

CIVIL AND STRUCTURAL SPECIFICATION

MEENREAGH BRIDGES REHABILITATION, KILLYGORDON, CO.
DONEGAL

DONEGAL COUNTY COUNCIL

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QUALITY CHECK SHEET

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GENERAL CIVIL AND STRUCTURAL CLAUSES

1 GENERAL REQUIREMENTS

1.1 CONTRACT DOCUMENTS

These Clauses shall be read in conjunction with the General Contract Preliminaries and all other Contract documents.

1.2 NAME OF CONTRACT

Unless stipulated otherwise by the lead agent (i.e. Architect), this contract shall be known as:

Meenreagh Bridges Rehabilitation, Killygordon, Co. Donegal

1.3 ABBREVIATIONS AND DEFINITIONS

1.3.1 ABBREVIATIONS

The following abbreviations, words and phrases shall have the following meanings:

BS	British Standard
CPR	Construction Products Regulation
EC	Eurocode
EN	European
ETA	European Technical Assessment
IEE	Institute of Electrical Engineers
IS	Irish Standard
ITM	Irish Transverse Mercator
ITT	Invitation to Tenderers
NCDWC	National Construction and Demolition Waste Council
NCDWC	National Construction and Demolition Waste Council
NHA	National Heritage Area
NSAI	National Standards Authority of Ireland
PSCS	Project Supervisor for the Construction Stage
PSDP	Project Supervisor for the Design Process
QMS	Quality Management System
SAC	Special Area of Conservation
SPA	Special Protection Area

1.3.2 DEFINITIONS

The Works	The whole of the Works envisaged by this Contract, including the works of nominated Sub-contractors or Suppliers, Local Authority and Public Undertakings unless specifically stated otherwise.
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The Work	That part of the Works dependent upon or subsequent to the statement.
'Submitted' or 'Submit'	Submitted to or submit to the Contract Administrator
Directed / Inspected	Directed/ inspected by the Contract Administrator
'Contract Administrator'	Equivalent to 'Employer's Representative' for any projects using the Public Works contracts in Ireland.

'Agreement', or 'acceptance', by or of the Contract Administrator shall have the following limitations:

- a) When given in respect to samples of materials, workmanship or methods of construction submitted in accordance with the requirements of the Specification, shall not be interpreted as denoting any degree of satisfaction with the materials used in, or the execution of the Works.
- b) When given in respect of Shop Drawings, documents, or schemes called for by the Specification or proposed by the Contractor is only for conformance with the design concept and design information given in the Contract Documents or contained in subsequent Contract Administrator's Instructions.

1.4 SUBMISSION COMMENT DEFINITIONS

Comment A	On the basis that the Contractor is confirming that all aspects of this submittal are in full conformance with the Project Specifications and Tender or subsequently issued revisions, LCE has no specific comments that require verification prior to the Contractor proceeding with purchase; fabrication; manufacture; installation or construction of the relevant items in this Technical Submittal.
Comment B	LCE has requested some confirmation regarding this Technical Submittal. Upon confirmation of these queries and on the basis that the Contractor is confirming that all aspects of this submittal are in full conformance with the Project Specifications and Tender or subsequently issued, revisions, LCE has no further comments that require verification prior to the Contractor proceeding with purchase; fabrication; manufacture; installation or construction of the relevant items in this Technical Submittal.
Comment C	LCE requests a resubmittal of this Technical Submittal which is to address the issues raised regarding compliance with the Project Specifications and Tender or subsequent issue, drawings.

1.5 RESPONSIBILITY

Any agreement or acceptance by the Contract Administrator shall have no effect unless given in writing. No such agreement or acceptance shall in anyway relieve or diminish the obligations of the Contractor under the Contract.

1.6 SITE VISIT

The Contractor will be deemed to have inspected the Site and its surroundings before Tendering and to have made itself thoroughly acquainted with the conditions under which it will work, nature of ground and water conditions, the construction fabric of the existing buildings, all local and existing conditions, means of access/egress, parking and unloading regulations, working and storage space, facilities generally, and all other matters which might affect its Tender, Programme or methods of carrying out the Works.

Arrangements for any site visit should be made as per the Instruction to Tenderer (ITT).

1.7 STANDARDS AND CODES OF PRACTICE

Any Standard or Code of Practice referred to in the Contract, or any other Standard or Code of Practice that may be substituted therefore, shall be held to be the latest edition, including all amendments, as published one month prior to the last date for submission of Tenders.

Where items to an Irish Standards Specification (IS) or British Standards Specification (BS), or any other Standard Specification of a Member State of the European Community are called for, this requirement shall be read as including items to a relevant national standard of any Member State of the European Community, which provides an equivalent guarantee of safety and suitability.

Design loads shall comply with appropriate Irish Standard where they exist, unless otherwise stated. Where an Irish or British Standard or Code of Practice quoted in this document has been amended or superseded, the current edition or superseding document shall apply.

The following is a non-exhaustive list of the Irish, British and European Standards and Codes of Practice that are relevant and shall be complied with.

- IS EN 1990 Eurocode 0: Basis of Structural Design
- IS EN 1991 Eurocode 1: Actions on Structures
- IS EN 1992 Eurocode 2: Concrete
- IS EN 1993 Eurocode 3: Steel
- IS EN 1994 Eurocode 4: Composite
- IS EN 1995 Eurocode 5: Timber
- IS EN 1996 Eurocode 6: Masonry
- IS EN 1997 Eurocode 7: Geotechnical Design
- IS EN 1999 Eurocode 9: Aluminium

Where materials, products and workmanship are not fully specified, the Contractor shall ensure those utilised within the Works are:

- the best quality and suitable for the purpose of the Works stated in, or reasonably to be inferred from, the Contract Documents; and
- in accordance with good engineering practice.

1.8 CONTRACTOR'S SUBMITTALS

Where information is to be submitted under the requirements of these Clauses the submittal shall be made not less than four weeks before the related work begins.

1.9 STATUTORY UNDERTAKERS AND AUTHORITIES

The Contractor shall be responsible for making all arrangements with and coordinating the activities of, the appropriate statutory undertakers to include Local Authority, An Garda Síochána, Emergency Services, utility and telecommunications providers. The Contractor shall ascertain the requirements of the Local Authority and comply with them, particularly as regards working hours, control of noise, vibration, dirt, debris and access/egress from the Site. The Contractor shall comply with requirements of An Garda Síochána and Local Authority concerning traffic movement, parking of vehicles, cranes, rubbish skips in the vicinity of the Site.

The Contractor is to provide traffic signs, road markings, lamps, barriers and traffic control signals and any other such measures for the execution of the Works. Any relaxation the Contractor seeks to these requirements from the Local Authority shall also be notified to the Engineer and submitted for approval.

Refer to the requirements as set out in section 4 of this Specification.

1.10 SI UNITS

The International System of Units (SI) shall be used for all designs, specifications and drawings.

1.11 CHECK ALL DIMENSIONS AND LEVELS

The Contractor shall check all dimensions and levels, both on drawings and site, particularly the correlation between components and the work in place. Materials and components shall not be ordered or work carried out until any discrepancies have been resolved with the Contract Administrator.

2 THE SITE

2.1 DESCRIPTION OF THE SITE

This site is located at:

See site layout drawings.

This site is shown on the following drawings:

See site layout drawings.

The drawings show adjacent buildings and the approximate known positions of any known underground hazards.

2.2 WORKING HOURS

Standard working hours shall be as follows unless otherwise agreed with the Client:

Monday-Friday: 8.00am to 6.00pm.

Saturday: 9.00am to 4.00pm.

No works shall be allowed on Sundays.

2.3 WEATHER RESTRICTIONS

Standard working weather restrictions shall be as follows unless agreed with the Client:

No works shall be allowed during Orange and Red Met Eireann weather warnings.

2.4 ADJACENT BUILDINGS/ PROPERTIES

Part of the existing adjacent properties will remain live during the Works. The Works shall be constructed in a manner that causes no impact on the structure or service of adjacent properties.

The Contractor shall take precautions to safeguard the existing properties against any movement, settlement or collapse of any existing structures, walls, retaining walls, sidewalls, diaphragm walls, streets, passages, existing footings, etc. If at any time the safety of the existing properties appears to be endangered, the Contractor shall cease all operations on site and take necessary precautions to support such properties and notify the Contract Administrator, the PSDP (Project Supervisor Design Process) and the PSCS (Project Supervisor Construction Stage) immediately. No work shall be resumed without Contract Administrator, PSDP's, and the PSCS written permission.

2.5 ACCESS/ EGRESS

The Contractor shall ascertain the means of access/ egress to the Site as necessary for the execution of the Works and allow for all associated necessary restrictions and costs that may be incurred, including but not limited to, the requirements of any statutory undertaking.

The Contractor shall provide, maintain, alter and remove as required all necessary temporary structures and facilities for access to the Site for the execution of the Works.

The Contractor shall ensure that no damage is caused to surrounding roads and utilities during the undertaking of the Contract and ensure repairs are undertaken under the supervision or direction of the Local Authority.

2.6 PROTECTION OF THE SITE

2.6.1 PROTECTIVE BARRIERS

Fencing or hoardings shall be provided around the perimeter of the Site. The fencing, hoarding and access shall be designed by a competent designer and shall be suitable for their environment.

The external hoardings and walkways shall be maintained in good condition during the whole contract period. The external hoardings and walkways shall not obstruct any drainage, surface water channel or traffic signs, signals or lights.

The external hoarding and walkways shall be painted with two coats of approved synthetic paint of colour to be specified, any logo and lettering as shown on drawings/details shall be provided by competent graphics painters and calligraphers.

2.6.2 SECURITY

The Contractor is responsible for the security of the Site. It shall adequately safeguard the Site, the Works, products, materials arising, plant and any existing buildings affected by the Works from damage, theft and trespass. The Contractor shall take all reasonable precautions to prevent unauthorised access to the Site, the Works and adjoining property.

The entire site is to be securely fenced-off for the duration of the Works. The Contractor's attention is drawn to ensure that the Site is secure from unauthorised access from young people outside normal working hours and in particular young children being able to pass under a fence/hoarding or access to climb a mobile crane.

The Contractor shall make the Site safe on completion. Duplicate keys of any locks installed for this purpose shall be handed to the Contract Administrator on completion.

2.7 EXPECTED SITE CONDITIONS

2.7.1 SITE INVESTIGATION

No intrusive Site investigations were carried out as part of this scope of works. Please refer to the 'Items for Information' for site images.

2.7.2 ARCHAEOLOGY

Refer to the tender documents for any archaeological requirements.

2.7.3 EXISTING SERVICES

Existing underground services cannot be located accurately in advance of the Works. The Contractor shall locate and identify all underground and overhead services prior to the Works. The Contractor shall verify with the Public and Statutory Authorities and others the extent and location of all their buried, surface and above ground services which may be affected by the Works.

The Works shall not cause damage to services outside the Site boundary or the services needed to be maintained inside the Site boundary. The Contractor shall ensure that all existing services that are redundant are properly identified, capped off, isolated and rendered harmless before work commences.

The Contractor shall be responsible for the necessary diversion of services and shall submit details for approval before the commencement of the work.

Where services are shown on the contract drawings, these are based on the available record data and are provided without warranty as to their accuracy.

The positions, details and sizes of all existing services contained within the Site are to be recorded and supplied to the Engineer. The Contractor shall replace marker tapes or protective covers disturbed by site operations to the service authority's recommendations.

The Contractor shall account for proceeding in such a manner that the Works shall be constructed without interference with existing services, unless the Contractor is specifically ordered to interfere with them under the terms of the Contract or by direction of the Engineer. A minimum of two weeks' notice shall be given to each private or public services authority in advance of the Works.

2.7.4 SITE CONDITIONS

The Contractor shall immediately notify the Contract Administrator should conditions encountered on-site be significantly different from those generally described in the Contract Documents.

2.8 ELECTRICITY DISTRIBUTION ON THE SITE

All electrical installations forming part of the Temporary Works shall comply with the relevant provisions of the "Regulations for Electrical Installations" (IEE Wiring Regulations - 16th Edition), published by the Institution of Electrical Engineers, with the ESB Regulations and with the ETCI Regulations.

3 THE WORKS

3.1 DRAWINGS

The drawings show the layout, principal dimensions, arrangement and details of the structure, the requirements of which are further detailed in this specification. The Works are designed for the permanent condition only, unless noted otherwise on the drawings or in this document. Any effect of the Contractor's construction sequence on the design of the structure should be assessed by the Contractor prior to works commencing.

3.2 DESCRIPTION OF THE STRUCTURAL WORKS

3.2.1 FOUNDATIONS

The foundations shall be as detailed on the Drawings.

3.2.2 SUPERSTRUCTURE

The superstructure shall be as detailed on the Drawings.

3.2.3 STABILITY

The stability is provided primarily by the foundations and robust reinforced concrete structures.

3.2.4 MOVEMENTS AND TOLERANCES

For details of the theoretical movements of the structure and additional information on the tolerances within which the structure is to be constructed, reference should be made to requirements set out in section 6.3.

3.3 DESCRIPTION OF STRUCTURAL ITEMS TO BE DESIGNED BY THE CONTRACTOR

3.3.1 GENERAL

Proprietary or standard types of structural units, components or assemblies to be incorporated in the Works are listed in the following clauses together with, where appropriate, the manufacturer or supplier, unit type or code, characteristic imposed load for the design and any other requirements.

Where the Contractor has a choice of the type or supplier of the structural units, components, or assemblies, they shall submit their proposals for comment.

Unless otherwise specified or shown on the drawings the methods of building in or fixing shall be in accordance with the manufacturer's instructions.

Where the Contractor proposes to use an alternative system or element then the Contractor shall be responsible for all the costs associated with proposed change, including knock-on changes on other disciplines, design, drafting and re-drafting, verification and any other specific requirement for the full delivery of such systems or elements.

The Contractor's attention is drawn to the requirements for provision of details and documentation in respect of the following Works, components, or assemblies:

- As detailed in appendix 1/11 of the specification document [SP1021].

Further Contractor designed elements may be listed on the Drawings.

The documentation to be submitted to the Contract Administrator for comment shall include all necessary design calculations (in English), detailed drawings, method statements and material certificates, all four weeks prior to the work being undertaken.

3.3.2 ELEMENTS TO BE DESIGNED BY THE CONTRACTOR

All elements listed in Appendix 1/11 of the specification SP1021 are to be designed by the Contractor in accordance with the requirements set out in same appendices. The Contractor is responsible for all Temporary Works and should ensure that the Works are designed by a suitable competent Engineer. The Temporary Works Designer shall comply with the requirements of section 0 of this specification.

The Contractor or approved Sub-contractor shall undertake the design, fabrication, installation and construction of the components detailed in section 3.3.1 and on the Drawings.

The Contractor is responsible for the programming and co-ordination of all the elements to be designed by the Contractor, noting that, the final design of the elements of the primary structure are dependent on the timely supply of design information by the Contractor.

The design shall be carried out by a Chartered Engineer, or under the direct supervision of a Chartered Engineer. The designer shall complete Ancillary Certificates as per section 3.5 of this Specification, which shall be signed by a Chartered Engineer.

Where the elements are designed by the Contractor or approved Subcontractor, the Contractor shall have in place appropriate designer's professional indemnity insurance cover and provide a collateral warranty for those elements.

3.4 LOADING ASSUMPTIONS

Unless otherwise indicated the Works have been designed for the finished state, and the loads assumed in the design are given below.

To calculate permanent loading, please refer to relevant Architectural and Engineering drawings, using Eurocode to calculate appropriate values.

The characteristic variable loads assumed in the design are:

- The bridge structure has been designed in accordance with the Eurocodes, specifically I.S. EN 1990 (Basis of structural design), I.S. EN 1991-2 (Traffic loads on bridges), and I.S. EN 1992-2 (Design of concrete bridges), each including the Irish National Annex.
- The basic wind speed is as per the Site location in accordance with IS EN 1991-1-4 including the Irish National Annex. The relevant characteristic structural design wind load is to be determined using the most appropriate coefficients from IS EN 1991-1-4 including the Irish National Annex and BS 6399: Part 2.
- Snow loading is based on IS EN 1991-1-3 including the Irish National Annex.
- Floor loading is as per IS EN 1991-1-1 including the Irish National Annex.
- Retaining wall surcharge loading shall be as per CIRIA C516. A minimum of 10kN/m² shall be applied.

3.5 BUILDING REGULATIONS

To meet the obligations of the Building Control Regulations 2014, the Contractor is required to complete Ancillary Design Certificates for all elements of their design in the ACEI format. The Contractor shall carry out the Works in accordance with the plans and Specifications of the design team, their specialists and

subconsultants as necessary and have regard to these in accordance with the requirements of the Buildings Regulations. Refer to Code of Practice for Inspecting and Certifying buildings and Works.

3.6 FIRE REGULATION

The works shall be carried out in compliance with the project fire certification and fire requirements. All residential works shall comply with the Technical Guidance Documents (TGD) with respect to fire, in particular Guidance to TGD B (Fire Safety) Volume 2- Dwelling Houses 2017, Guidance on Fire Resistance of Walls, Intermediate Floors, and Trussed Roofs in dwellings.

The fire resistance of all load bearing elements must be proven by test to the European Test method EN 1365.

3.7 ENVIRONMENTAL AND WASTE MANAGEMENT REQUIREMENTS

In addition to all project environmental requirements and statutory environmental requirements, the following environmental requirements shall be adhered to by the Contractor.

All areas occupied by the Contractor shall be kept clean, tidy and drained at all times and remain safe for access of all personnel, site equipment and vehicles as required. Materials shall be stored in an orderly manner.

All reasonable precautions to prevent pollution of the Site, works and the general environment including streams and waterways are to be taken. If pollution occurs, the appropriate authorities and the Contract Administrator shall be notified without delay.

All waste is to be segregated and managed in accordance with the principles of the waste hierarchy i.e. prevention, re-use, recycling, energy recovery and disposal.

A waste disposal plan following guidelines as set out by the National Construction and Demolition Waste Council (NCDWC) shall be produced outlining the Contractor's proposals with respect to waste recycling, segregation and details of landfill proposals with target percentage of each element. The Contractor is to highlight/seek approval for any mobile recycling plant and/or stockpiling proposals. The following legislation should be noted:

- Environmental Protection Agency Acts 1992 and 2003.
- Waste Management Acts 1996 to 2003 as amended.
- Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste.
- Council Directive 2008/98/EC on waste (Waste Framework Directive).
- EU Council Decision on Waste Acceptance (2003/33/EC).
- Best Practice Guidelines on the preparation of Waste Management Plans for Construction and Demolition Waste.
- Department of Environment, Heritage and Local Government July 2006.

Waste removal from site shall be in accordance with the Waste Management (Collection Permit) Regulations, S.I. No. 820 of 2007 and amending regulations, the Waste Management (Collection Permit) (Amendment) Regulations, S.I. No. 87 of 2008.

3.8 DISPOSAL OF WATER

The Contractor shall ensure the Works are free from water where it may be detrimental to the Works. The Contractor shall obtain all necessary approvals/ consents from the Local Authority, Water Authority and any other interested parties to its proposals for disposal of water from the Works. Disposal shall comply with the requirements as set out in section 3.7.

3.9 INFECTED TIMBER

Where timber affected by fungal / insect attack is to be removed from the building, the Contractor shall minimise the risk of infecting other parts of the building during the removal.

3.10 ALTERATIONS TO EXISTING STRUCTURES OR SERVICES

The Contractor shall make all necessary arrangements for and pay all costs in connection with, the removal, alteration or demolition of existing structures or services for the purpose of carrying out the Contract, whether special items are provided in the Bill of Quantities for this purpose or not. In addition:

- All Temporary Works/ demolition works designs shall be the responsibility of the Contractor.
- A detailed method statement for the related construction work shall be prepared by the Contractor and submitted for review by the Engineer.
- Details of the Contractors competence for the related work, including demolition and diversion of services, together with related insurances shall be submitted to the Contract Administrator for approval in advance of the Works.

3.11 GENERAL REQUIREMENTS FOR MATERIALS FOR USE IN THE WORKS

3.11.1 STANDARDS AND SUBMISSION OF MATERIALS

Where materials are required to comply with European, Irish or other National Standards, specifications or their equivalents, the Contractor shall submit to the Engineer test certificates, furnished by the supplier or manufacturer of the materials, indicating compliance with the relevant specification.

As soon as possible after the Contract has been awarded, the Contractor shall submit to the Engineer for its approval a list of its proposed suppliers and sources of materials required for the execution of the Works.

Where a choice in manufacturer or source of supply is allowed for any particular product or material, the whole quantity required to complete the work shall be of the same type, manufacture and/or source. Names of additional suppliers and sources may be submitted by the Contractor during the execution of the contract, but no source of supply shall be changed without the Engineer's approval.

Products shall be new unless otherwise specified.

3.11.2 SAMPLES

Where approval of products or materials is specified, the Contractor shall submit samples or other evidence of suitability. Samples shall be taken in accordance with the appropriate European, Irish or other National Standard where applicable. Orders shall not be confirmed or materials used until approval has been obtained. Approved samples shall be retained on-site for comparison with products and materials used in the Works and the samples shall be removed when no longer required. The materials subsequently supplied shall conform to the quality of samples which have been approved by the Engineer.

Where samples of finished work are specified, the Contractor shall obtain approval of stated characteristics before proceeding with the Works.

Where requested, for facing bricks, plastering, floor tiles, painting and other in-situ finishes, a sample panel of at least 1m² shall be made.

3.11.3 STORAGE OF MATERIALS

All plans for the storage of materials shall be agreed with the Client in advance of the Works.

Materials and components shall be stored in such a manner as to preserve their quality and condition to the standards required by the contract.

The quantity of materials and components stored on the Site shall be consistent with that necessary for efficient working.

Cement shall be stored in dry, weatherproof buildings with adequate ventilation. Bags of cement shall be stored on wooden slats raised above ground level to allow effective circulation of air.

Where silos are used for the storage of cement, each silo or compartment thereof shall be completely separate and fitted with a filter or an alternative method of dust control. Each filter or dust control system shall be of sufficient size to allow delivery of cement to be maintained at a specified pressure and shall be properly maintained to prevent undue emission of dust and to prevent interference with weighing accuracy by build-up of pressure.

The cement store shall be arranged to allow for the cement to be used in the order in which the consignments are delivered. The Engineer's representative shall be furnished with the means of identifying the several consignments of cement delivered.

3.11.4 HANDLING AND USE OF MATERIALS

Materials and components shall be handled in such a manner as to avoid any damage or contamination and in accordance with all applicable recommendations of the manufacturers.

Unless otherwise described in the Contract, the use, installation, application or fixing of materials and components shall be in accordance with all applicable recommendations of the manufacturers. Where appropriate, the Contractor shall make use of any technical advisory services offered by manufacturers.

Copies of manufacturer's recommendations shall be provided for the Engineer when requested.

3.11.5 WATER

Water for commissioning potable watermains and installations, shall be obtained from a Local Authority supply and be of potable quality.

Water for use in concrete shall comply with "BS EN 1008:2002: Mixing water for concrete. Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete", and the Appendix thereto. It shall be clean, free from turbidity and suspended matter and, if not from the mains potable water supply, shall be certified by a reputable chemist as suitable for its intended purposes.

4 SITE CONTROLS

4.1 GENERAL

The Contractor shall indemnify the Client against all and every claim that may be brought against the Client for any loss and /or damage associated with any item noted in the following sections.

The Contractor shall comply with all regulations concerning the prevention of nuisance arising from noise, vibration, water, smoke, dust, accumulation of rubbish and all other causes. Any statutory considerations or limitations which are more onerous than those laid out elsewhere in this Specification shall take precedence.

The Contractor shall carry out background surveys for noise, vibration and dust prior to commencement of the Works and include for monitoring during the Works.

4.2 CONTROL OF DUST

The techniques adopted for completion of the Works shall minimise the release of dust into atmosphere. Dust generated during the Works shall be mitigated using techniques such as water spraying or similar containment. Water spraying shall not cause nuisance to adjoining landowners or members of the public.

The Contractor shall comply with the all statutory requirements relating to dust suppression, including but not limited to the requirements of the Local Authority Environmental Health Officer and any planning requirements.

Dust levels shall be mitigated below the TA Luft guideline of 350mg/m²/day. Should an exceedance of the TA Luft limit occur during the construction phase, additional mitigation measures shall be implemented by the Contractor.

The Contractor shall undertake dust deposition monitoring at a minimum of two locations in the vicinity of the Site using the Bergerhoff method (German Standard VD 2119, 1972). Results shall be compared to the TA Luft guidelines of 350mg/m²/day.

The Contractor shall provide suitable screens to contain dust resulting from the Works. The screening shall be capable of sustaining wind loads. Any damage to the screening shall be made good at once and the Contractor will be held responsible for any consequence arising out of inadequacies or damage to the screening.

4.3 NOISE AND VIBRATION

4.3.1 NOISE

The Contractor shall obtain the necessary construction noise limits from the relevant Local Authority or as stated in this Contract. The Contractor shall consider this restriction when preparing its Tender.

The noise levels during the Works shall comply with the following requirements:

- BS 5228-1: 2009 Code of practice for noise and vibration control on construction and open sites. Noise;
- Environmental Protection Agency Act 1992 Sections 106-108;
- Chapter 1 of Part 5 and Schedule 6 to the Safety, Health and Welfare at Work (General Applications relating to the control of noise at work) Regulations 2007 (S.I. No. 299 of 2007) as amended from 12 November 2007 by the Safety, Health and Welfare at Work (General Application) (Amended) Regulations 2007 (S.I. No. 732 of 2007); and
- Local authority specific requirements.

In the absence of more onerous limits arising from these Clauses, the limits as noted in Table 4.1 shall apply.

Table 4.1 Max. permissible noise levels at the façade of dwellings during works

Day and Time	Noise Level (dB)	
	L _{Aeq} (1hr)	L _{pA} (max) slow
Monday to Friday 07.00hrs to 19.00hrs	70	80
Monday to Friday 19.00hrs to 22.00hrs*	60	65
Saturdays 08.00hrs to 16.30hrs	65	75
Sundays & Bank Holidays 08:00hrs to 16:30hrs*	60	65
* Construction activity at these times, other than that required in respect of emergency works, shall require the explicit permission of the Client and relevant Local Authority (BS 5228:2009 Code of Practice for noise and vibration control on construction and open site).		

These limits shall only be modified with the express written agreement of the Contract Administrator. The following measures shall also be implemented:

- Fit all compressors, percussion tools and vehicles with effective silencers of a type recommended by their manufacturers.
- Noise should be minimised, as far as practicable, by the selection of appropriate methods and equipment, and by the use of silencing devices wherever necessary.
- Do not use or permit employees to use radios or other audio equipment in ways or at times which may cause nuisance and cause a Health and Safety risk.
- Measures shall be taken to minimise noise during periods where it will have the greatest effect on neighbouring properties.

4.3.2 VIBRATION

The Contractor shall carry out the Works such that the effect of vibration on the adjoining buildings and surroundings is minimised and does not cause any damage. The Contractor shall refer to this Specification/ Contract for particular vibration limits.

The vibration levels during the Works shall comply with the following requirements:

- BS 5228-2: 2009 Code of practice for noise and vibration control on construction and open sites. Vibration;
- Environmental Protection Agency Act 1992 Sections 106-108;
- Chapter 2 of Part 5 of the Safety, Health and Welfare at Work (General Applications relating to the control of noise at work) Regulations 2007 (S.I. No. 299 of 2007) as amended by the Safety, Health and Welfare at Work (General Application) (Amended) Regulations 2007 (S.I. No. 732 of 2007); and
- Local authority specific requirements.

In the absence of more onerous values the limits set out in table below shall apply. These values shall only be modified with the express written agreement of the Engineer.

Table 4.2 Allowable vibration limits

Frequency Range	Less than 10Hz	10 to 50Hz	50 to 100Hz (and >100Hz)
Allowable vibration (in terms of peak particle vibration) at the closest part of sensitive property to the source	3mm/s	3 to 8mm/s	8 to 100mm/s

4.4 SURFACE WATER MANAGEMENT

All excavations and slopes shall have appropriate surface water management in place to ensure no deterioration of existing soils, slopes, excavations, embankments. Detailed surface water management shall be agreed in writing with the Engineer. No Works shall be allowed to proceed without this agreement in place.

Surface water management shall comply with following standards:

- CIRIA C532D Control of water pollution from construction sites. Guidance for consultants and contractors (C532D)
- SP156 Control of water pollution from construction sites
- CIRIA C648D/ C649/ C649D Control of water pollution from linear construction projects
- CIRIA Report 142 Control of pollution from highway drainage discharges
- CIRIA C753 The SuDS Manual
- CIRIA C698 Site handbook for the construction of SuDS
- CIRIA Protection of River and Canal Banks

Standing water shall be cleared as soon as practicable and treated with an approved product at least once a week or disposed of offsite.

The Contractor shall ensure that there is no hazardous build-up of water and provide for disposal of rainwater from existing structures and all areas occupied during the course of the Works. Any water that is potentially contaminated is to be disposed of appropriately in accordance with the Waste Management Acts 1996-2010 and associated regulations (or latest edition). The Contractor shall ensure compliance with the Local Government (Water Pollution) Acts (1977-1990) and Water Services Act 2007-2013.

Additional environmental controls shall be provided as follows:

The Works are located adjacent to or within an environmentally sensitive area (e.g. SAC, SPA, NHA). The following requirements shall apply:

A Water Quality Management Plan (WQMP) shall be developed by the Contractor project management staff and agreed with the Client and where necessary (as directed by the Client) the EPA, Inland Fisheries Ireland, National Parks & Wildlife Service (NPWS) and the relevant authorities.

The mitigation measures shall include the requirements for best practice and adherence to relevant Irish guidelines, or international guidelines where these are not available. The following is a list of best practice guidance:

- Good practice guidelines on the control of water pollution from construction sites developed by the Construction Industry Research and Information Association (CIRIA, 2001);
- Pollution prevention guidelines in relation to a variety of activities developed by the Environment Agency (EA), the Scottish Environmental Agency (SEPA) and the Northern Ireland Environment Agency (NIEA);
- Environment Agency Pollution Prevention Guidelines (PPG6);
- Fisheries Guidelines for Local Authority Works. Department of Communications, Marine & Natural Resources, Dublin, (Anonymous, 1998);
- Guidelines on protection of fisheries habitats during construction projects (Eastern Regional Fisheries Board, 2006);
- International Convention for the Prevention of Pollution From Ships, 1973, as modified by the Protocol of 1978 (MARPOL) for domestic waste discharges to the environment;

- International Marine Organisation guidelines; and Control of Substances Hazardous to Health (COSHH) Handling of Hazardous Materials.

A Construction Environmental Monitoring Programme shall also be prepared to provide additional safeguards to the receiving environment during the construction phase of the works. The monitoring programme should include the establishment of water quality trigger levels and corresponding actions (including the necessity to temporarily cease construction operations) to safeguard sensitive conservation sites (SPA and SAC) and the operations of other users of the receiving waters.

4.5 TREES, SHRUBS AND GRASSED AREAS

The Contractor shall provide for trees, shrubs and grassed areas as follows:

As outlined on the layout drawings.

The Contractor shall verify with the Contract Administrator if trees are to be removed and shall mark them clearly. Adequate protection to the trees remaining shall be provided. No unauthorised removal of trees is allowed.

If mature trees or shrubs are uprooted, destroyed or damaged beyond a reasonable chance of survival in the original shape as a consequence of the Contractors negligence, the Contractor shall replace with stock of similar type and age and bear the cost arising.

The Contractor shall not dump soil or rubbish, excavate or disturb topsoil, park vehicles or plant, store materials or place temporary accommodation within an area that is the larger of.

- Branch spread of the tree.
- An area with a radius of half the height of the tree measured from the trunk.

The Contractor shall not change the level of the ground within an area 3m beyond the branch spread. The Contractor shall not sever roots exceeding 25mm in diameter. If these are unintentionally severed the Contractor shall give notice to the Contract Administrator.

Tress shall be protected by protective barriers and generally in compliance with physical protection measures to BS 5837.

The Contractor shall maintain the integrity of the protection for the duration of the Works. The Contractor shall remove the protection measures on completion of the Works and make good the disturbed area.

4.6 FIRE AND EXPLOSION

No explosive or other dangerous substance shall be brought onto the Site or used for any purpose.

The Contractor shall take precautions to prevent the risk of fire or explosion caused by gas or vapour. Suitable portable fire suppression systems, including fire extinguishers shall be kept at all times in working areas and areas not protected by other fire services.

Containers of flammable liquids or gases shall be handled in accordance with the recommendations of the Fire Services Department, Local Authority and Statutory Regulations.

4.7 BLASTING

The use of explosives will not be permitted.

4.8 PUBLIC ROADS, PAVING AND FOOTPATHS

No spreading of clay and debris shall be permitted by vehicles leaving the Site. The Contractor shall accept responsibility and account in the Tender for the upkeep of the adjoining roads and footpaths adjacent to the Site and site access. The Contractor shall also ensure traffic and debris from the Site shall not impact the

services under access routes, roads, footpath adjacent to the Site. The Contractor shall make good, to the satisfaction of the Local Authority or other owner or service provider, any related damages.

5 CONSTRUCTION PROGRAMME AND COORDINATION

5.1 PROGRAMME

In advance of commencement of the Works on site, the Contractor shall submit a master programme, showing the intended timing and order for the construction of the Works and highlighting the dates by which any significant items of information will be required from the Contract Administrator. If the Contractor wishes at any time to bring forward any such dates, it shall notify the Contract Administrator:

not less than 4 weeks before the proposed revised dates.

The master programme shall be in the most suitable form for the proper control of the Works and make all necessary allowances for submissions and any other specific requirements of the Specification, including allowances for any standing time and time for work under provisional and contingency sums, which may affect the progress and shall be arranged such that actual progress may be recorded against each item.

The master programme shall be updated and re-submitted to show work completed and any proposed changes to timing and order for the construction of the Works at 2 intervals until the Works are complete.

If requested by the Contract Administrator a more detailed programme is to be made available.

5.2 SEQUENCE OF CONSTRUCTION

The Contractor shall submit, in writing, proposals for the sequence of construction and forming of structural connections before work begins.

Where the proposed sequence affects the design of the permanent works then the Contractor shall provide calculations justifying the design.

Where a sequence of construction is described or shown on the drawings or other schedules the Contractor may, if it so wishes, submit its own proposals not less than 4 weeks before the work begins.

5.3 SUBMISSIONS FOR ACCEPTANCE, OR COMMENT

Where submissions for acceptance or comment are specified, the Contractor shall prepare and submit with its Master Programme a schedule of such submissions, co-ordinated with the Programme and including agreed time allowances for submission and return of any comments before the related work commences.

Shop Drawings, calculations and any other relevant information shall be submitted not less than 4 weeks before manufacture begins.

The Contractor shall check that all Shop and Installation Drawings are complete and co-ordinated. The Contractor shall confirm in writing to the Contract Administrator that this is complete.

5.4 AVAILABILITY OF NAMED GOODS

Within two weeks of the commencement of the Contract the Contractor shall determine the availability of all named goods and materials specified in the Contract Documents and shall notify the Contract Administrator of its findings in writing.

5.5 BULK ORDERING

Bulk orders for materials shall not be placed before any submissions and return of comments required by the Specification for sources and samples have been given, or satisfactory results of any preliminary tests required by the Specification have been submitted.

The Contract Administrator should be made aware of when bulk orders for materials are being made.

5.6 SUB-CONTRACTORS/ SUB-CONSULTANTS/ TRADES

The Contractor shall ensure that specialist sub-contractors/ sub-consultants/ trades responsible for work necessary for the proper execution of the Works are available when required.

The Contractor shall ensure that all and components are available in time for their incorporation in the Works.

5.7 CO-ORDINATION

5.7.1 DRAWINGS

The Contractor shall check all drawings and schedules to ensure in good time that it has sufficient information to carry out the work and that all the instructions, drawings and schedules which it has been provided with give compatible information on the work to be carried out. If the Contractor considers additional details are required, it shall notify the Contract Administrator immediately.

In the event of any discrepancy being found between such drawings and schedules, the Contractor shall notify the Contract Administrator immediately.

5.7.2 HOLES, CHASES, INSERTS AND FITTINGS

The Contractor shall obtain approval for the size and position of any hole, chase, insert or fixing required by itself or any Sub-contractor before the related work begins.

Unless otherwise specified or approved all holes and chases shall be formed and any inserts or fixings shall be built in at the time of construction. No part of the Works shall be cut or drilled without approval. The Contractor shall use an agreed standard form for all requests for such approval.

5.8 COMMENCEMENT OF WORK

No item of work shall be commenced until satisfactory results of any related preliminary tests required by the Specification have been submitted.

5.9 COVERING UP

Where the Contract Administrator has specified notice in advance of any covering-up, no item of work shall be covered up until approval is given by the Contract Administrator.

6 QUALITY ASSURANCE

6.1 QUALITY MANAGEMENT

The Contractor shall utilise a Quality Management System (QMS) to verify that the whole of the Works comply with the requirements of the Contract. The QMS shall be based on IS EN ISO 9000, unless otherwise required in the Contract. Details of the Contractor QMS shall be provided in the Tender.

6.1.1 QUALITY PLAN

The Contractor shall provide a Quality Plan to the Contract Administrator in advance of commencement of the Works. The quality plan shall fully describe the specific practices, resources and activities for the implementation of the quality system on the Contract. The quality plan shall include, but not be limited to, details on the following:

- i. Project organisation and details of the experiences and roles of personnel
- ii. Compliance with QMS
- iii. Document control
- iv. Control of Sub-contractors
- v. Materials certification, storage and handling
- vi. Prefabricated products
- vii. Inspection and Testing
- viii. Submission
- ix. Programme
- x. Sign-off

The Quality Plan and QMS shall be periodically reviewed by the Contractor to ensure its continued effectiveness. Records of the review shall be maintained and made available on request.

6.1.2 ORGANISATION

The Contractor shall allocate to a senior member of management the responsibility and resources necessary for ensuring that the Quality Plan is effective and implemented fully. The Contractor shall provide details, including roles and responsibility of:

- personnel to be involved both on and off site
- sub-contractors
- Health and Safety personnel
- independent inspecting authorities

The Contractor shall ensure that all personnel have appropriate qualifications, experience or training for the tasks allocated to them.

6.1.3 RECORDS

The Contractor shall maintain records to substantiate conformance to the Specification, including materials and work carried out by Sub-contractors, manufacturers, suppliers and independent inspecting authorities. The records shall include:

- Identification of the element, item or batch;
- Material properties;
- The nature and number of observations and tests;
- The number and type of deficiencies found; and
- The details of any corrective action taken or proposed.

Any records which indicate that material or workmanship in any part of the Works does not comply with the specified requirements shall be submitted without delay together with the Contractor's proposals for

rectification. All records shall be retained on site and made available for examination on request. On completion of the Works a copy of all records shall be provided to the Contractor Administrator.

6.1.4 SIGN-OFF

The Contractor shall include and operate a sign-off system as part of the Contract Quality Plan. The sign-off system shall include, but not be limited to:

- reference to the item to be signed off;
- details of the standards/ specification to which the item relates;
- the name and role of the signatory; and
- date.

The sign-off shall confirm that the item is in full compliance with the Contract documents and is ready for inspection by the Client's Representative. The Contractor shall keep a record of all the sign-off sheets and have them available for inspection on request.

6.2 QUALITY CONTROL

6.2.1 CONSTRUCTION MATERIALS AND PREFABRICATED ITEMS

6.2.1.1 GENERAL

Materials shall be provided in accordance with the requirements of the Specification and in compliance with current good practice for their specified location and environment within the Works.

All materials and prefabricated items shall be manufactured and tested in conformance with the specified requirements. When evidence of conformance depends solely on inspections and tests performed by a Sub-contractor, manufacturer, supplier, or independent inspecting authority, the Contractor shall ensure that such evidence is satisfactory and that appropriate records are maintained.

No materials or prefabricated items shall be used in the Works until it has been verified that they comply with the specified requirements.

Where appropriate, all materials and prefabricated items delivered to the Site shall bear the manufacturer's name, brand name, or any other data that may be required to verify the exact nature of the material or item and relate it to the specified requirements.

Where applicable, materials and prefabricated items shall be obtained from suppliers and manufacturers who have been assessed by an independent certification authority accredited by the National Accreditation Council for Certification Bodies.

Where applicable, materials and prefabricated items shall bear the British Standards Institution certification mark, the Irish British Board of Agrément certification mark or other appropriate certification mark.

Transportation, handling and storage of materials and prefabricated items shall be controlled to prevent misuse, damage or deterioration.

The Contractor shall operate procedures for the identification and isolation of materials and prefabricated items that do not comply with the specified requirements.

Works test certificates shall include, whenever applicable, the location in the Works or the delivery or batch which the sample represents. Under the Construction Products Regulation 2011 (CPR), it is mandatory for products covered by a harmonised European Standard (hEN) or European Technical Assessment (ETA) to be CE marked.

6.2.1.2 SAMPLES

The Contractor shall provide all samples required by the Specification for the approval of the Contract Administrator and provide safe storage including racks for the display, reference and inspection of approved samples.

6.2.1.3 VARIATIONS

Variations to the materials specified may be permitted subject to the Contractor submitting full details of its proposals before the related work begins. Such submissions shall be subject to approval.

All submissions should be accompanied by evidence to demonstrate that the material complies with the requirements of the Specification.

The alternative product may be approved, provided that the Contractor shall demonstrate to the full satisfaction of the Contractor Administrator that it is in appearance, workmanship, quality, performance durability and warranty at least equivalent to the product originally specified. If requested, the Contractor shall provide test certificates and any other necessary information to enable full comparison with the product originally specified to be made.

Any increased costs arising whatsoever from such a substitution in terms of re-design, re-scheduling, health and safety issues etc. shall be borne by the Contractor.

6.2.1.4 SIMILAR/ EQUIVALENT APPROVED

Where products are specified by proprietary name and the phrase 'or similar approved' or 'or equivalent' is not included, it is to be deemed included. Alternative products may be permitted subject to the requirements of section 6.2.1.3.

6.2.2 INSPECTION AND TESTING

The Contractor shall agree with the Contract Administrator, prior to commencement of the Works, those elements of the Works for which specific tests shall be carried out and for which inspection and test records shall be maintained. These elements are likely to include in particular those sections of the Works which would be covered up during the course of construction of the Works.

The Contractor shall be responsible for carrying out all tests as required by the Specification or requested by the Engineer. The Contractor shall arrange for copies of the test results to be supplied direct to the Engineer. The Contractor shall nominate a member of its staff with the necessary authority and experience to be responsible for all inspection and testing matters to the satisfaction of the Engineer.

The Contractor shall provide agreed notice to enable the Contract Administrator to be present, if so desired, at whatever inspections or tests are performed by the Contractor, Sub-contractors, manufacturers and suppliers, and others.

The Contractor shall agree a programme of inspections with the Contract Administrator, including allowing sufficient time for any re-inspections of nonconforming work, to allow the Client's Representative complete inspections in accordance with the Building Control (Amendment) Regulations. Inspections shall be completed during normal working hours 8.00am to 6.00pm.

Prior to submitting the Works to the Contract Administrator, the Contractor shall submit notification that the Works are in full compliance with the Contract Documents and the Building Regulations and that the Works have been checked by the Contractor and are ready for inspection by the Client's Representative.

The Contractor shall be responsible for providing, controlling, calibrating and maintaining inspection, measuring and test equipment suitable to demonstrate that the Works comply with the specified requirements. This equipment shall be made available to the Contract Administrator or its representative whenever required for examination of the Works.

On-site sampling and testing such as concrete sump tests, concrete sampling (e.g. cube preparation, curing and storage) shall all be implemented in compliance with an agreed method statement and carried out by suitably qualified and trained personnel.

6.2.3 CONSTRUCTION PROGRESS RECORDS

The Contractor shall maintain an accurate record of the progression of the Works. All records shall be dated. Daily photographic records shall be kept of all Works. All records shall be available on request.

6.2.4 RECORDS OF WEATHER CONDITIONS

The Contractor shall keep a daily record of the maximum, minimum and average outside shade temperature. A record of humidity and wind speed shall be kept and readings shall be taken just prior to any concrete being placed.

6.2.5 NON-CONFORMIN ELEMENTS OF THE WORKS

Where in the opinion of the Contract Administrator any of the finished work or materials or workmanship in any part of the Works fails to comply with the Specification that part of the Works will not be accepted.

Any work which the Contract Administrator judges to be inferior in respect to an approved sample or trial panel or to be unacceptably different from parts of the Works already constructed or which is subsequently stained or damaged will not be accepted.

All such work shall be cut out and removed from the Site and replaced or otherwise dealt with in an agreed manner. The Contractor shall be responsible for all costs associated with the removal of non-conforming work including any subsequent changes to other discipline's design, drafting, re-drafting and verification.

6.2.6 PROTECTION OF THE WORKS

The Contractor shall be responsible for ensuring where appropriate that new work is adequately protected at the completion of each day and during periods of inclement weather.

All work exposed to view in the finished Works shall be protected from spillage, stains and other damage.

6.3 WORKS MOVEMENTS AND TOLERANCES

6.3.1 MOVEMENTS

Buildings Project

Movement given here relates to the perimeters of the building and are intended for use in the design of the cladding systems, lift installation and other elements.

Movements include the effects of:

- Creep and shrinkage of reinforced concrete.
- Temperature range inside of building of +50C to +250C.
- Imposed loads and Wind loading. (Dead load deflection is assumed to have taken place prior to the installation of the finishes).
- Foundation settlement.

Unless specifically noted otherwise in the text, movements given separately are cumulative, e.g. change in column heights, edge beam deflections, and cantilever slab deflections to give closure between adjacent floors.

Movements given make no allowance for movements of the "applied elements" themselves, e.g. due to thermal or wind effects.

Movements given are envelopes of maximum expected movements.

No allowance is included here for initial out-of-position of structure to which "applied elements" e.g. cladding will be fixed. This is defined as the as-constructed 'tolerance' of the structural frame which, together with the manufacturing tolerances of the "applied element", will determine the 'adjustability' required in the "applied element" fixing system.

The dimensional accuracy and the accuracy of construction as set out below are to be allowed for in combination with the structural movements, which together determine the "movement capability", required in the applied element.

Civils Project

Movement given here relates to the perimeters of the structure and are intended for use in the design of the facing systems and other elements.

Movements include the effects of:

- Creep and shrinkage of reinforced concrete.
- Temperature range inside of building of +50C to +250C.
- Imposed loads and Wind loading. (Dead load deflection is assumed to have taken place prior to the installation of the finishes).
- Foundation settlement.

Unless specifically noted otherwise in the text, movements given separately are cumulative, e.g. change in column/wall heights, edge deflections, and cantilever slab deflections.

Movements given make no allowance for movements of the "applied elements" themselves, e.g. due to thermal or wind effects.

Movements given are envelopes of maximum expected movements.

No allowance is included here for initial out-of-position of structure to which "applied elements" e.g. facing will be fixed. This is defined as the as-constructed 'tolerance' of the structural frame which, together with the manufacturing tolerances of the "applied element", will determine the 'adjustability' required in the "applied element" fixing system.

The dimensional accuracy and the accuracy of construction as set out below are to be allowed for in combination with the structural movements, which together determine the "movement capability", required in the applied element.

6.3.2 DIMENSIONAL ACCURACY

6.3.2.1 GENERAL

In advance of commencement of the Works, the Contractor shall submit its proposed methods of dimensional setting out, construction and checking in order to satisfy the specified dimensional accuracy. The Contractor shall be responsible for checking the co-ordination of the specified or agreed constructional accuracies with the requirements of any Sub-contractor or Supplier and shall notify the Contract Administrator of any discrepancy before the related work begins.

Alternative tolerances to those specified may be permitted provided they are submitted for approval before work begins on site. Where this change involves alterations to details already prepared, the Contractor shall include for provision of revised details in accordance with its proposals. Any such details shall be submitted for approval before the related work begins on site.

6.3.2.2 SETTING OUT

At the beginning of the Contract the Contractor shall establish an agreed primary benchmark and base line on which all subsequent setting out work shall be based. The benchmark shall be located relative to Irish Transverse Mercator (ITM) and the elevation shall be relative to Ordnance Datum Malin Head (OSGM02/15 shall be specified). A local grid can subsequently be utilised.

Where a structural grid is shown on the drawings the reference grid shall relate to the structural grid, unless otherwise agreed.

Setting out shall comply with BS 5964. At every structural level the Contractor shall set up a secondary grid and a transferred benchmark within the following permitted deviations in Table 6.1.

Table 6.1 Setting out dimensional accuracy

Aspect	Dimension	Permitted Deviations (PD)
Plan	On plan dimension L(m) between any two secondary points in a secondary grid:	$L \leq 10\text{m} : \pm 6\text{mm}$ $L > 10\text{m} : \pm 2\sqrt{L}\text{mm}$
Elevation	Vertical dimension H(m) between any two benchmarks:	$H \leq 3\text{m} : \pm 3\text{mm}$ $H > 3\text{m} : \pm H\text{mm}$
Plumb	Verticality of any point above the corresponding point H(m) below:	$\pm 2\sqrt{H}\text{mm}$
Level	Difference in level between primary and secondary benchmarks	$\pm 5\text{mm}$
	Secondary benchmarks	$\pm 3\text{mm}$

6.3.2.3 FORMED AND UNFORMED SURFACES

See the Concrete Specification for construction accuracy requirements.

The PDs specified for flat surfaces shall apply in principle to curved surfaces.

6.3.2.4 LIFT SHAFT AND STAIR CORE WALL TOLERANCES

Not applicable

6.3.2.5 COMPLIANCE

The Contractor shall check that the permitted deviations are not exceeded and shall keep a record of its checks. The Contractor shall keep records in an approved form of the dimensions of all work as constructed. These records, which shall be available for examination at any time and shall be provided immediately after completion of each section.

6.3.3 STRUCTURAL FRAME MOVEMENT**6.3.3.1 DEFLECTIONS**

Deflections shall be read as the maximum expected long term deflections taken from the time of completion of the main structural frame, after removal of all temporary propping. Instantaneous deflections at this time are not included.

Deflections can occur at each level independently of any other level (unless noted otherwise) and shall be read as the opening or closing movement between slabs:

Allowable deflections and expected deflections shall be agreed with the Engineer.

6.3.3.2 NEW BUILD RC ELEMENTS (UNLESS OTHERWISE NOTED)

To be agreed with Engineer.

6.3.3.3 MOVEMENT JOINTS

Movement joints shall be provided as per the Drawings and as follows unless otherwise noted:

- Ground bearing slabs, foundations at 10m c/c:

- 20mm wide Free Movement Joint as per Figure 10 of CIRIA Report 146;
- Walls at 10m c/c:
 - 18mm movement joint, filled with closed cell polyethylene and mastic pointing.
- Water retaining walls, lift pits, flood walls at 10m c/c:
 - 18mm movement joint filled with closed cell polyethylene and mastic pointing. Joint protected with CETCO Volseal Connect or equivalent approved to ensure no water ingress.

Details of the joints shall be agreed with the Engineer.

6.3.3.4 FOUNDATION SETTLEMENT

Unless otherwise noted, maximum allowable absolute settlement of foundations is 15mm. Maximum allowable relative settlement between any two foundations is 10mm.

7 TEMPORARY WORKS

7.1 GENERAL

The Contractor is responsible for the design of all Temporary Works and shall ensure that these works are designed by a suitably qualified competent engineer. The Temporary Works designer shall be a Chartered Engineer working in private practice with Professional Indemnity Insurance to a level required under the Contract. The Temporary Works Designer shall comply with its roles and responsibilities under the Safety, Health and Welfare at Work (Construction) Regulations 2013.

The Contractor is responsible for the temporary stability of the Works at all stages of construction. The Contractor shall be responsible for the design, fabrication, erection and removal of all Temporary Works.

The Contractor shall provide details of its Temporary Works proposals prior to the commencement of works. The Temporary Works shall not negatively affect the permanent works. Where the Temporary Works may interact with the permanent works, the Contractor shall provide calculations justifying that the permanent works will not be adversely affected by the Temporary Works.

Where dewatering of the Site is required, the Contractor shall submit details of the proposed methodology and calculations justifying that the dewatering will not adversely affect the Temporary Works and permanent works.

7.2 STABILITY OF THE WORKS DURING CONSTRUCTION

The structural works may require temporary stabilisation during the erection, in particular in the use of formwork for concrete or the erection of steelwork. In advance of the related work, the Contractor shall submit calculations and details of its proposed temporary work, including stabilisation of the Works.

Temporary propping of existing foundations may be necessary for the completion of proposed Works and underpinning of existing foundations. The Contractor shall be responsible for the design of all Temporary Works required.

The Contractor shall ensure sufficient temporary supports and/or bracing for any proprietary or standard types of structural formworks, units, components or assemblies to be incorporated in the Works. The Contractor shall satisfy itself that propping, and bracing recommended by Sub-contractors, manufacturers and suppliers is sufficient. Where deficiencies are noted, the Contractor is responsible for ensuring these works are adequate based on the specific circumstances of their use.

8 HEALTH AND SAFETY

The Contractor shall comply with the Safety, Health and Welfare at Work Act 2005, the Safety Health and Welfare at Work (Construction) Regulations SI No. 291 of 2013 and all relevant published guidelines by the Health and Safety Authority.

The Contractor shall liaise with the Client's Project Supervisor Design Process (PSDP) on health and safety matters prior to the commencement of the Contract. The Contractor shall notify the Health and Safety Authority (HSA) and PSDP of the appointment of the Project Supervisor Construction Stage (PSCS) prior to commencement of the Works and shall ensure that all employees are made and kept aware of all site safety regulations. The Contractor shall ensure the PSCS provides evidence of competence to act as the PSCS, by providing the Client with details of the training, experience and knowledge of the particular staff acting as PSCS taking into account the particular size, complexity and hazards that the project presents.

The PSCS shall also inform the Health and Safety Authority of the duration of the Works and an estimated number of persons working on the project before the work commences.

The Contractor's attention is drawn to the Design Stage Preliminary Safety and Health Plan. Hazard Identification and Risk Assessments relating to the civil and structural aspects of the Works are provided in the Preliminary Health and Safety Plan. These should be considered as a non-exhaustive list of potential Hazards identified during the design process. These shall be reviewed by the Contractor and Sub-contractors and incorporated into the Contractor's risk assessments along with any additional hazards and risks identified by the contractor. The Contractor is expected to be competent in the identification and management of typically encountered common place construction hazards.

The Construction Stage Safety and Health Plan is to be developed from the Preliminary Safety and Health Plan by the PSCS and shall be brought to the attention of all the contractors on the project prior to the proposed date for the start of their works. The plan shall include, but not be limited to, the mitigation measures to be put in place to address the risks identified in the Preliminary Safety and Health Plan.

The Contractor and PSCS are to provide all necessary information on the project to the PSDP, to enable the Safety File to be compiled and delivered to the Client at the end of the Construction Stage.

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APPENDIX I. RC CONCRETE

APPENDIX II. MASONRY

APPENDIX III. CIVIL WORK

