

APPENDIX 2

Services

(Schedule 3)

The scope of works comprises civil and structural engineering services and advice in relation to the Development.

The Consultant shall provide structural engineering services to the Development comprising the following:

Scope of Structural works				
Description	Category			
	A	B	C	D
Pile loads and layout	X			
Enabling work, (excavation, fill and blinding but excluding other temporary works).	X			
Primary steelwork (framing plans and details) including steel to concrete connections.	X			
Floor vibration to verify structural serviceability performance	X			
Wind posts for cladding and wall/partition systems			X	
Secondary steelwork balconies	X			
Secondary steelwork:			X	
1. Masonry support systems				
2. Metsec (or similar) frame				
3. Access Ladders/ Walkways				
4. Builders work/ Supports to services				
5. Lift equipment/ guiderails and lifting beams				
6. Glazing design including windows, full height openings, roof lights and fixing to primary structure.				
7. Cladding including all fixings and framework required to connect it into the primary structure (primary structure is dictated as that shown on the structural drawings).				
8. Louvre design and fixings back to primary structure				
9. Balustrade and handrails				
Loadbearing masonry, (including masonry panels subjected to wind loading).	X			

Substructure work including foundations	X			
Pile design			X	
Superstructure floor/roof slab			X	
RC bunds and upstands (where part of primary structure)			X	
RC bases for plant and equipment (typical details only)			X	
Corrosion protection of structural steelwork, (level of corrosion protection specified by consultant, galvanising/paint).			X	
Structural Stability of adjacent buildings impacted by the Development works	X			
Steel staircases and landings			X	
Metal decking			X	
Steelwork connections (steel to steel)			X	
Pre-cast concrete elements			X	
Fire protection of structural steelwork				X
Builders work (sleeves, holes, openings, trimmers)				X
Temporary openings in structure and temporary works generally				X
Concrete finishes (location to be shown on structural plans)				X
Cladding systems, including secondary framing, where connected with primary structure			X	
Non loadbearing brickwork/blockwork walls and partitions				X
Temporary works associated or in connection with the structure				X
Geotechnical design				X
Drainage	X			

- A: Works for which the Consultant shall provide a full design service, including preparation of detailed working drawings, schedules and specifications for construction, plus checking and commenting on trade contractors' drawings as appropriate.
- B: As category A, but reinforced concrete detailing.
- C: Works designed and detailed by any trade contractor, specialist contractor or supplier, for which the Consultant shall provide structural design criteria and performance requirements, the Consultant shall check the design for compliance and shall integrate the design into the structural work where necessary.
- D: Works designed by others. The Consultant shall design relevant permanent works to suit and assist in co-ordinating the design with the structural works. The Consultant shall also (if required)

review and comment on the design basis proposed by other consultants but shall not carry out detailed reviews or checks on drawings or calculations.

General

- Provide all other services relating to the civil and structural engineering services incidental to the foregoing provisions of this Schedule 3 as may reasonably be required.
- Sequence of events – the project stages described above are intended for general guidance only. The actual sequence and timing of activities will be as required to meet the required programme.
- Attend all required client meetings, project meetings, design team meetings and site meetings
- Provide a design programme for the structural elements to the architect/lead consultant, for incorporation in an integrated design programme to reflect the requirements of the master programme prepared by the Project Manager and (programme to include review points, deliveries, milestones, drawing production and design freeze date) and report on progress.
- Provide all required information for and assistance in the liaison and negotiation with planning authorities, building control authorities, fire authorities and statutory undertakings.
- Provide the Project Manager with any drawings and specification relating to the architectural information as may be required to secure the agreement of any relevant party wall award(s) and other third party agreements

Appraisal Stage (Stage A)

- Seek the development brief and instructions from the Client describing his requirements in respect of the structural works, what they are intended to achieve, their cost and programme. Carry out studies to determine the feasibility of the development brief.
- Discuss with the Client the likely requirements for site staff; these shall be considered again prior to and following the appointment of the Contractor.
- Visit the Site and carry out an initial appraisal.
- Obtain from the lead consultant/Architect and/or representatives/consultants and/or statutory undertakers information on ownership of the Site, any existing building on the Site, boundaries, any known easements, underground services, rights of way, rights of support and other relevant matters.
- Study data and information relating to the Site or the Development which are reasonably accessible to the Consultant.
- Consult with local authorities on matters of principle in connection with the structural works.
- If relevant, carry out a survey of and report upon any existing services, or make recommendations for any special investigations or surveys which may be necessary.
- Participate in the preparation of an outline programme for design and construction, taking account of the proposed contract procedures.

Strategic Briefing Stage (Stage B)

- Outline the effects or limitations of the Site on the structural works caused by the topography and any reasonably identifiable previous uses thereof and the presence or possible presence of contaminants as a result of such uses where such matters are apparent from the documents.
- Advise the Architect and Project Manager on any limitations on road and public transport access to the site, both during the construction of the structural works and on completion which may affect design options.
- Obtain such information as is reasonably available from documents on the existence and extent of public services such as water, gas, electricity, sewerage and telecommunications services and comment to the Client on any effect that these may have on the structural works, both during construction of the structural works and on completion.
- Carry out and report upon a full Site inspection/Site survey of any existing structures and undertake, or make recommendations for any special structural investigations or condition surveys which may be necessary. Oversee and supervise investigation works and report on their findings and incorporation into design proposals.
- Comment to the Architect and Project Manager on any physical site restrictions which may affect the engineering options for the structural works.
- Collaborate with the Architect and other consultants in making initial recommendations to the Client on the technical viability of the structural works.
- Recommend to the lead consultant/Architect and Project Manager any necessary remediation works required on the Site and/or any necessary protection measures required in the building specification consequential on any contamination investigations and/or reports.

Outline Proposals Stage (Stage C)

- Collaborate with the Architect and other consultants in investigating the available range of options affecting the built form, including building size and shape and sub-division and construction standards, including floor load capacities, column to column spans, insulation, fire protection and structural materials.
- Consider the Client's requirements and recommend the most suitable solutions for the structural works, with options, including comparative comments as to costs and time considerations. Agree with the Client and the other consultants the preferred outline design solution and provide any specification, drawings or other documentation necessary to illustrate the outline design proposals.
- Make all necessary enquiries into the previous uses of the Site and adjacent land and for this purpose examine old ordnance survey maps and other accessible and relevant historical records. Advise as to the need for geotechnical and environmental investigations.
- Visit the Site and study data and information relating to the Development and relevant to the structural works which are reasonably accessible to the Consultant, and consider reports relating to the structural works which have either been prepared by the Consultant or have been prepared by others and made available to the Consultant by the Client.

- Advise the lead consultant/Architect and Project Manager on the need for arrangements to be made for and define the extent of topographical and dimensional surveys of the Site, surveys to obtain details of construction in existence on or adjacent to the site, special investigations or model tests.
- Prepare a specification for the carrying out of appropriate geo-technical and environmental investigations. As instructed by the Project Manager either carry out or as agents of the Client arrange for others to carry out the required geo-technical and environmental investigations including administer and supervise any such contracts for site investigations works. Report and advise on the result of such site investigations and make recommendations as to foundation design and/or appropriate ground treatment/remediation to cater for any environmental contamination.
- Consult local or other authorities about matters of principle in connection with the design of the structural works.
- Consider alternative outline solutions for the structural works.
- Provide information for and assistance in the liaison and negotiation with planning authorities, building control authorities, fire authorities and statutory undertakings.
- Develop the development brief into a full brief for the structural works in consultation with the Architect and Project Manager, and the other consultants. Such brief shall describe the Client's requirements in respect of the services and both the Client and the Consultant shall work to the brief. Comment on any restrictions the brief may impose on any future use of the Structural works suggested by the Client.
- Provide sufficient preliminary information in relation to the structural works in the form of advice, sketch drawings, reports or outline specifications to enable the other consultants to prepare the outline cost plan of the design scheme for the Development.
- In conjunction with the Architect and other consultants submit a report to the Project Manager in relation to the above matters.
- Provide required assistance and input for the 1st stage tender process

Detailed Proposals Stage (Stage D)

- Complete the development of the development brief and the design of the detailed proposals for the structural works in collaboration with the other consultants. In developing the scheme design consider and advise in conjunction with the other consultants as to such issues as gross and net lettable area, floor loadings, location and size of columns, fire protection, thermal, air-tightness, walls, foundations, bracing, stairs and other structural relevant considerations.
- Prepare outline specifications for structural materials, forms of construction and constructional standards.
- Obtain from and discuss with the other consultants, their proposals, designs and outline specifications as to mechanical and electrical and architectural elements and requirements. Co-ordinate these requirements with the design of the overall Development. Prepare and provide such representative sketches, drawings, specifications and/or calculations in respect of the Structural works as are necessary to the other consultants and to enable the Consultant or any other consultant to prepare cost estimates/cost plans.

- Consider issues as to life cycle costs, including costs in use, maintenance and renewal requirements.
- If instructed and with the other consultants make changes to the scheme design and advise the Client of the implications of any such changes on the cost of the Development and on the development programme. If necessary revise the designs and scheme design report to meet the requirements of the planning, highways or other regulatory authorities.
- In conjunction with the other consultants, prepare a report and cost plan in respect of the final scheme design, illustrating the scheme in scale plans, sections, elevations and specifications in sufficient detail to enable the Client to approve the scheme design, spatial arrangements, materials and appearance and reporting as to all the above issues required to be dealt with under this work stage.
- Liaise, as necessary, with the other consultants to agree a programme for the whole design and construction of the structural works and in accordance with the master programme.
- Collaborate with the other consultants to prepare the detailed proposals for presentation to the Client. Obtain Client approval to the detailed proposals, showing spatial arrangements, materials and appearance, and a cost estimate. Draw the Client's attention to any significant differences from the previously agreed requirements for the Development.

Detailed Design Proposals Stage (Stage E)

- Develop the design of the structural works in collaboration with the other consultants and prepare sufficient calculations, schedules and specifications to enable the consultant and any other consultants to prepare the final proposals for incorporation into the Client's requirements and the tender documentation.
- Assist the Architect in co-ordinating the design of the structural works into the overall design.
- Integrate into the design of the structural works any requirements of specialist sub-contractors, if any.
- Collaborate with the Architect and the other consultants to prepare the final proposals for presentation to the Client, drawing attention to any significant difference from the previously agreed requirements for the structural works.

Production Information Stage/Client's Requirements (Stage F)

- Develop sufficient structural design and specifications from the approved scheme design to enable the quantity surveyor to compile an employer's requirements document. Ensure that the structural designs are developed in a manner compatible with the mechanical and electrical and architectural design. Review and incorporate the designs of the other consultants. Prepare in sufficient detail to enable potential contractors to tender all the necessary detailed design drawings, calculations, schedules and specifications for the structural works to be incorporated into the employer's requirements and tender documentation.
- Prepare such calculations and details relating to the structural works as may be required for submission to any appropriate statutory authority including the co-ordination of such information for the structural works submitted by the Client, other consultants, specialist suppliers and/or sub-contractors as is available which may need to be included in such submissions and the employer's requirements.
- Provide sufficient information to the other consultants to enable them to co-ordinate their designs and dimensions with the requirements of the structural designs and to enable an accurate cost plan for the Development to be produced.
- Carry out any re-design work the Client may request or as may be necessary to bring the estimated cost of the Development within an acceptable budget and the approved cost plan.
- Assist in the preparation of a timetable for construction.
- Prepare and provide to the principal designer such information as may be required relating to the general and architectural matters for inclusion in the construction phase plan.

Tender Documentation and Tender Action Stage (Stages G and H)

- Advise as to the tendering process.
- Assist in compiling a list of tenderers. Invite and appraise a tender or tenders, including consider with the Project Manager and other consultants a tenderer or a list of tenderers for the Project and the appointment of the Contractor and the responsibilities of all the other parties.
- Provide all the necessary design information in relation to the structural works to the required level of detail as agreed with the Project Manager for incorporation into the employer's requirements all in sufficient detail to enable potential contractors to prepare their tender submission. Advise on the need for any special conditions of contract relevant to the structural works and invitations to tender for the structural works. Assist to assemble the tender documentation and to issue it to firms selected to tender.
- Where applicable pass final information to the principal designer for the pre-tender construction phase plan.
- Provide information to the quantity surveyor for preparation of the pre-tender cost estimate and tender pricing document.
- Assist in reviewing tender documentation. Assist the other consultants in advising the Client as to the relative merits of tenders, prices and estimates received for execution of all or part of the structural works and providing a report on the tenders.
- Assist in the negotiations with tenderers relating to the structural design during either single or two stage tender process.
- Assist the other consultants in negotiating prices and contractual matters with contractors.

- Revise the structural design for any of the tenderers as may be required to adjust the tender sum.
- Advise the Project Manager on the need for any special conditions of contract relevant to the Development and invitations to tender and on the finalisation of formal contract documents.
- Advise the Client as to the suitability for carrying out the structural works of persons and firms to be invited to tender for any contract involving the construction, supply and/or installation of all or part of the structural works.

Construction and Completion Stage (RIBA Stages J, K, L)

- Advise on the finalisation of formal contract documents relating to accepted tenders for carrying out the works or any part thereof.
- Examine detailed designs, shop fabrication drawings, standard details, bar bending schedules and specifications submitted by contractors and sub-contractors for the works or parts thereof, in respect of conformity with the consultant's design and in particular in respect of general dimensions, structural adequacy of members and connections and compliance with performance criteria.
- Advise on the need for special inspections or tests arising during the construction of the Development.
- Advise on the appointment and duties of site staff, if required and agree scope of services.
- Assist in examining contractors' and/or sub-contractors' proposals as may be required by contracts for the works submitted by contractors and/or sub-contractors.
- Attend relevant site meetings and make other periodic visits to the site as appropriate to the stage of construction or as otherwise agreed to assist in monitoring that the Development is being executed generally in accordance with the contract documents and with good engineering practice and advise on the need for instructions to contractors (not site resident engineer).
- Examine any designs carried out by a contractor or sub-contractor on the basis of a performance specification for general compliance with the specification.
- Provide technical advice on certificates for payment to works contractors in respect of the works and provide technical information to any other consultants to enable accounts for the works to be agreed.
- Perform any services which the Consultant may be so required to do under any contract for the execution of the Development including where appropriate the witnessing of any specified tests
- Inspect the Development on completion and, in conjunction with any site staff, record any defects.
- On completion of the Development provide copy of each of the final drawings supplied by the Consultant to contractors for the purpose of constructing the Development.
- Receive and comment on copies of record drawings, operating instructions and maintenance manuals prepared by contractors or sub-contractors if so required under their contracts for construction.