Allowable deviations for buildings greater than 10 stories to be agreed.

Amend clause 9.6.5

Add

Bearing surfaces shall comply with those specified in BS EN 1090 part 2.

Amend clause 9.6.11

This shall include self-weight deflection of steelwork and metal deck. Pre-cambers where indicated shall be out with this tolerance.

Amend clause 9.6.13

Delete maximum = ± 25mm
Add maximum = ± 15mm

SECTION 10 – PROTECTIVE TREATMENT

No amendments.

SECTION 11 – QUALITY ASSURANCE

No amendments.

Add **SECTION 12 DESIGN CALCULATIONS**

12.1 The Steelwork Contractor will be required to submit proof to the Engineer that the connections as shown on his fabrication drawings are capable of resisting the forces and moments shown on the Engineer's drawings and/or other Engineer's data sheets.

Design calculations shall be submitted in accordance with the contract documentation.

12.2 Connections shall not only be structurally adequate but must also be carefully detailed to provide a clean functional appearance and also avoid stress concentrations particularly in welded sections.

Add **SECTION 13 - SITE DIMENSIONS**

13.1 The Steelwork Contractor shall take all necessary dimensions and levels from site to execute and complete his work to suit the Engineer's requirements and other trades in such order and sequence as may be directed in accordance with the Construction Manager's programme charts from commencement to completion of his work.

13.2 In this regard the Steelwork Contractor shall take particular care to ensure sufficient site dimensions, including the plumbing of any existing internal and external walls, have been taken to ensure the steelwork fits the site throughout the full height of the steelwork structure.

13.3 The Steelwork Contractor shall be responsible for the positioning and levelling of all the steelwork, the plumbing of columns and the placing of each section with accuracy in accordance with the relevant drawings and shall amend or make good as necessary any fabrication or erection defects resulting from dimensional errors at his own expense.

13.4 The Steelwork Contractor is responsible for taking site dimensions where steelwork is fixed to an existing concrete face.

Add **SECTION 14 - STEEL CASTINGS**

14.1 The steel quality in the castings should be equivalent to a weldable grade S355 JR steel, in accordance with BS EN 10025. The cast equivalent is to be in accordance with EN 10088 (2005) corrosion resistant supplied in the normalised condition.

14.2 TESTING AND INSPECTION PLAN

14.2.1 SURFACE FINISH

Surface Cleanliness	Shot blast to SA2.5 standards
Surface Texture	By comparison to ASTM A802
	APPENDIX A**ACCEPTANCE**
Surface Texture	Level A3 (max)
Gas	Level C3

Sand	Level B2
Surface Laps	Level D1
Mechanical Dressing	Level H3

14.2.2 CASTING INTEGRITY

SURFACE REQUIREMENT

Crack Detection	To BS EN 1369 – 2012, Level 4

VOLUMETRIC INTERNAL REQUIREMENTS

X-ray	To ASTM E446 Level 3

14.2.3 FREQUENCY AND AREAS FOR TEST

Surface Finish	100% visual examination all castings	
Crack Detection	Samples: Bulk:	100% coverage Methods features, fillets and all changes of section
Radiography	Samples only:	100% coverage

14.2.4 MECHANICAL TEST

Tensile and charpy test on a one per heat basis, indicating yield, elongation, BHN, chemical analysis - all from separately cast test bars.

Tensile test pieces would be machined in accordance with BS.EN 10.002-1-1990 and impact test pieces BS 10.045-1-1990.

Chemical analysis tests would be carried out in accordance with BS EN 10293:2015 in conjunction with BS EN ISO 9002, 1994 approval using certified reference materials traceable to British Standards.

14.2.5 WELD REPAIRS

Cosmetic Welding

To be carried out without prior sanction, a cosmetic weld is not greater than 10% of thickness. Weld repairs would be carried out in accordance with BS 4570. Weld maps to be produced for structural welds only, structural repairs to be approved by client.

14.2.6 INSPECTION OF WELD REPAIRS

Cosmetic Welds	To be inspected by crack detection after suitable heat treatment.
Structural Welds	To be inspected by ultrasonic examination and crack detection on completion of suitable heat treatment.

14.2.7 OUTSIDE INSPECTION

Facilities are to be provided for independent testing visits to be carried out by nominated inspection authority of client.

NB All inspection functions, i.e. crack detection, radiography and visual would be carried out by approved internal inspection personnel.

Mechanical testing is to be carried out by approved test house.

14.2.8 DIMENSIONAL TOLERANCE (CAST)

In accordance with BS 6615, 1996 grade CT 10.

14.2.9 CERTIFICATES OF CONFORMITY

Certificates of conformity to be provided on a one per order basis.

14.2.10 DIMENSIONAL VERIFICATION

Initial samples are to be fully marked out for approval prior to bulk production.

14.2.11 CERTIFICATION PACKAGE

To be supplied at end of contract.

APPENDIX A

SPECIFICATION FOR PROFILED METAL DECKING

A.1 The metal decking should be of such form, gauge and material that full composite action can develop with the concrete topping to the depths as shown on the drawings, all in accordance with BS EN 1994 part 4 .

A.2 The composite section must be capable of sustaining the loads as specified on the drawings (partition load to be taken as dead) together with its own weight

A.3 The Engineer's design has been based on the use of a *re-entrant* profile decking of height *60*mm and not the use of a *trapezoidal deck**.

A.4 The metal decking must be capable of supporting the wet weight of *lightweight** concrete to the overall depths shown on the drawings, together with a construction super-load of 1.5 kN/m² without propping. If the spans vary the gauge of the decking may need to change to enable unpropped construction. Refer to BS EN 1994-1.1 CLAUSE 9.6 AND NA BS EN 1994 for deflection criteria

(The tenderer is required to submit with his tender details of the thicknesses of the decks and types of edge trims included within his tender price).

If any propping is required in exceptional circumstances, the decking contractor is to identify these at time of tender.

A5 The metal decking should be zinc coated to a total weight, including both sides, of 275g/m² in accordance with BS EN10346.

A.6 The metal deck should provide a fixing system to the soffit for the suspension of services and false ceiling. The fixing points should be at a maximum spacing of 600mm in each direction and capable of supporting a uniform load of 1.0 kN/m². (If this item is extra to the normal deck price, the additional cost should be itemised separately by the Tenderer).

A.7 The decking contractor must submit for approval by the Engineer the following information:

i) Calculations covering connection design.
ii) General arrangement drawings.
iii) Decking detail drawings.
iv) Q.A. plan.
v) Method statement for erection, including risk assessments.
vi) Material test certificates.

A.8 The decking shall include all edge trims and void fillers etc. in connection with edge trims, in locations as indicated on the drawings, to facilitate the placing of the concrete topping. (Concrete topping is by other trades).

A.9 The decking shall be taped at all joints, perimeters and columns to prevent grout leakage.

* Engineer to amend as required.

APPENDIX B

SPECIFICATION FOR STUD WELDING AND THE LAYING OF METAL DECKING

B.1 (a) All tools and equipment used in stud welding procedures must be used strictly in accordance with the manufacturer's instructions and/or recommendations.

(b) All stud welding operatives employed on the site must have attended a recognised course on the operation of the particular welding equipment to be used and must be certified by the equipment manufacturer as competent in its use.

B.2 (a) Before starting stud welding operations, or after equipment has been moved or left unused for any period of time, test welds should be done. The initial test welds shall be undertaken in the presence of the Engineer and or Local Authority's representative.

(b) Two studs shall be welded and then bent to an angle of 30 degrees from the original axis. This can be done by placing a pipe over the stud and levering to the required test angle. If failure occurs in the weld zone of either stud, correct or adjust the equipment set-up and repeat the test until two consecutive studs are welded and found to be satisfactory. Production welding can then commence.

(c) If studs, on visual inspection, do not show a 360 degree weld fillet, these studs should be bent 15 degrees from the vertical positions towards the nearest end of the beam. If the weld shows no fracture, these studs should be considered acceptable, and left in the bent condition. Studs failing this test should be replaced.

(d) The first and last stud on every beam shall be tested as a minimum requirement by bending to an angle of 15^{o} towards the nearest end. If one or more of the studs fails, a further 5% with a minimum of 2 shall be tested and if no further studs fail, the remainder of the studs shall be accepted. If further studs fail, the studs over the entire beam length shall be replaced and tested again, and studs failing during testing shall be replaced. Also allow for 100% ring tests.

B.3 (a) The decking shall be laid butt fitted longitudinally and have the shear connectors welded in a suitable pattern, i.e. one per valley on each sheet or staggered, as specified on the Engineer's drawings. The decking shall have sufficient temporary fixings to ensure the correct operation of the stud welding equipment.

(b) The spacing of the shear connectors across the metal decking will generally be governed to a maximum of one shear connector per valley. The minimum centre to centre spacing of stud connections in the above transverse axis, along the composite beam, should be not less than 6 stud diameters. The connectors shall further be welded, wherever possible, directly over the web of the composite beam. If studs are to be welded to the flange, the diameter shall be no greater than 2½ times the flange thickness. The spacing of these studs from the edge of the beam towards the web should also be approximately 2½ times the stud diameter.

(c) All spacing of the shear connectors shall comply with the shear stud manufacturer's requirements.

B.4 (a) The flange of the beam to be welded shall be unpainted and free of rust and mill scale, dirt, sand and/or other materials detrimental to welding. The top flange shall be cleaned as necessary prior to laying the metal decking, to ensure that the shear connector can be welded satisfactorily.

(b) Decking materials shall also be free of materials - listed above - which are detrimental to welding. Any water on the deck or beams must be removed before welding.

(c) Decking shall be laid in dry weather just ahead of the stud welding team. In wet weather, cover must be provided and the conditions for water, above, rigidly observed.

(N.B. It may be possible to lay additional decking overhead to provide weather protection).

(d) The decking must fit tightly to the beam where a shear connector is to be welded - no air gaps must be permitted.