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Dernafanogy Bridge, Donegal

Bridge Deck Replacement Specification

24200-DID-ZZ-XX-SP-C-7002

Document Details

Project:	Dernafanogy Bridge, Donegal		
Title:	Bridge Deck Replacement Specification		
External Project Number:	N/A		
Document Reference:	24200-DID-ZZ-XX-SP-C-7002		
Design ID Project Number:	24200		
Date:	June 2026		
Current revision:	T01		
Suitability	D2		
Suitability Description	Issued for Tender		
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Checked By:	Ronan Carlin	Initial:	RC

Revision	Description	Date Revised	Revised By	Checked By
P01	First Issue	08.10.2025	CC	RC
P02	Second Issue	11.03.2026	CC	RC
T01	Tender Issue	09.06.2026	YH	RC

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Contents

1	APPENDIX 0/3: LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION AND INCLUDED IN THE CONTRACT
2	APPENDIX 0/4: LIST OF DRAWINGS INCLUDED IN THE CONTRACT
3	APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR
4	APPENDIX 1/11: STRUCTURAL ELEMENTS AND OTHER FEATURES TO BE DESIGNED BY THE CONTRACTOR
5	APPENDIX 1/12: SETTING OUT AND EXISTING GROUND LEVELS
6	APPENDIX 1/16: PRIVATELY AND PUBLICLY OWNED SERVICES AND SUPPLIES
7	APPENDIX 1/70: AS-BUILT RECORD DRAWINGS
8	APPENDIX 1/71: TEMPORARY CONSTRUCTION PLATFORMS
9	APPENDIX 2/70: VEGETATION CLEARANCE
10	APPENDIX 3/1: FENCING, GATES AND STILES
11	APPENDIX 4/1: SAFETY BARRIERS
12	APPENDIX 5/1: DRAINAGE REQUIREMENTS
13	APPENDIX 6/1: REQUIREMENTS FOR ACCEPTIBILITY AND TESTING OF EARTHWORKS REQUIREMENTS
14	APPENDIX 6/2: REQUIREMENTS FOR DEALING WITH CLASS U2 UNACCEPTABLE MATERIAL
15	APPENDIX 6/3: REQUIREMENTS FOR EXCAVATION, DEPOSITION COMPACTION (OTHER THAN DYNAMIC COMPACTION)
16	APPENDIX 6/5: GEOTEXTILES USED TO SEPARATE EARTHWORKS MATERIALS
17	APPENDIX 6/6: FILL TO STRUCTURES AND FILL ABOVE STRUCTURAL FOUNDATIONS
18	APPENDIX 7/1: PERMITTED PAVEMENT TYPES
19	APPENDIX 11/1: KERBS, FOOTWAYS AND PAVED AREAS
20	APPENDIX 17/1: SCHEDULE FOR THE SPECIFICATION OF DESIGNED CONCRETE
21	APPENDIX 17/3: CONCRETE – SURFACE FINISHES
22	APPENDIX 17/4: CONCRETE – GENERAL
23	APPENDIX 21/1: BRIDGE BEARING SCHEDULE
24	APPENDIX 23/1: BRIDGE DECK EXPANSION JOINT SCHEDULE
25	APPENDIX 26/1: ANCILLARY CONCRETE

Preamble to the Specification

1. The Specification referred to in the Tender shall be the 'Specification for Highway Works', published by The Stationery Office (Formerly HMSO) as Volume 1 of the Manual of Contract Documents for Highway Works as modified and extended by the following:
 - (i) Appendix 0/1: Contract Specific Additional, Substitute and Cancelled Clauses Tables and Figures;
 - (ii) Appendix 0/2: Contract Specific Minor Alterations to Existing Clauses, Tables and Figures;
 - (iii) The Numbered Appendices referred to in the Specification for Highway Works listed in Appendix 0/3 List A and contract specific Numbered Appendices listed in Appendix 0/3 List B;
 - (iv) Appendix 0/5: Special National alterations of the Overseeing Organisation.

Appendix 0/4 contains a list of the drawings.

2. The relevant publication date of each page of the Specification for Highway Works is given in the Schedule of Pages and Relevant Publication Dates
3. An Additional Clause as indicated by a suffix 'A' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Northern Ireland. An additional Clause as indicated by a suffix 'AR' in Appendix 0/1 is a Contract-specific alteration.
4. A Substitute Clause, as indicated by the suffix 'S' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Northern Ireland. A Substitute Clause as indicated by a suffix 'SR' in Appendix 0/1 is a Contract-specific alteration.
5. A Cancelled Clause as indicated by a suffix 'C' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Northern Ireland. A Cancelled Clause as indicated by a suffix 'CR' in Appendix 0/1 is a Contract-specific alteration.
6. Insofar as any of the Numbered Appendices may conflict or be inconsistent with any provision of the Specification for Highway Works the Numbered Appendices shall always prevail. Additionally, Numbered Appendices 0/1 and 0/2 shall take precedence over numbered Appendix 0/5.
7. Any reference in the Contract to a Clause number of Appendix shall be deemed to refer to the corresponding Substitute Clause number of Appendix listed in Appendices 0/1, 0/2 or 0/5.
8. Where a Clause is altered any original Table/Figure referred to in the Clause shall apply unless the Table/Figure is also altered. Where a Table/Figure is altered any reference in a Clause to the original Table/Figure shall apply to the altered Table/Figure.

9. Where a Clause in the Specification relates to work, goods or materials which are not required for the Works it shall be deemed not to apply.
10. Any Appendix referred to in the Specification which is not used shall be deemed not to apply.
11. Where a Clause in the Specification is prefixed by an # this indicates that this particular Clause has a substitute National Alteration for one or more of the Overseeing Departments of Scotland, Wales or Northern Ireland. Substitute or additional National Clauses shall be used within countries to which they specifically apply, and they are deemed to replace corresponding Clauses in the main text of the Specification as appropriate. The substitute National Clauses are located at the end of the relevant Series together with the additional National Clauses of the Overseeing Organisations.
12. Other than where references to the Overseeing Organisation are made in the context of the Overseeing Organisation granting statutory or type approvals, the roles and functions of the Overseeing Organisation shall be undertaken by the Project Manager.

Where the Specification requires the provision of documentation to the Overseeing Organisation for statutory or type approval such documentation shall be provided to the Project Manager.

13. (11/06) If the Specification is used in conjunction with a Contract under which the Contractor is responsible for the design of any part of the Permanent Works, the delegation of the roles and functions of the Overseeing Organisation as stated in paragraph 12 above shall be further amended as follows: -
 - (i) (11/06) If any agreement, consent or approval required to be obtained from the Overseeing Organisation impacts on the health and safety of the general public, the environment or any property or equipment not owned or operated by the Contractor or the Design Build Finance and Operate concessionaire, such agreement, consent, approval shall be obtained from the Project Manager.
 - (ii) Where the Specification provides for the Overseeing Organisation to require a test, waive the requirement for a test or alter testing frequency, the party to whom the Overseeing Organisation's roles and functions have been ascribed by paragraph 12 above shall exercise such decisions in accordance with the Employer's Requirements.

APPENDIX 0/1: CONTRACT - SPECIFIC ADDITIONAL, SUBSTITUTE AND CANCELLED CLAUSES, TABLES AND FIGURES INCLUDED IN THE CONTRACT

List of Additional Clauses, Tables and Figures

Clause No. (etc.)	Title	Written on Page No. following
170AR	Wayleaves and rights of access	5
171AR	Damage to Roads and Adjacent Property or Buildings	5
172AR	Access Roads to be Kept Clean	5
173AR	Communication plan	5
174AR	Publicity	5
175AR	Removal of surplus material and reinstatement	6
176AR	Design and Approval of Temporary Works	6
177AR	Temporary Works Coordinator and Designer	7
178AR	Risk Assessments and Method Statements (RAMS)	7
179AR	Supervision and inspection	7
180AR	Notice period for inspections	7
181AR	Site security	7
182AR	Health and Safety / Risk Assessment	8
183AR	Management of Specialist Contractor	8
184AR	Precaution against dust, mud, dirt and other debris	8
185AR	Ecological Requirements	8

Clause No.(etc.)	Title and written text
170 AR	Wayleaves and rights of access 1. In order to afford the Contractor, the greatest degree of flexibility in the programming of operations, there have been no agreements made at tender stage regarding access rights and wayleaves outside the works area. 2. It is the responsibility of the Contractor to agree access arrangements with the necessary landowners as detailed in Appendix 1/15 and reinstatement of affected lands to the acceptance of the individual landowner.
171AR	Damage to roads and adjacent property or buildings 1. The Contractor shall satisfy themselves as to the condition of the area and adjacent property before commencing works on site and shall report any defects to the Supervisor. 2. The Contractor shall be responsible for any damage to roads, footways, slipways or entrances (public or private) and adjoining property or buildings which may be caused by works or sub-contractors in the carrying out of the works and shall make good any such damage to the satisfaction of the Supervisor. This includes the maintenance of diversionary routes.
172AR	Access roads to be kept clean 1. The Contractor shall take every precaution to prevent dirt and mud or other material being dropped or spread by traffic from or associated with the works on roads in public and private use or on roads being part of the works which are made available for use by the Contractor. 2. Particular attention shall be paid to the loading of lorries carrying bulk materials into the site and spoil from the site to ensure that these are not overloaded or loaded in such a way that spillage is unavoidable. Any dirt or mud adhering to the tyres or chassis of any vehicle shall be thoroughly cleaned off before the vehicle is permitted to leave the site. In the case of delivery to the site, vehicles shall be thoroughly cleaned before they leave the point of collection. The Contractor shall be equally responsible for the vehicles of sub-contractors and suppliers. 3. While the intent of this Clause is to prevent the spilling and spreading of dirt, mud and other materials on roadways, nevertheless the Contractor shall also clean roadways of any such dirt, mud and other materials as may be spilled or spread by traffic travelling to or from the site in connection with the works whether such traffic is the Contractor's or sub contractor's or suppliers. The Contractor shall carry out any cleaning work during hours which will reduce interference with public traffic.
173AR	Communication plan 1. Within 7 days of award of the contract the Contractor shall provide the Supervisor and Project Manager in writing with a contact telephone number for the periods as detailed below: · 8.00 am to 6.00 pm on weekdays · 6.00 pm to 8.00 am on weekdays · Saturdays, Sundays and Bank Holidays

	2. The Contractor shall ensure that operatives can be contacted at all times during the contract period. 3. The Contractor shall provide and maintain an effective communication system with all parties involved in the works to the satisfaction of the Project Manager and shall provide a full contact list for operatives. 4. The Contractor shall include in this communication plan, informing local businesses and residents of works which will be likely to adversely impact upon normal day to day activities. This can be done via letter drops, phone calls or door to door visits if appropriate. 5. Emergency contact details shall be included on scheme information signs to allow members of the public to make 24-hour contact with the Contractor both during and outside working hours.
174AR	Publicity 1. The Contractor shall not use any photograph, whether those specified herein or not, for advertisements nor approve any publication in connection with the works without the prior written agreement of the Project Manager. 2. Copyright of all the photographs of the works shall remain with the Employer.
175AR	Removal of surplus material and reinstatement 1. At the completion of the contract the Contractor shall clean up, remove surplus materials and equipment and make good any to the satisfaction of the Supervisor. 2. The Contractor shall not permit the accumulation of rubbish or other unwanted materials and shall clear away materials on the same day that they are removed.
176AR	Design and Approval of Temporary Works 1. The Contractor shall be responsible for the design of all temporary works, including but not limited to 2. A schedule of temporary works to be designed by the Contractor is included in Appendix 1/11 as a minimum requirement. 3. In designing temporary works the Contractor must ensure no adverse impact upon existing structures and must satisfy the Project Manager of the acceptability of temporary works using numerical loading analysis as appropriate. This does not indemnify the Contractor from their obligation to make good any damage caused to existing structures as a result of temporary works at no additional expense to the Employer. 4. Where the stability of temporary works is dependent on support or restraint from either existing ground or earthworks structures, whether or not such structures are wholly or partly completed, the Contractor's design shall include for providing investigations to ensure that the existing ground or earthworks structures are capable of supporting the loadings which they intend to impose on them.

	Access scaffolding requirements, if required As a minimum the Contractor must adhere to the following: 1. <u>Design</u> The Contractor must adhere to the guidance given in document TG20:08 'Guide to Good Practice for Scaffolding with Tubes and Fittings'. All scaffolding used by the Contractor shall comply with the following standards: 1. Basic Scaffold – BS EN 12811 2. Suspended Scaffold – BS 5974 3. Special Scaffold Structures – BS EN 12811 The Contractor shall submit to the Project Manager proposals for a Safe System of Working, in writing, at least two weeks before works utilising the scaffolding are due to commence. The submission shall include the erection, maintenance and demolition of all temporary access scaffolding along with details of access and security arrangements.
177AR	Appointment of Temporary Works Coordinator and Designer 1. Where the Contractor, in the course of carrying out the works on site is involved with design, construction and dismantling of temporary works he shall appoint in writing as a minimum the following competent staff in accordance with BS 5975:2008: • <u>Temporary Works Coordinator (TWC)</u> • <u>Temporary Works Designer/Design Checker (TWD/DC)</u> • <u>Temporary Works Supervisor (TWS)</u> 2. The Contractors Temporary Works appointees should be notified to the Project Manager in writing and must adhere with the relevant legislation. <u>The TWC/TWS shall be responsible for the following as a minimum: -</u> • Coordinating all false work activities • Making sure that designers have been adequately briefed • Making sure that design brief contains all residual risks, modes of construction, loading restraints and any other relevant information identified by the permanent works designers • Making sure that the design is properly carried out, checked independently and communicated in a properly documented form to all relevant parties • Making sure that there is full cooperation and consultation between the temporary works designer, the principal contractor, the structural Supervisor, the CDM coordinator and

	the supplier of elements, components and materials for the temporary works • Supervision of construction, periodic systematic maintenance and subsequent dismantling of the temporary works, including preparing procedures and furnishing them to the site personnel • Checking of erected temporary works before allowing loading and, after permanent works are self-supporting, before dismantling Planning and supervising every lifting operation involving lifting equipment in accordance with Regulation 8 of the Lifting Operations and Lifting Equipment Regulations 1998
178AR	Safe systems of work The attention of the Contractor is drawn to their legal responsibilities under the The Construction (Design and Management) Regulations (Northern Ireland) 2016. In addition, the Contractor shall 1. Submit to the Supervisor a document detailing a safe system of work in the form of a risk assessment and method statement (RAMS) for each activity on site 2 weeks in advance of work activities. 2. Resubmit RAMS as appropriate until such times as they are agreed as compliant with the Supervisor. This does not absolve the Contractor of their responsibilities under CDM. The Supervisor may inform the Contractor in writing within a reasonable period after receipt of RAMS if, in the opinion of the Supervisor, it fails to comply with the requirements of relevant Health and Safety regulations. 3. Once accepted, the Contractor shall not subsequently change RAMS without the prior knowledge and consent of the Supervisor. 4. The Contractor shall ensure that all safe system of work are communicated to the relevant operatives on site who are likely to take part in or be affected by the particular activity, and a record of this communication shall be retained on site for inspection by the Supervisor. 5. Where in the opinion of the Supervisor, a safe system of work has not been adequately communicated prior to an activity which would constitute a breach of the CDM Regulations, the Supervisor will as a minimum instruct the Contractor's representative to suspend the relevant activity until satisfied that adequate planning has been carried out. The Supervisor has the authority to stop any works deemed unsafe at the time of discovery. All such stoppages shall be at no additional cost to the Employer nor shall result in extension of the Completion Date.
179AR	Supervision and inspection 1. The Contractor is required to maintain all access to the works until the Supervisor has inspected that part of the works and has accepted it as being satisfactory. 2. During any inspection of the works by the Supervisor, the Contractor shall provide adequate illumination of the works.

	3. The Contractor shall provide the Supervisor with all personal protective equipment necessary for the safe inspection of the works by the Supervisor.
180AR	Notice periods for inspection 1. The Contractor shall notify the Supervisor in writing of their intention to commence any item of work at least 24 hours prior to the programmed work activity. 2. The Contractor shall give the Supervisor a minimum of 4 hours notice prior to requiring the Supervisor to inspect any element of the works.
181AR	Site security 1. The Contractor shall take all reasonable preventative measures to achieve security of the site and thereby prevent unauthorised access, theft or damage to the works in accordance with Regulation 13 of the CDM (NI) Regulations 2016. 2. The Contractor shall maintain on site a log of all breaches of security which shall be available to the Supervisor on request. 3. The Contractor shall prepare a site security plan which takes account of the methods of working and equipment used at each stage of the works. It shall demonstrate how he proposes to balance levels of security risk by physical protection, control of access and methods of patrolling and watching which may vary with time and location. The site security plan shall be made available to the Supervisor on request. 4. The Contractor shall maintain a sign-in register of both personnel working on the site and visitors to the site. This register shall be available to the Supervisor on request.
182AR	Health and safety 1. The Contractor, as part of their duties, may be required to attend regular meetings with other duty holders for interchange of information on Health & Safety issues. Special meetings may be convened to deal with unforeseen hazards, design changes and emergencies. 2. The Contractor shall appoint to the site a competent Safety Supervisor to inspect, monitor, record and report to the Contractor on health, safety and welfare issues.
183AR	Management of Specialist Sub-Contractor The Contractor shall be responsible for the coordination and management of all specialist sub-contractor and roped access activities. This shall include the review and approval of all method statements, risk assessments, and rescue plans in accordance with the requirements of the CDM Regulations 2016 and all relevant codes and standards for working at height and use of roped access. The Contractor shall ensure that the roped access subcontractor is demonstrably

	competent, holds relevant IRATA or equivalent certifications, and operates under a safe system of work. The Contractor shall implement appropriate site controls including exclusion zones, signage, and barriers to protect site personnel and the public. Daily coordination with other site activities shall be undertaken to avoid conflict of work at height. The Contractor shall also ensure that emergency and rescue arrangements are in place, tested, and clearly communicated to all relevant parties. All interface management, communication with the Principal Designer, and submission of roped access documentation shall be included within the scope of this item.
184AR	Precaution against dust, mud, dirt and other debris 1. The Contractor shall take all reasonable steps to minimise the impact of dust, mud, dirt and other debris during the works. Appropriate control measures shall include dampening of surfaces to prevent dusting when required or as instructed by the Supervisor. 2. The Contractor shall provide measures to prevent silt/lime from site runoff entering watercourses/storm drains. The measures provided shall be agreed with the Supervisor prior to commencement of any site works.
185AR	Ecological Requirements The Contractor shall carry out the Works in such a manner as to avoid, minimise and control any adverse impact on the surrounding environment, including habitats and species of ecological importance, in compliance with the Habitats Directive (92/43/EEC), the Birds Directive (2009/147/EC), the Wildlife Acts (1976–2012), and all other relevant statutory provisions. 1. The Works are located within the Derryveagh & Glendowan Mountains SPA and adjacent to the Cloghernagore Bog & Glenveagh National Park SAC. 2. No instream works shall be permitted. 3. Construction activities shall be confined to the existing roadway and bridge footprint. No encroachment into bog, heath, woodland, or other Annex I habitats will be allowed. 4. Pollution prevention measures shall be implemented to protect the Sruhancrocam River and Owenwee, including full control of silt, grout, fuels, and oils. 5. Works shall avoid the bird breeding season (March–August) unless otherwise agreed with the Project Manager following NPWS consultation.

APPENDIX 0/3: LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION AND INCLUDED IN THE CONTRACT

This Appendix 0/3 is comprised of a list of the Numbered Appendices referred to in the Specification and included in this Contract.

Responsibility for the compilation/completion of the appendices is indicated by the following symbols:

E	Employer compiles
C	Contractor to compile and submit to the Employer's Representative
E/C	Employer partially compiles and Contractor completes and submits to the Employer's Representative
T/C	Tenderer compiles and returns with their Tender. Post award of Contract the Contractor reviews and submits to the Employer's Representative.
P	The symbol 'P' indicates the appendix is national pro-forma and the format must not be altered.

Where a Contractor or Tenderer is required to compile or complete an Appendix, they shall do so in accordance with the GSW and provide information similar to that stated in the sample appendices as a minimum.

Appendix 0/3 is comprised of two lists, A and B, of Numbered Appendices as follows.

List 'A' is a complete list of the Numbered Appendices referred to in the SPW with those not adopted marked "Not Used". Those identified by the letters 'T' or 'C' shall be compiled by the Tenderer or the Contractor respectively

List 'B' gives a list of Contract – specific Numbered Appendices devised for this Contract

List of Numbered Appendices – List A

Contract for Works Designed by the Employer Compiled/ Completed By	Appendix No.	Title
Introduction		
E	0/1	Contract-specific Additional, Substitute and Cancelled Clauses and Tables included in the Contract
Not Used	0/2	Contract-specific Minor Alterations to Existing Clauses and Tables included in the Contract
E	0/3	List of Numbered Appendices Referred to in the Specification and included in the Contract
E	0/4	List of drawings included in the Works Requirements
Preliminaries		
Not Used	1/1	Accommodation and Equipment for The Employer's Representative
Not Used	1/2	Vehicles for the Employer's Personnel
Not Used	1/3	Communications System for the Employer's Personnel
E	1/4	Working and Fabrication Drawings
E	1/5	Testing to be Carried out by the Contractor
Not Used	1/6	Supply and Delivery of Samples to the Employer's Representative
E	1/7	Site Extent and Limitations on Use
Not Used	1/8	Operatives for the Employer's Representative
E	1/9	Control of Noise and Vibration
E	1/10	Principal Structures to be Designed by the Contractor
E/C	1/11	Structural Elements and Other Features to be Designed by the Contractor
E	1/12	Setting Out and Existing Ground Levels
E	1/13	Programme of Design and Execution and Completion of the Works
E	1/14	Monthly Statements
Not Used	1/15	Accommodations Works
E	1/16	Privately & Publicly Owned Services & Supplies
E	1/17	Traffic Safety & Management

E	1/18	Temporary Diversions for Traffic
E	1/19	Routeing of Vehicles
Not Used	1/20	Recovery Vehicles for Breakdowns
Not Used	1/21	Information Boards
E	1/22	Progress Photographs
E	1/23	Substances Hazardous to Health
E	1/24	Quality Management System
Not Used	1/25	Temporary Closed-Circuit Television (CCTV) System for the Monitoring of Traffic.
Not Used	1/26	Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Road Works (TASCAR)
Not Used	1/27	Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Road Works
Not Used	1/28	(TASCAR) – Particular Requirements.
E	1/70	Pollution Prevention
E	1/71	Working with Employer and Others
E	1/72	Donegal County Council Liaison
Not Used	1/73	Sustainability
Site Clearance		
E	2/1	List of Buildings, etc., to be Demolished
Not Used	2/2	Filling of Trenches and Pipes
E	2/3	Retention of Material Arising from Site Clearance
Not Used	2/4	Explosives and Blasting
Not Used	2/5	Hazardous Materials
Not Used	2/6	Site Clearance Environmental Requirements
Not Used	2/70	Vegetation Clearance
Fencing and Environmental Noise Barriers		
Not Used	3/1	Fencing, Gates and Stiles
Not Used	3/2	Fencing: TII Road Construction Details
Road Restraint Systems (vehicle and pedestrian)		
Not Used	4/1	Safety Barriers
Not Used	4/2	Pedestrian Restraint Systems
Not Used	4/3	Safety Barrier Terminals
Not Used	4/4	Safety Barrier Maintenance
Not Used	4/5	Anti-Glare Screens
Not Used	4/6	Safety Barriers: NRA Road Construction Details

Not Used	4/7	Vehicle Parapet Systems
Drainage and Service Ducts		
Not Used	5/1	Drainage Requirements
Not Used	5/2	Service Duct Requirements
Not Used	5/3	Surface Water Channels and Drainage Channel Blocks
Not Used	5/4	Fin Drains and Narrow Filter Drains and Geotextiles for Filter Drains
Not Used	5/5	Combined Drainage and Kerb Systems
Not Used	5/6	Linear Drainage Channel Systems
Not Used	5/7	Drainage and Service Ducts: NRA Road Construction Details
Not Used	5/8	Thermoplastics Structural Wall Pipes and Fittings
Not Used	5/9	Attenuation
Earthworks		
E	6/1	Requirements for Acceptability & Testing of Earthworks Materials
E	6/2	Requirements for Dealing with Class U2 Unacceptable Material
E	6/3	Requirements for Excavation, Deposition, Compaction (other than Dynamic Compaction)
E	6/4	Not Used
Not Used	6/5	Geotextiles Used to Separate Earthworks Materials
E	6/6	Fill to Structures & Fill Above Structural Foundations
Not Used	6/7	Sub-formation & Capping & Preparation & Surface Treatment of Formation
Not Used	6/8	Topsoiling, Grass Seeding and Turfing
Not Used	6/9	Earthwork Environmental Bunds, Landscape Areas, Screening Mounds, Strengthened Embankments
Not Used	6/10	Ground Anchorages, Crib Walling and Gabions
Not Used	6/11	Swallow Holes & Other Naturally Occurring Cavities & Disused Mine Workings
Not Used	6/12	Instrumentation & Monitoring
Not Used	6/13	Ground Improvement

Road Pavements – General		
E	7/1	Permitted Pavement Options
E	7/2	Excavation & Reinstatement of Existing Surfaces
Not Used	7/3	Surface Dressing Product (End Performance)
Not Used	7/4	Bituminous Sprays
E	7/5	Road Pavements: NRA Road Construction Details
Not Used	7/6	Breaking Up or Perforation of Existing Pavement
Not Used	7/7	Not Used
Not Used	7/8	Not Used
Not Used	7/9	Cold Milling (Planing) of Bituminous Bound Flexible
Not Used	7/10	Microsurfacing
Not Used	7/11	High Friction Surfacing
Not Used	7/12	Low Energy Bound Mixtures
Not Used	7/21	Recipe Surface Dressing
Kerbs, Footways and Paved Areas		
E	11/1	Kerbs, Footways and Paved Areas
Not Used	11/2	Access Steps
Not Used	11/3	Kerbs, Footways and Paved Areas: NRA Road Construction Details
Traffic signs		
Not Used	12/1	Traffic Signs: General
Not Used	12/2	Traffic Signs: Reflective Markers
Not Used	12/3	Traffic Signs: Road Markings & Studs
Not Used	12/4	Traffic Signs: Cones, Cylinders, FTD's & Other Traffic Delineators
Not Used	12/5	Traffic Signs: Traffic Signals
Not Used	12/6	Traffic Signs: Special Sign Requirements on Gantries
Not Used	12/7	Traffic Signs: Preparation and Finish of Metal and Other Surfaces
Road Lighting Columns & Brackets		
Not Used	13/1	Information to be Provided by the Designer for the Road Lighting Works when Specifying Lighting Columns and Brackets
Not Used	13/2	Column & Bracket Data Sheets 1 & 2
Not Used	13/3	Instructions for Completion of Column and Bracket Data Sheet
Not Used	13/4	Certification for Lighting Columns

Not Used	13/5	Road Lighting Column and Brackets: NRA Road Construction Details
Electrical Work for Road Lighting and Traffic Signs		
Not Used	14/1	Site Records
Not Used	14/2	Location of Lighting Units and Feeder Pillars
Not Used	14/3	Temporary Lighting
Not Used	14/4	Electrical Equipment for Road Lighting
Not Used	14/5	Electrical Equipment for Traffic Signs
Not Used	14/6	Preparation and Finish of Metal and Other Surfaces
Motorway Communications		
Not Used	15/1	Motorway Communications
Piling and Embedded Retaining Walls		
Not Used	16/1	General Requirements for Piling and Embedded Retaining Walls
Not Used	16/2	Precast Reinforced and Prestressed Concrete Piles and Precast Reinforced Concrete Segmental Piles
Not Used	16/3	Bored Cast-in-Place Piles
Not Used	16/4	Bored Piles Constructed Using Continuous Flight Augers and Concrete or Grout Injection Through Hollow Auger Stems
Not Used	16/5	Driven Cast-in-Place Piles
Not Used	16/6	Steel Bearing Piles
Not Used	16/7	Reduction of Friction on Piles
Not Used	16/8	Non-Destructive Methods for Testing Piles
Not Used	16/9	Static Testing of Piles
Not Used	16/10	Diaphragm Walls
Not Used	16/11	Hard/Hard Secant Pile Walls
Not Used	16/12	Hard/Soft Secant Pile Walls
Not Used	16/13	Contiguous Bored Pile Walls
Not Used	16/14	King Post Walls
Not Used	16/15	Steel Sheet Piles
Not Used	16/16	Integrity Testing of Wall Elements
Not Used	16/17	Instrumentation for Piles and Embedded Walls
Not Used	16/18	Support Fluid
Structural Concrete		
E	17/1	Concrete – Classification of Mixes
Not Used	17/2	Concrete – Impregnation and Coating Schedule

E	17/3	Concrete – Surface Finishes
E	17/4	Concrete – General
E	17/7	Precast Concrete Elements
Structural Steelwork		
Not Used	18/1	Requirements for Structural Steelwork
Protection of Steelwork against Corrosion		
Not Used	19/1	(Specification for Road Works) Sheet No. Form BE/P1 (New Works) Paint System Sheet
Not Used	19/2	(New Works) Requirements for Other Work
Not Used	19/3	(Specification for Road Works) Form BE/P2 Paint Data Sheet
Not Used	19/3	(Specification for Road Works) Form BE/P3 Paint Sample Despatch List: Sheet 1 & 2
Not Used	19/4	(New Works) General Requirements
Not Used	19/5	(Specification for Road Works) Form BE/PE1 (Maintenance) Paint System Sheet 1
Not Used	19/6	(Specification for Road Works) Form BE/P1 (Maintenance) Paint System Sheet 2
Not Used	19/7	(Maintenance) Requirements for Other Work
Not Used	19/8	(Maintenance) General Requirements
Waterproofing for Concrete Structures		
E	20/1	Waterproofing for Concrete Structures
Bridge Bearings		
Not Used	21/1	Bridge Bearing Schedule
Bridge Expansion Joints and Sealing of Gaps		
Not Used	23/1	Bridge Deck Expansion Joint Schedule
E	23/2	Sealing of Gaps Schedule (other than in Bridge Deck Expansion Joints)
Brickwork, Blockwork and Stonework		
E	24/1	Brickwork, Blockwork and Stonework
Not Used	24/2	Brickwork, Blockwork and Stonework: NRA Road Construction Details
Special Structures		
Not Used	25/1	Requirements for Corrugated Steel Buried Structures
Not Used	25/2	Requirements for Reinforced Soil and Anchored Earth Structures

Not Used	25/3	Requirements for Reinforced Clay Brickwork Retaining Walls of Pocket Type and Grouted Cavity Construction Structures
Miscellaneous		
E	26/1	Ancillary Concrete
Not Used	26/2	Bedding Mortar
Not Used	26/3	Cored Thermoplastic Node Markers
Watermains, Utilities and Accommodation Works		
Not Used	27/1	Requirements for Watermains
Not Used	27/2	Watermains: NRA Road Construction Details
Trenchless Installation of Road Drainage & Service Ducts		
Not Used	28/1	Trenchless and Minimum Dig Techniques
CCTV Survey of Road Drainage Systems		
Not Used	29/1	CCTV Survey of Road Drainage Systems
Landscape and Ecology		
Not Used	30/1	General, sheets 1, 2 & 3
Not Used	30/2	Weed Control
Not Used	30/3	Control of Rabbits and Deer
Not Used	30/4	Ground Preparation
Not Used	30/5	Grass Seeding, Wildflower Seeding and Turfing
Not Used	30/6	Planting, Sheets 1 & 2
Not Used	30/7	Grass, Bulbs and Wildflower Maintenance
Not Used	30/8	Watering
Not Used	30/9	Established Maintenance for Planting
Not Used	30/10	Maintenance of Established Trees and Shrubs
E	30/11	Management of Waterbodies
E	30/12	Special Ecological Measures
Maintenance Paining of Steelwork		
Not Used	50/1	(Specification for Highway Works) Form HA/P1 (Maintenance) Paint Systems Sheet
Not Used	50/2	General Requirements
Not Used	50/3	(Specification for Highways Works) Form HA/P2 Paint
Not Used	50/4	Form HA/P3 Paint Sample Dispatch List

List of Contract specific numbered Appendices devised for the Contract – List B

Volume No.	Appendix No.	Appendix Title
E	1/74	Donegal County Council Liaison
E	1/75	As-Built Drawings

APPENDIX 0/4: LIST OF DRAWINGS INCLUDED IN THE CONTRACT

<i>Drawing Number</i>	<i>Title</i>	<i>Rev</i>
24200-DID-ZZ-XX-DR-C-1001	Existing Site Location Plan	P01
24200-DID-ZZ-XX-DR-C-1002	Plan Layouts	P01
24200-DID-ZZ-XX-DR-C-1003	Sections and Details	P01

0100 – Preliminaries

APPENDIX 1/4: WORKING AND FABRICATION DRAWINGS

General

1. Whenever required by the Employer's Representative, the Contractor shall supply calculations, test reports, data sheets, etc. in support of their detailed working and fabrication drawings. Such documents shall remain the property of the Employer's Representative.
 - a. Drawings shall be to an appropriate scale and standard and in sufficient detail to enable the Employer's Representative to assess the Contractor's proposals.

Series	Description of Work	Minimum period for submission of drawings
Bridge Deck Concrete Fabrication Drawings	The Contractor / Fabricator shall produce precast concrete fabrication drawings for the bridge on the basis of the design intent presented on the drawings and setting present presented in the Works Requirements.	At least 4 weeks must be allowed in the programme for the review and acceptance of these drawings. (Refer to Appendix 18/1)
Traffic Management Proposals	The Contractor shall develop and present Traffic Management Proposals in drawing format, for each stage of the construction process	At least 4 weeks must be allowed in the programme for these approvals to be given. (Refer to Appendix 1/17)
Temporary Works for Construction	The Contractor shall develop and present all Temporary Works required to facilitate the proposed bridge construction in drawing format.	At least 4 weeks must be allowed in the programme for these approvals to be given. (Refer to Appendix 1/17)

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR

1. Tests comparable to those specified in this Appendix will be necessary for any equivalent work, goods or materials proposed by the Contractor (See sub-Clause 105.4).
2. (IL) indicates that an INAB test report or certificate is required.
3. Unless otherwise shown in this Appendix tests for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.
4. Cube strength tests are not required for concrete complying with Clause 2602.
5. Unless otherwise shown in this Appendix test certificates for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.

Clause	Work, Goods or Material			Test	Frequency of Testing	Test Certificate	Comments
Series 600							
601, 631 to 637 and 640	Acceptable Material						
	Class	General Description					
	1	General	Granular Fill	Grading/uniformity	Twice a week*	Required	[For recycled aggregate, see sub-Clauses 601.12 and 601.18]
				coefficient			
				mc/MCV (N)	2 per 1000 m3 up to max of 5 per day*		
				SMC of chalk (N)	Twice a week*		
		1C only	Resistance to	Weekly*		[LA category]	
2	General cohesive fill	Grading	Twice a week* Required	Required	[Cross-reference should be made to any requirements in Appendix 6/1]		
		mc/MCV/PL Undrained shear strength (N)	2 per 1000 m3 up to max of 5 per day*				
		SMC of chalk (N)	Twice a week*				
		Bulk density (pfa) (N)	2 per 1000 m3 up to max of 5 per day*				
3	General chalk fill	mc (N)	2 per 1000 m3 up to max of 5 per day*	Required			
		SMC (N) & IDD test	Daily*				
4	Landscape fill	Grading/mc/MCV (N)	Daily*	Required			
5	Topsoil	Grading	Daily*	Required			
6	Selected granular fill	Grading/uniformity coefficient	1 per 400 tonnes*	Required			
		PI/LL (N)	Daily*				

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 600						
			Resistance to fragmentation (N)	Weekly for on-site material*		[LA category but not for Class 6F4 and 6F5]
			SMC (N)	Weekly*		
			omc/mc, mc or MCV (N)	1 per 400 tonnes*		[At least 5 tests per source for sulfur compounds over the course of the contract in accordance with TRL Report 447, tests 1-5]
			Organic matter/water soluble sulfate (WS) (N)	Weekly*		
			Oxidisable sulfides (OS) and total potential sulfate (TPS) content (N)	Weekly*		
			pH/chloride ion content (N)	Weekly*		
			Resistivity (N)	[As required]		
			Undrained and drained shear parameters (N)	As requested by supervising engineer*		[Cross-reference should be made to any requirements in Appendix 6/1]
	6F4 and 6F5	Selected granular fill	Size designation and overall grading category	1 per week*	Required	[Results of routine control tests from the factory production control system operated by the producer to be provided for Class 6F4 and Class 6F5 - see Annex C of BS EN 13242 and Annex D of BS EN 13285]
			Maximum fines and oversize categories	1 per week*		
			Volume stability of blast furnace slag	6 monthly		
			Volume stability of steel (BOF and EAF) slag Other aggregate requirements	6 monthly Annex C of BS EN 13242		

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 600						
			Laboratory dry density and optimum water content			
			Water content			
	7	Selected cohesive fill	Grading/mc/MCV/bulk density (N)	1 per 400 tonnes*	Required	[Results of routine control tests from the factory production control system operated by the producer to be provided for Class 6F4 and Class 6F5 - see Annex C of BS EN 13242 and Annex D of BS EN 13285]
			SMC of chalk (N)	Twice a week*		
			PI/LL (N)	Daily*		
			Organic matter/water soluble (WS) sulfate content (N), Effective angle of internal friction (ϕ') and effective cohesion (c')	Twice a week* or daily where sulfates are expected		[At least 5 tests per source for sulfur compounds over the course of the contract in accordance with TRL Report 447, tests 1-5]
			Oxidisable sulfides (OS) and total potential sulfate (TPS) content (N)	Twice a week* or daily when sulfides are expected		[At least 5 tests per source for sulfur compounds over the course of the contract]
			pH/chloride ion content (N)	Weekly*		
			Resistivity (N)	[As required]		
			Undrained and drained shear parameters (N)	[As required]		[Cross-reference should be made to

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 600						
						any requirements in Appendix 6/1]
			Permeability (N)	[As required]		
	8	Miscellaneous fill	mc/MCV (N)	Daily*	Required	
	9	Stabilised materials	Pulverization	1 per lane width per 200 m length*	Required	
			mc/MCV (N)			
			Bearing ratio (N)			
		Pulverized fuel ash	Chemical analysis	1 per consignment*		[As appropriate to properties stated in Table 6/1 or Appendix 6/1]
		Furnace bottom ash	Grading	1 per 300 tonnes*		
		Fill material adjacent to cementitious or metallic items	Water-soluble sulfate (WS) content, oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes*		[At least 5 tests per source for sulfur compounds over the course of the contract in accordance with TRL Report 447, tests 1-5]
612	Compaction of fills				Required	
		Method compaction	Field dry density (N)	[As required]		††
		End product compaction	Optimum mc (2.5 kg rammer/vibrating hammer method) (N)	Each class or sub class of material*		†
			Field dry density (N)	1 per 400 tonnes*		†

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 700					
705	Sub-base and roadbase material beneath surface of a road or paved central reserve	Frost heave (IL)	1 per 500m ³ *		
Series 800					
801	Unbound sub-base and roadbase material (other than slag) adjacent to cement bound materials, concrete pavements, structures or products.	Acid Soluble sulphate content (IL)	1 per 400 tonnes per location if less than 400 tonnes*		
Series 900					
901	Aggregates for bituminous mixtures				
925		Determination of resistance to fragmentation – Los Angeles coefficient (IL)	Monthly*		
938		Determination of percentage of crushed and broken surfaces in coarse aggregate particles (IL)	Monthly*		
942		Magnesium Sulphate test (IL)	1 per 2 years*		Where required – see NG 9012
		Determination of particle density and water absorption (IL)	2 per year		
		Determination of particle size distribution (mass passing 0.063mm sieve) (IL)	Monthly*		Washing and sieving method to be used
		Determination of particle shape of aggregates – Flakiness index (IL)	Monthly*		
		Determination of the polished stone value (PSV) (IL)	2 per year per		

			source*		
		Determination of resistance to surface abrasion – Aggregate Abrasion value (AAV) (IL)	2 per year per source*		
	Binders for bituminous materials	Penetration (IL)	1 per 750 tonnes*		(More frequent test samples should be scheduled for modified binders)
		Softening point (IL)	1 per 750 tonnes*		
		(other NBS tests)			
903 to 914 916, 925, 930, 932 to 934	Bituminous mixtures	Determination of particle size distribution (IL)	1 per 75 tonnes* (min 2 per day)		
		Binder content (IL)			

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700					
1702 1703 1704	Cement				Certificate to be provided monthly* for each type of cement. Quality management and product certification schemes apply.
	Normal and Rapid Hardening Portland			Required (IS 1)	
	Cements (all type)	Chloride content	Monthly*		Tests to be carried out by the manufacturer and results included on the test certificates required above.
	Aggregates	Grading	1 per delivery (min 1 weekly per source)		Results of routine control tests by the manufacturer/supplier to be provided. Product certification scheme applies.
		Shell Content (IL)	Monthly*		
		Flakiness Index (IL)	Monthly*		
		10% fines value (IL)	Monthly*		
		Drying shrinkage (IL)	Monthly*		
1702 1703 1709 (c/td)	Water	Chloride content (IL)	Daily		
		Sulphate content (IL)	Monthly*		
		Test specified in BS 3148	(As required)		
		Chloride content	Monthly*		
		Sulphate content	Monthly*		

	Admixtures	Acid-soluble alkali content	Weekly*	Required (BS 5075)	
		Chloride content	1 per consignment		
		Sulphate content	1 per consignment		
		Acid-soluble alkali content	1 per consignment		
1707	Concrete	Cube strength (IL)	Concrete greater than C40 – sample from 10m ³ or 10 batches whichever represents the lesser volume		Contractor to cast and test sufficient additional cubes to demonstrate cube strength before transfer †
			C30 or C40 concrete – sample from 20m ³ or 20 batches whichever represents the lesser volume		
			Concrete less than C30 – sample from 50m ³ or 50 batched whichever represents the lesser volume		
			Additional cubes for special purposes		(Tests/samples should be scheduled as required – See NG 1707.6)
		Cube strength – special testing as described in Appendix 17/4 (IL)	A cube from each of 2 samples of each batch		(Requirements should be given in Appendix 17/4 as appropriate)

		Density	(As required)		(Requirements should be given in Appendix 17/1 as appropriate)
		Modulus of elasticity			
	Fresh concrete	Workability (IL)	Each batch		
		Air content	Each batch		
		Cement content	(As required)		
		Water/cement ratio			

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 1700 (c/td)						
1711	Grout		Fluidity	1 per mix*		
			Bleeding	1 per mix*		
			Volume Change	1 per mix*		
			Free expansion	1 per mix*		Only applicable if an expanding agent is used.
			Cube strength	3 cubes from each batch		
		Admixtures			Required (BS 5075)	
1712	Reinforce ment					Product certification scheme applies.
		Steel bars			Required (BS 4449)	
		Steel wire			Required (BS 4482)	
		Steel fabric			Required (BS 4483)	
1726	Stainless steel bar				Required (BS 6744)	
1727	Inspection and testing of structures and components					Tests should be schedules as appropriate and requirements given in Appendix 17/4).

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 2400					
2401	Masonry Cement			Required (BS 5224)	Quality management scheme applies
		Chloride content	Monthly*		Test to be carried out by the manufacturer and results include on the test certificate.
2402	Sand			Required per consignment (IS 5)	
		Chloride content	Monthly*		Test to be carried out by the manufacturer and results include on the test certificate.
2404	Mortar admixtures			Required (BS 4887) (BS 5075)	Product certification scheme applies.
2405	Lime			Required (BS 890)	
2408	Reconstituted stone				(Tests/samples (in accordance with BS 6457) should be scheduled as required)
2410	Stainless Steel				
	Wire/fabric			Required (BS 970: Part 1)	

APPENDIX 1/7: SITE EXTENT AND LIMITATIONS ON USE**Extent of the Site.**

1. The extent of the works area is shown on the drawings in Appendix 0/4.
2. The Site crosses through private land owned by various landowners. The Contractor shall liaise directly with landowners prior to carrying out works that are on or will impact their property.
3. The Contractor shall keep open and maintain access facilities to properties for all landowners during the Works.
4. The Contractor is limited to the use of access routes by means of public roads to the site as stated in Appendix 1/19.

Limitations on the Use of the Site.

1. The Contractor shall maintain adequate routes for traffic and pedestrian rights of way across the Site or provide temporary diversions. Any temporary road or footpath closures are to be approved and arranged with Donegal County Council. The Contractor is to provide a minimum of 6 weeks' notice to allow sufficient time to organise the temporary closures, subject to Donegal County Council Acceptance. Path diversions to be approved by The Employer's Representative prior to any closures of existing public rights of way.
2. The Contractor shall ensure that all areas of land, which have been temporarily occupied, are reinstated to the satisfaction of the affected landowner, occupier, and the relevant Authorities.
3. The Contractor shall undertake the Works in such a manner as to avoid degradation of the water quality of any of the watercourses affected by the Works by pollution as a consequence of site operations as required by Clause 133 and 170AR of this Specification.

Construction Compounds

1. The Contractor shall be responsible for making all arrangements for providing any land required for offices and other temporary site facilities.

APPENDIX 1/9: CONTROL OF NOISE AND VIBRATION**Noise**

1. The Natural Authority has informally agreed that the following measures would be appropriate, and these are given as a guide; however, it is for the Contractor to decide whether to seek the Natural Authority's formal consent to their proposed methods of work and to the steps he proposes in order to minimise noise.
2. The normal working hours within the Site shall be Monday to Friday between 08.00 and 19.00 hours and Saturday between 08.00 and 16.30 hours, with no working on public holidays. Exceptionally, the Employer's Representative's consent for work outside these hours may be given after any necessary consultation. 7 days' notice is required from the Contractor when seeking such consent. The period referred to as "night" shall be from 2200 hrs to 0600 hrs.
3. The noise levels (see Note (i) below) scheduled below for periods outside the normal working hours will only be permitted when consent has been given to exceptional working.
4. The ambient noise level, LAeq (see Note (ii) below) from all sources when measured 2.0 m above the ground at 20m away from the noise source or at the façade of neighbouring buildings, shall either not exceed the appropriate level given in the Schedule or not exceed by more than 3Db(A) the existing ambient noise level, L Aeq (see Note (iii) below), at the control station measured over the same period, whichever level is the greater. The maximum sound level at any noise control station shall not exceed the level given in the Schedule. Exceptionally the Contractor may be given permission to carry out works which exceed the noise levels in the Schedule, provided that 14 days' notice of the date and timing of these works is given to the Employer's Representative and the Contractor demonstrates that he intends to take all reasonable measures to mitigate the noise nuisance. After consultations with the Natural Authority and any other interested bodies a decision will be given within 7. days of receipt of the notice.
5. The Contractor shall employ the best practical means to minimise noise produced by their operations including plant maintenance and shall comply with the recommendations in BS 5228 1997 (Noise and Vibration Control on Construction and Open sites).
6. All vehicles and mechanical plant used on the works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order for the duration of the works in compliance with BS 5228. Machines in intermittent use shall be shut down in the periods between work or throttled down to a minimum. The Contractor shall remove from the works any item of plant, which in the opinion of the Employer's Representative is ineffectively silenced. All compressors shall be "sound reduced" models fitted with properly lined and sealed acoustic covers and shall be kept closed whenever the machines are in use. All ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers. Pumps and mechanical static plant shall be enclosed by acoustic sheds or screens were directed by the Employer's Representative.
7. Any plant such as generators and pumps shall be surrounded by an acoustic enclosure to the approval of the Employer's Representative which shall restrict the noise level to not less than 5dB (A) below levels quoted in the schedule to this Appendix.
8. The Contractor shall organise their operations with regard to the positioning of plant, etc., so it minimises construction noise to adjacent properties.
9. The Contractor shall carry out noise monitoring in accordance with the standards referenced in this Appendix.
10. The use of explosives is not permitted.

Schedule 1/9/ -1: Noise Levels

Period	Hours	Permitted Ambient Noise Level, L_{eq} , measured 20m away from the works or at neighbouring Building Facades [dB(A)]	Period of Hours over which L_{eq} is applicable.	Maximum Sound Level (see note (iv) below) measured 20m away from the works or at Building Facades
Monday to Friday	08.00hrs to 19.00hrs	70	1 hour	80
Monday to Friday	19.00hrs to 22.00hrs	60	1 hour	65
Saturday	08.00hrs to 16.30hrs	65	1 hour	75
Sunday and Public Holidays	09.00hrs to 16.00hrs	60	1 hour	65
All unattended plant outside normal working hours		60	1 hour	65

Notes:

- i) Noise levels relate to free field conditions. Where noise control stations are located 1 m from facades of buildings, the permitted noise levels can be increased by 3 dB(A).
- ii) The ambient noise level, L_{Aeq} , at a noise control station is the total L_{Aeq} from all the noise sources in the vicinity over the specified period.
- iii) The existing ambient noise level, L_{Aeq} , at a control station is the total L_{Aeq} from all the noise sources in the vicinity over the specified period prior to the commencement of the Works.
- iv) Maximum sound level is the highest value indicated on a sound level meter which meets the requirements of IS EN 61672: 1 Class 1 or 2 set to SLOW response and frequency weighting A or an integrating - averaging sound level meter to IS EN 61672: 2.

Vibration

1. Vibration generated by the Contractor's activities shall not adversely affect the structural and serviceability performance of any building and structure outside the boundaries of the Site. Non-blast vibration emanating from any part of the Works when measured at, or adjacent to, the foundation of any building and expressed as the peak particle velocity shall not exceed the values set out in Table 2 the TII Guidance Document Guidelines for the Treatment of Noise & Vibration in National Road Schemes.
2. The Contractor shall select methods of working and items of plant so that the maximum measured vibrations on surrounding structures do not exceed the following peak particle velocities:

Schedule 1/9/ -2: Vibration limits

Allowable vibration velocity (Peak Particle Velocity) at the closest part of any sensitive property to the source of vibration, at a frequency of		
Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
8 mm/s	12.5mm/s	20mm/s

The Contractor shall further comply with the allowable vibration velocities as stipulated through engagement with affected authorities during the works as described in Appendix 1/71, 1/72, and 1/74. The allowable velocities stipulated may be more onerous than the limits indicated above.

3. The Contractor shall employ the best practical means to minimise vibration produced by their operations, including Contractor's Equipment maintenance, and shall comply with the recommendations in BS5228 (Noise and Vibration Controls on Construction and Open Sites; Part 1: Code of Practice for basic information and procedures for noise and vibration control).
4. To ensure compliance with the specified vibration limit, monitoring shall be undertaken by the Contractor using a digital seismograph. Such monitoring shall include locations outside the limits of the Site, for which the Contractor shall obtain all necessary permissions. The Contractor shall provide for a minimum of 4 separate vibration monitoring locations to be in operation at any one time.
5. The Contractor shall monitor ground vibrations at selected locations to the approval of the Employer's Representative during the progress of the Works. Each vibrograph shall be certified as being in proper working order and shall unless otherwise approved in writing by the Employer's Representative, record vibrations in three directions simultaneously with a print-out showing the amplitude and frequency of the vibrations. Vibration Control Stations shall be established at locations agreed with Donegal County Council.
6. Groundborne vibrations shall not be permitted at sites of freshly placed concrete, i.e. concrete less than 48 hours old.

APPENDIX 1/10: PRINCIPAL STRUCTURES TO BE DESIGNED BY THE CONTRACTOR

1. The Contractor shall be responsible for the design of the following structures:
 - 300mm deep box beams
 - 300mm deep edge box beams
2. The Contractor shall carry out all necessary surveys to validate precast dimensions set out on the Contract Drawings in Appendix 0/4.
3. The Contractor's design shall comply with the Design Standards Listed below;
 - a. Relevant TII DMRB Standards and the Eurocodes including the Irish National Annexes. Further details of the relevant standards can be found in TII GE-POL-01008.
 - b. PD 6694-1: Recommendations for the Design of Structures subject to traffic loading to BS EN 1997-1.
4. The Contractor is to ensure that all designers have Professional Indemnity insurance to a level of €1.5m.
5. The design rationale and assumptions adopted by the Contractor shall be clearly stated, and as a minimum, shall include for the minimum performance specification as below;
 - a. 120 year design life
 - b. Reinforcement to be Grade B500B to IS EN 10080 and BS 4449.
 - c. Prestressing steel to comply with B.S. 5896:2012 & E.N. 10138-3
 - d. Further performance specification information is presented on the Drawing Notes.

APPENDIX 1/11: STRUCTURAL ELEMENTS AND OTHER FEATURES TO BE DESIGNED BY THE CONTRACTOR

1. All Temporary Works necessary to facilitate the reconstruction and repair works shall be responsibility of the Contractor. All Temporary Works are to be designed in accordance with the Eurocode suite of design standards, as amended by the Irish National Annex. The temporary works anticipated include working platform for craneage, propping of the new bridge deck and lift checks, however this list is not deemed exhaustive. It remains the responsibility of the Contractor to determine the need for Temporary Works required to facilitate the proposed works.
2. Precast supplier to design the tendon arrangement for bridge beams.

APPENDIX 1/12: SETTING OUT AND EXISTING GROUND LEVELS

1. The Contractor shall set out the Works by reference to Malin Head Ordnance Datum ordnance survey digital data and to which all levels quoted on the drawings refer.
2. The Contractor shall verify existing kerb alignments at tie-in points and notify the Employer's Representative of any discrepancy so that the alignments may be adjusted to provide a smooth transition to existing.
3. The Contractor shall confirm the existing carriageway levels at all tie-in points to ensure that the existing vertical alignment of the footpath is maintained upon completion of the refurbishment works.
 - a. Where the Contractor establishes subsidiary permanent control markers, such markers shall be of a substantial type and construction, to the approval of the Employer's Representative. A schedule of all such subsidiary markers, detailing colour coding or any other distinguishing features, shall be supplied to the Employer's Representative.
 - b. The Contractor shall not destroy any Permanent Ground Marker (PGM) or Permanent Benchmark (PBM) until a replacement subsidiary permanent control marker has been established in a position agreed with the Employer's Representative.
 - c. The completion of the Works shall ensure that the new/repared road levels tie in satisfactorily with the existing path levels at the end of the repair works. The Contractor shall give the Employer's Representative 7 days' notice to inspect the proposed tie in level prior to the works being completed.
 - d. The Contractor shall reinstate control stations and permanent ground markers on site to facilitate the execution of the works. A minimum of 3 No. Control Stations shall be established at each site at locations to be agreed with the Employer's Representative. Control Stations shall be sufficiently robust to ensure adequate dimensional control for the scheme.
 - e. For the duration of the works the Contractor shall employ a suitably qualified Surveyor to establish the Control Stations. Details of the proposed Surveyor shall be submitted to the Employer's Representative prior to the establishment of the Control Stations.
 - f. When survey ground markers, reference pegs or Works benchmarks lie outside the limits of the Area Provided by the Employer for the Works, the Contractor shall make all arrangements with the landowners and occupiers for entry and maintenance and shall pay fees in that connection. Upon completion of the Works or when directed by the Employer's Representative, the contractor shall remove such markers, pegs and bench marks and reinstate the ground to the satisfaction of the Employer's Representative.

APPENDIX 1/13: PROGRAMME OF DESIGN AND EXECUTION AND COMPLETION OF THE WORKS**General**

1. The Contractor shall provide the programme in the form of a gantt chart produced as a result of a “critical path analysis” and must abide by the constraints stated or implied in the Contract. It shall show the level of detail appropriate to each stage of the Works and all activities and restraints, each of which shall be given a short title. All events shall be numbered and annotated with earliest and latest event dates. The critical path should be clearly shown on the programme.
2. At the time of presentation of the programme the Contractor shall also provide a mass-haul diagram showing their intended earthworks movements and locations and capacities of anticipated plant and other resource input.

Schedule of Stated Constraints

1. This list of Constraints is not exhaustive, and all other constraints suggested or implied by the Contract Documents or considered prudent by the Contractor following their inspection of the Site shall be taken into account by them in formulating their programme
 - a) Traffic safety and management including notice requirements and restrictions arising from the use of substances hazardous to health.
 - b) Bird breeding season (1st March – 31st July)
 - c) Staging of works for minimal impact on pedestrian users
 - d) Provision of environmental protection prior to the main construction operations
 - e) Approval by the Employer's Representative of domestic subcontractor nominations.
 - f) The “Permitted Access Routes” to and from the Site are outlined in Appendix 1/19 of the Specification. The contractor shall allow for the construction of access routes to site and restrictions on access to and from the site in their programme of works.
 - g) The Contractor is required to submit independent check certificates for temporary works for elements of work in accordance with Clause 174 AR.
 - h) The Contractor is required to complete condition surveys in accordance with Clause 136 of this Specification
 - i) Works to be undertaken to facilitate adequate working space
 - j) Maintenance of access for traffic, pedestrians and cyclists during the works

The Works Programme

1. The programme shall be split up individually for each element of the works. Refer to Volume B: Tender and Schedule for anticipated programme length and completion date. The works in different sections may be programmed to run consecutively or concurrently. The programme should show as a minimum the following detail:
 - a) Mobilisation
 - b) Site set-up
 - c) Set up temporary diversions / road closures
 - d) Ground preparation at repair sites
 - e) Transport of materials
 - f) Fabrication
 - g) Bridge deck construction
 - h) Demobilisation
2. Upon the Employer's Representative confirmation in writing of their acceptance of the Contractor's programme it shall become the Works Programme. If the Employer's Representative shall advise the Contractor that the programme does not comply with the requirements of the Contract, including this Appendix 1/13, or is otherwise not practicable, the

Contractor shall within 7 days thereof submit a revised programme for the Employer's Representative's approval.

3. The Works Programme shall be treated as the baseline target programme against which the progress of construction shall be monitored during the course of the Works. The Contractor shall also recognise that the Employer's Representative shall use the Works Programme as an aid to assessment of the valuation of interim payment.
4. Any activity that generates an imposed time constraint shall be fully defined by the Contractor in the Works Programme and all subsequent revisions of such programme.
5. Approval of the Contractor's programme as the Works Programme by the Employer's Representative shall not in any way relieve the Contractor of any of their contractual obligations, in particular their responsibility to advise the Employer's Representative of the need for further drawings or details or instructions, nor shall it constitute any notice required to be given under the Contract.
6. Approval by the Employer's Representative of any revision to the Works Programme shall not constitute any acknowledgement or acceptance by the Employer's Representative of the Contractor's entitlement to extension of time.

Narrative Report

1. The programme submitted by the Contractor and any revision thereof shall include a narrative report which shall contain, as a minimum, the following information: -
 - a) The Contractor's strategy and methodology for planning and achieving the Date for Completion of the Works or any Section given in the Contract; and
 - b) all relevant data, calculations and assumptions used in deriving all quantities and durations; and
 - c) resource planning and sub-contract/supply procurement details to meet the programme requirements; and
 - d) anticipated periods for approvals, notifications, and procurement items; and
 - e) sequence and inter-dependence of all activities including logic links and float; and
 - f) identify the critical path and critical resources; and
 - g) Access proposals; and
 - h) Submittal schedule of data for the Employer's Representative's acceptance/approval; and
 - i) Any other information that the Contractor deems is relevant to explain the order of procedure and timescales within which he proposes to carry out the Works and/or as requested by the Employer's Representative.

Monthly Programme

1. Each month the Contractor shall submit a programme (the Monthly Programme) to the Employer's Representative not later than 5 days following the end of the period being reported. The data date for each reporting period shall be as agreed with the Employer's Representative and shall be strictly adhered to by the Contractor.
2. The Monthly Programme shall be in the same format, contain the same level of detail as the Works Programme, be accompanied by a narrative report of the same detail as that submitted with the Works Programme while also giving an accurate representation of the status of the Works.
3. The Monthly Programme shall include and clearly define actual start and finish dates, percent complete and remaining durations for all activities including any new or additional activities or omissions, variations to the Works as instructed by the Employer's Representative in accordance with the Contract and any extensions of time granted by the Employer's Representative.
4. In the narrative report accompanying the Monthly Programme, the Contractor shall: -
 - a) compare actual progress against anticipated progress in relation to the sequence, quantities, duration and resource details defined on the Works Programme; and

identify any additional activities or changes since the previous month's update of the Monthly Programme, and

- b) include provision for decisions made in respect of programming or sequencing of the Works at the Employer's Representative's monthly site progress meetings; and
- c) identify and describe any current and anticipated problems that may affect the performance of the Works, the factors causing the problem, and their impacts on the project; and
- d) refer to critical path activities and shall include delay mitigation proposals, where appropriate; and
- e) Include new or revised programme assumptions to be employed in achieving timely completion of the Works.

As Built Programme

1. The Contractor shall within two weeks of practical completion of the Works provide an As Built Programme of the Works which shall contain a similar level of detail as the Works Programme and shall accurately reflect the actual start and finish dates of each activity, all works instructed by the Employer's Representative and any other information necessary to properly record the actual construction history of the Works.

Other Programmes

1. During the Works and as requested by the Employer's Representative the Contractor shall submit other programmes and reports in a format and level of detail that is acceptable to the Employer's Representative within 7 days of such request. The requirements for and effects of such amplifications and detail shall not be grounds for a claim by the Contractor for additional costs or extensions of time.

Extensions of Time

1. All claims for Extensions of Time shall be accompanied by a bar chart network diagram, total float report and narrative report supporting the Contractors claim. The Contractor shall include the sequence of operations, resource implications and other impacts of all work related to each claim.
2. The Contractor shall highlight on the Works Programme the direct logic links between the cause and effect of the event or events in respect of which he is making their claim.
3. Acceptance by the Employer's Representative of changes to the approved version of the Works Programme shall not constitute approval of any Extension of Time.
4. Submission of the programmes and reports specified herein shall not relieve the Contractor of their responsibility to separately make application for instruction, drawings etc. in accordance with the Contract.

Format of Reports

1. All programmes and reports specified herein shall be submitted to the Employer's Representative, unless expressly stated otherwise.
2. The size, number of copies and electronic format of copies of the programmes and reports to be submitted by the Contractor as specified herein shall be as agreed with the Employer's Representative.
3. All programmes shall be submitted electronically by the Contractor together with a paper copy at a size that is appropriate to the information contained on such programmes.
4. The Contractor shall within 7 days of notification of acceptance of their tender issue to the Employer a schedule of all items to be furnished for review and or approval by the Employer's Representative.

APPENDIX 1/14: MONTHLY STATEMENTS**General**

1. The monthly statements submitted by the Contractor to the Employer's Representative in accordance with the Conditions shall, whenever dealing with matters covered by the Bills of Quantities, be set out under Part and Section headings similar to those in the Bill of Quantities and shall separately identify each item and specify quantity, unit, rate and value.
2. Items not described in the Bills of Quantities but appropriate for inclusion as measured work shall be shown at the end of the relevant section or under section headings as appropriate indicating quantity, unit rate and value.

APPENDIX 1/16: PRIVATELY AND PUBLICLY OWNED SERVICES AND SUPPLIES

1. This Appendix contains details of services and supplies located near or within the extents of the Site. For further information on all known services, refer to 24200-DID-ZZ-XX-DR-C-1001.
2. The Contractor is responsible for scanning, identifying, and accurately locating all existing underground and overground services prior to commencing any works. The Contractor shall ensure all services are clearly marked on site and protected throughout the works.
3. The services shown within the drawing are indicative only and it is the Contractors responsibility to carry out their own services search, and to take all reasonable precautions when working on site with regard to undiscovered services including, but not limited to, the use of a cable avoidance tool (CAT).
4. No accommodation works are scheduled to be carried out as part of the services within this contract, however, should the Contract damage any of these services during the works it is their responsibility to contract the service provider, and any costs and penalties cause due to this disruption shall be borne by the Contractor and not the Employer.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT**Traffic Safety and Management Requirements**

1. The Contractor shall be responsible for the planning, implementation, maintenance and removal of traffic safety and management measures required in order to facilitate the work.
2. The Contractor shall comply at all times with the requirement of the Traffic Signs Manual, and any additional requirements detailed in the TII / NRA Standards.
3. Where there is any conflict between the Traffic Signs Manual produced by the Department of the Environment and published by the Stationary Office and Chapter 8 of the Traffic Signs Manual published for the Highways Agency, the Irish and UK standards in respect of such for sign faces and the like the Irish standard shall prevail. Where there are any other conflicts between the Irish and the UK standards the solution that provides for the safest and most conservative solution or highest quality and service shall prevail.
4. The Contractor shall, a minimum of two weeks prior to the commencement of work on Site, or to Offsite areas provide the Employer's Representative with detailed traffic management plans showing the sequence of Construction, within the programme constraints of Appendix 1/13, including the following information as a minimum:
 - i. Phasing of Works.
 - ii. Drawings showing traffic management layout, including:
 - iii. Geometric Design.
 - iv. Position of traffic signals.
 - v. Width of lanes.
 - vi. Working areas.
 - vii. Safety zones.
 - viii. Crossovers.
 - ix. Running lane for emergency vehicles.
 - x. Location for emergency vehicles.
 - xi. Access and exit locations for construction.
 - xii. Timing of operations.
 - xiii. Road lighting requirements
 - xiv. Requirements for Temporary Emergency Telephones.
 - xv. Whether hazard warning lights are an acceptable alternative to a roof-mounted amber flashing lamp and if so, in what circumstances.
 - xvi. Whether a traffic safety and control officer is required.
 - xvii. Restrictions arising from the use of substances hazardous to health
5. The Contractor shall appoint a Chartered Engineer, suitably experienced in Traffic Management and who is to be approved by the Local Roads Authority and the Employer's Representative to prepare traffic management plans.

APPENDIX 1/18: TEMPORARY DIVERSIONS FOR TRAFFIC

1. The Contractor shall provide a detailed Traffic Management Plan to the Employers Representative for each of the bridge sites under repair and construction, where lane or road closures are required.
2. Temporary Traffic Management Design shall be in accordance with Chapter 8 of the Traffic Signs Manual 2019.
3. Any road closures required are to be agreed with the Employers Representative in the first 2 weeks of the contract. Road Closures are only to be proposed, and will only be agreed, where absolutely necessary to enable construction, and for as short a time frame as possible. A minimum of 6 weeks is to be allowed for reasonable statutory processes or stakeholder liaison to enable a decision to be made.
4. 2No. Electronic Variable Message Signs are required per bridge to facilitate the communication of basic information along the road on either side of each bridge. Specification to be agreed with the Employers Representative.
5. The Contractor is to ensure that all access from the existing road to neighbouring landowners is maintained. Any obstruction to these accesses must have written consent from the landowner.

APPENDIX 1/19: ROUTEING OF VEHICLES**Permitted Access Routes to and From the Site**

1. The Contractor shall provide access/egress to and from the Site for construction traffic giving due regard to the safety of the travelling public. All such routes shall be clearly and adequately signed, and drivers made aware of the applicable traffic management arrangements.
2. The Contractor shall submit to the Employer's Representative their proposals for the routeing of traffic, be that the traffic of the Contractor, their sub-contractors and suppliers in the movement or haulage of heavy loads constructional plant materials including spoil or manufactured or fabricated articles (hereinafter referred to as "the construction traffic") including particulars of the public roads which they, the Contractor, proposes to select as routes to be used by the construction traffic.
3. The Contractor shall apply in writing to Donegal County Council for use of haulage routes required for the works and the Employer's Representative shall inform the Contractor in writing of those roads which they approve for use by the construction traffic (such roads are hereinafter referred to as "approved haulage routes").
4. The Employer / Employer's Representative may refuse to approve any road that they consider unsuitable or unreasonable for use by the construction traffic and the Contractor shall therefore propose alternative plans for consideration.
5. The Contractor shall ensure that all plant and vehicular movements to and from the site are limited during the construction period.
6. The Contractor shall liaise with Donegal County Council and the Employer's Representative to ensure approvals are sought regarding to using or forming any Temporary Access Routes.

The Use of the Permanent Works by Construction Traffic

1. The proposed bridge structure has been designed for pedestrian and Emergency Vehicle loading only. The Contractor shall ensure that no construction traffic attempt to access or use the bridge structure as a vehicular route.
2. The Contractor shall limit the use of any other permanent works by construction traffic to essential operations only. Should the Contractor wish to use any component of the permanent works to convey Construction Traffic then they shall request approval in writing from the Employer's Representative in advance.

Movement of Machinery and Plant Across Public Roads

1. Machinery and plant shall only cross public roads where necessary and only after the Employer's Representative grants approval in agreement with Donegal County Council. Where an operation involves the use of heavy or slow-moving plant on the public roads the Contractor shall complete this work during carriageway closures whenever possible.
2. The Contractor shall be responsible for arranging any carriageway closures and/or An Garda Síochána escort were deemed necessary.

Temporary Structures for Construction Traffic Spanning Areas Used by the Public

1. Temporary structures may only be used by construction traffic after written approval has been received from the Employer's Representative and the appropriate authority that is responsible for the area used by the public. The Contractor shall be required to prove the adequacy of any such temporary structure for its intended use and loading requirement.

APPENDIX 1/22: PROGRESS PHOTOGRAPHS**General**

The following schedule describes the progress photographs to be taken

Location	Type	No.	Aerial / Ground	Frequency required	Remarks
Whole Site	Digital Photos of minimum size 10 Megapixels	Weekly progress photographs to be provided by Contractor capturing key construction activities in given week (Min. 5No. per construction activity).	Ground / Drone Photography	Prior to starting date and at weekly intervals until completion	

APPENDIX 1/23: SUBSTANCES HAZARDOUS TO HEALTH**General**

1. The Contractor shall be required to provide temporary screening to protect members of the public, including motorists and other road users, in close proximity to the works.
2. The screening shall be of sufficient construction to protect the public from any substances potentially hazardous to health, which are either being used by the Contractor or are a result of the works.
3. Once erected, the screening shall reduce the concentrations of these substances within the air to levels which are below European Union guidelines. Any monitoring necessary shall be the responsibility of the Contractor.
4. The following list details materials which may require particular precautions:
 - i. Concrete dust
 - ii. Cement dust
 - iii. Aggregate dust

This list is not fully comprehensive and further materials will fall within the scope of this requirement.

5. The Contractor shall submit to the Employer's Representative their proposals for complying with the above requirements 14 days in advance of the use of the potentially hazardous material.
6. All work shall be carried out with due regard to the Health, Safety and Welfare at Work (Construction) Regulations 2013 or any subsequent relevant legislation.
7. The Contractor shall provide the Employer's Representative with a copy of their Safety Statement and shall revise it as necessary in the light of any revised or additional obligations required by law. The statement shall include the Contractor's detailed procedures to be followed in the event of any accident including minor incidents.

APPENDIX 1/24: QUALITY MANAGEMENT SYSTEM

General

1. The Contractor shall institute a quality management system generally complying with BS EN ISO 9001 and Clause 104NI. The quality management system shall be described in a Quality Plan that shall be submitted to the Employer's Representative for acceptance. The Quality Plan shall cover the following items:
 - i. Contractor's organisation management
 - ii. Contractor's method statements and construction procedures
 - iii. Contractor's construction quality control
 - iv. Organisation's Quality Plans

Quality Plans

1. Quality plans shall conform with the requirements tabulated in this Appendix, and shall contain a Quality Management System generally incorporating as a minimum the following aspects

a.	Objectives	
b.	Organisation & staff responsibilities	Organisation Chart Staff profiles and responsibilities Delegation Lines of Command and Communication
c.	Works procedures	Administrative Procedures Control of Documents Control of Sub-Contractors Lists of Methods Statements Ordering and Monitoring Materials Control of Temporary Works Control of Temporary Traffic Management Liaison with Third Parties including Police Liaison with Service Authorities Liaison with Landowners and Local Communities Dealing with Complaints QA Audits and Responsibilities Non-Conformances Pollution Control Environmental Management (Refer to Section 2) Supervision of Construction
d.	Method statements	For every major construction activity
e.	Check lists	For every major construction activity
f.	Inspection and testing	Materials records Materials testing Inspection plans
g.	Quality review	Quality review Quality audits Quality records
h.	Health and Safety	Control audits

2. Items a. and b. of the Quality Plan shall be submitted to the Employer's Representative for its acceptance not later than one week after the contract start date.
3. The contractor shall submit other parts of the Quality Plan prior to commencement of any related work or activity and to a timetable included in item 1a.
4. Method Statements and Check Lists must be prepared for every construction operation and submitted to the Supervisor for comment no later than two weeks prior to commencement of any associated work or activity. Hold points must be identified to allow for checking and material testing at appropriate points. Where required hold points must be inserted to allow the

Supervisor to check materials and the Works. Work may not proceed until the Supervisor has given their consent to proceed.

APPENDIX 1/70: POLLUTION PREVENTION

The Contractor shall implement all necessary measures to prevent pollution and protect the natural environment during the execution of the Works. In particular:

- The Contractor shall be responsible for the protection of all watercourses, groundwater, and drainage systems within or adjacent to the site from contamination, siltation, and disturbance.
- All refuelling, oil storage, and chemical usage shall be carried out in designated areas with appropriate bunding and spill containment.
- The Contractor shall protect all identified protected species, habitats, and ecological features.
- No works shall commence in or near designated environmentally sensitive areas (e.g., ASSIs, SACs, or priority habitats) without approval from the Employer and appropriate regulatory bodies (e.g., NPWS).
- Where works interface with watercourses, the Contractor shall comply with Waterways Ireland guidance and obtain any required Discharge Consents or Abstractions Licences.
- Site personnel shall receive toolbox talks on pollution prevention and biodiversity protection as part of site inductions and regular updates.
- The Contractor shall maintain an Environmental Incident Log and report any pollution events immediately to the Employer and relevant authorities.

APPENDIX 1/71: WORKING WITH EMPLOYER AND OTHERS

The Contractor shall cooperate fully with the Employer, the Employer's Representatives, and other stakeholders to ensure the safe, coordinated, and efficient execution of the Works. In particular:

- The Contractor shall attend regular progress meetings, including those with statutory undertakers, landowners, adjacent contractors, and third-party stakeholders as required by the Employer.
- The Contractor shall coordinate activities to accommodate third-party access, including utility providers, local authorities, and emergency services.
- Advance notice of disruptive works (e.g. road closures, noisy operations, large deliveries) shall be provided to the Employer and affected stakeholders in line with the Communications Plan or Traffic Management Strategy.
- The Contractor shall liaise with utility companies and other third parties identified in the Pre-Construction Information to plan and manage interfaces efficiently.
- Any constraints identified by the Employer, such as working hours, environmental restrictions, or access limitations, shall be adhered to without exception unless otherwise agreed.
- The Contractor shall notify the Employer in writing of any changes to the construction programme that could affect coordination with other parties.

- The Contractor shall contribute to and support the Employer's public liaison and community engagement strategy as required.

APPENDIX 1/72: DONEGAL COUNTY COUNCIL LIAISON

Donegal County Council is the Employer for the Works. Throughout the Works, liaison may be required with DCC. The Contractor shall liaise with Donegal County Council, who will then liaise with landowners prior to carrying out works that are on or will impact their property. All communication except for communication required directly with the Employer in accordance with the conditions of the Contract shall be directed to the Employer's Representative.

APPENDIX 1/74: STAKEHOLDER LIAISON

The Works to be undertaken shall interface with assets owned by Donegal County Council (DCC). During the progress of the Works, the Contractor shall liaise with and take measures required by DCC, adjacent landowners and all other relevant stakeholders. The Contractor shall include for the programming consequences to fulfil all requirements of DCC in the construction programme to the satisfaction of the Project Manager.

APPENDIX 1/75: AS-BUILT DRAWINGS

The contractor shall maintain and submit as-built and construction records and drawings of the works in accordance with the requirements of Clause 172.1AR, 172.2AR and as described below:

Deliverables

1. The Contractor shall be responsible for supplying a detailed set of scalable as-built record drawings. All as-built drawings shall be submitted in A1 format.
2. Drawings shall include but not be limited to:
 - i. All standard, typical and specific details pertaining to the design;
 - ii. All configuration plans and wiring diagrams;
 - iii. Component drawings;
 - iv. General arrangement details;
 - v. Fully coordinated plan layouts for earthworks, foundations, earthing, structures, ducting, drainage, surfacing, watermains and building service layouts and details;
 - vi. Signs;
 - vii. Landscaping;
 - viii. Detailed sections and profile drawings.
3. Plan layouts, general arrangement and plan location drawings shall be drawn in context with the surrounding environment, to demonstrate how newly constructed elements tie in and link with the adjacent works.
4. The Contractor shall maintain and issue to the Employer's Representative interim as-built drawings of the works on request.

As-built drawing submissions

1. The following as-built information shall be issued by the Contractor to the Employer's Representative:
 - i. One electronic drawing file (including reference files and any drawings referred to within the main body of the as-built drawing) and one hard copy of interim asconstructed drawings shall be submitted to the Employer's Representative on request.
 - ii. On completion of the works, one electronic drawing (including reference files and any drawings referred to within the main body of the as-built drawing) and two full size hard copies of the as-constructed record drawings shall be issued to the Employer's Representative.
 - iii. On acceptance of this data a further signed full size hard copy shall be issued to the Employer's Representative.

Drawings

1. The Contractor shall create and maintain drawings within the specifications as laid out in this Appendix. A brief description of the drawing requirements will include but not be exclusive to:
 - i. All design criteria will be drawn to the Project grid;
 - ii. Global origin must be set to world coordinates;
 - iii. All design data to be drawn at a scale of 1:1;
 - iv. All master design files will be submitted at agreed intervals;
 - v. All files must be named in accordance with the drawings in the Contract;
 - vi. All drawings numbers must be in accordance with the drawings in the Contract;
 - vii. Working units must be set to 1000mm per m and 1 pos unit per mm;
 - viii. Drawings shall not contain any additional contractor's address or telephone number other than that shown on the standard drawing sheet;
 - ix. Transmittals will accompany all submittals of drawing data, itemising each individual item, submitted CD's to be labelled and have cross reference of transmittal clearly on it;
 - x. Where drawings are included within reports they are not deemed to have been officially submitted;
 - xi. All submittals will include hard copy, design files and drawing files;
 - xii. Email submittals must be accompanied by a formal transmittal.

Electronic Data

1. All CAD files shall be translated to an acceptable version of AutoCAD 2010 DWG format, along with any font, line style, block or other necessary definition.
2. Each transfer shall be fully documented to detail items such as level use cross-referenced files, necessary directory structure, etc.
3. Full details of the programs used to generate the DWG format file shall be attached for reference.
4. Data transfers shall be readable using equipment currently employed by the Employer's Representative. For small transfers this may take the form of cc: Mail attachments; for large transfers a USB Pen shall be provided to the Employer's Representative.
5. The following standards shall also apply:

- i. Each transfer shall be fully documented to detail items such as layer use, cross-referenced files, necessary directory structure, etc.
 - ii. Data transfers shall be readable using equipment currently employed by the Employer's Representative.
6. Generally, the current version of all application software shall be deemed to be standard, as long as it is compliant with the operating characteristics of the Employer's Representative's computer systems.

0200 – Site Clearance

APPENDIX 2/1: LIST OF BUILDINGS, ETC., TO BE DEMOLISHED

1. All demolition must be carried out in accordance with the Safety, Health & Welfare at Work (Construction) Regulations 2006, and any subsequent relevant legislation
2. The existing road surfacing over the bridge span will be excavated and removed using mechanical plant. This process will be carried out with care to prevent damage to the underlying structural slab. All removed surfacing material will be appropriately disposed of offsite in accordance with waste management protocols.
3. Further excavation will be undertaken to expose the full extent of the existing concrete bridge slab. This operation will involve the removal of granular fill or sub-base material down to the original structural slab level.

APPENDIX 2/3: RETENTION OF MATERIAL ARISING FROM SITE CLEARANCE

General

1. Material arising from excavations, if suitable, may be used within the same Section it originates, at locations to be agreed with the Employers Representative.
2. Appropriate measures must be taken to safeguard the Health of the Contractor's operatives and the general public.
3. Hazardous materials arising from site clearance and/or excavations shall be disposed of only at sites licensed by the County Council of the area for the arisings or other licensing authorities.
4. All waste waters and contaminated effluents must be collected and removed from the site to a suitable location.

0600 – Earthworks

APPENDIX 6/1: REQUIREMENTS FOR ACCEPTABILITY AND TESTING ETC OF EATHWORKS MATERIALS

Acceptable limits for fills

1. Earthworks materials shall comply with the Series 600 of the Specification for Road Works. The permitted classes of construction materials are defined in CC-SPW-00600 Table 6/1.
1. Materials for use as landscape fill shall be Class 4 and shall comply with the requirements of Clause 601.2 (i) (b) NI.
2. The Contractor's should show the location of general and selected imported granular fill proposals on drawings.
3. The classification and confirmation of acceptability of the earthwork's material shall be carried out by the Contractor either at the point of loading or the point of deposition for imported materials. The tests required and the rate of testing required shall be as stated in Appendix 1/5.
4. If in the opinion of the Supervisor the material has altered its classification or become unacceptable for whatever reason, he may require the Contractor to repeat the classification and acceptability tests given in Table 6/1 and Appendix 1/5.
5. Acceptability limits and requirements for earthworks materials are shown in Table 6/1. Depending on the results from the Contractor testing the acceptability limits may be modified by the Employer's Representative if considered necessary.
6. The Contractor shall submit two copies of all test results to the Supervisor within one working day of the completion of the test. The copies shall be signed by the Contractor's Representative.
7. Class 3 material shall not be used.
8. The Contractor shall take full responsibility for dealing with known or suspected U1B materials.
9. Construction areas shall be kept free of groundwater, and all reasonable measures shall be taken to ensure that the sub-grade is protected.
10. Excavations should be kept free of standing water by either pumping from sumps or installing temporary drainage.
11. Acceptable material excavated on site shall be as classified in MCHW Series 600 Table 6/1. The Supervisor shall decide upon the suitability of excavated material for reuse, taking due cognisance of seasonal variation and ground conditions.
12. No material shall be incorporated within the works until tests for classification and acceptability have been carried out. Failure to comply with this request, which could result in delays to the contract, will be the responsibility of the Contractor.
13. Trial pits shall be carried out as directed by the Supervisor.
14. Logging and sampling shall be carried out as per the requirements of Appendix 1/5

Class	Property	Acceptable Limits	
		Lower	Upper
1A	Grading	Table 6/2	Table 6/2
	Uniformity Coefficient	10	-
	mc	5	15
1B	Grading	Table 6/2	Table 6/2
	Uniformity Coefficient	-	10
	mc	5	15
1C	Grading	Table 6/2	Table 6/2
	Uniformity Coefficient	5	-
	Los Angeles Coefficient	-	50
2A	Grading	Table 6/2	Table 6/2
	MCV	8	13
	Undrained shear strength	50kPa	150kPa
2B	Grading	Table 6/2	Table 6/2
	MCV	8	13
	Undrained shear strength	50kPa	150kPa
2C	Grading	Table 6/2	Table 6/2
	MCV	8	-
	Undrained shear strength	50kPa	-
2D	Grading	Table 6/2	Table 6/2
	MCV	8	13
	Undrained shear strength	50kPa	150kPa
4	Grading	As for Class 2 Table 6/2	As for Class 2 Table 6/2
	MCV	5	15
	Undrained shear strength	40kPa	-
5A	Grading	-	Clause 618
5B	Comply with BS3882		
6C	mc	omc-1.5%	omc+0.5%
6H	mc	omc-1.5%	omc+0.5%
	MCV	8	13
6I	mc	omc-1.5%	omc+0.5%
	ϕ'	36o	-
	c'	0	-
	Coefficient of friction and adhesion	0.7	-

6J	mc	omc-1.5%	omc+0.5%
	Ø'	36o	-
	c'	0	-
	Coefficient of friction and adhesion	0.7	-
6N1	As Class 6N with:		
	mc	omc-1.5%	omc+0.5%
	Ø'	35o	45o
	c'	0	-
6N2	mc	omc-1.5%	omc+0.5%
	Ø'	36o	-
	c'	0	-
6P	mc	omc-1.5%	omc+0.5%
	Ø'	36o	-
	c'	0	-
	Slope stability	1:1.5 h/v	
6P(i)	As Class 6P with:		
	mc	omc-1.5%	omc+0.5%
	Ø'	35o	45 o
	c'	0	-
	Slope stability	1:1.5 h/v	
8	MCV	8	13

Requirements for Determining Acceptability

1. The Employer's Representative will be responsible for Classifying earthworks materials as well as confirming founding levels onto the rock for the central foundation and abutments. The Contractor will be responsible for the testing of earthworks materials. The testing types and frequency for Earthworks Materials are given in Appendix1/5. Facilities shall be provided to allow the Employer's Representative to supervise any or all tests. The procedure for submission of test results shall be as follows:
 - a) At least one week prior to excavation of material from Cut or Borrow Area intended for use as Acceptable Material on site, the Contractor shall give 24 hours notice to the Employer's Representative of their intention to excavate Trial Pits for the purpose of sampling.
 - b) At least one week prior to excavation of imported materials intended for use as Acceptable Material on site, the Contractor shall give 48 hours notice to the Employer's Representative of their intention to obtain samples of materials at the source location for the purpose of earthworks classification.
 - c) The location of the Trial Pits shall be agreed with the Employers Representative and shall be generally at a spacing to give one Trial Pit in the proposed Acceptable Material. Facilities shall be provided for the taking of duplicate samples by the Employer's Representative.
 - d) Laboratory testing shall be carried out to show compliance of material with Tables 6/1, 6/2
 - e) and Appendix 6/1. Laboratory testing shall be carried out with regard to maximising the use of materials encountered on site.

- f) Earthwork materials shall be tested and classified at the site of deposition and excavation as required by the testing schedule of Appendix 1/5.
- g) Trial Pit sampling shall be in accordance with BS 5930:1981 Code of Practice for Site Investigations (British Standards Institution).

Requirements for removal off site of excavated material requiring processing or retention of surplus material on site.

1. The Employer reserves the right to restrict off-site tipping of all surplus material from the site, where this is likely to be prejudicial to future road proposals or any other development of which the Department is aware. Accordingly, details, locations, etc. of any proposed tipping shall be agreed with the Site Supervisor before any material is taken from site.
2. All surplus acceptable material shall be disposed of in licensed approved tips (See App. 0/5 and Clause 650A). Accordingly, details, locations, etc. of any proposed tipping shall be agreed with the Employer before any material is taken from site.
3. Where approval is given to the use of any particular site, this in no way implies a right to tip, or absolves the Contractor from compliance with relevant legislation, or statutory procedures.
4. Where approval cannot be given, and an alternative site must be agreed no extra costs will be allowable to the Contractor.
5. The Employer's Representative shall decide upon the acceptability of ground conditions for road formation. These materials shall be tested in accordance with Clause 636 and Appendix 1/5.

Requirements for determination of sulphate content of fills.

6. For all materials to be used as structural backfills around concrete or metallic structures that form part of the permanent works, limiting values of sulphur chemical constituents must be assessed on a frequency dictated by Appendix 1/5 in order to establish acceptability of the material prior to use.

APPENDIX 6/2: REQUIREMENTS FOR DEALING WITH CLASS U2 UNACCEPTABLE MATERIAL

Methods of excavation, precautions, and requirements for handling

1. If Class U2 material is encountered in the Works, it shall be disposed of in a manner to be agreed between the Contractor and the Employer's Representative and to comply fully with Appendix 0/5 (Clause 650A, Waste Management) and the relevant legislation inclusive of: - Waste Management (Facility Permit and Registration) Regulations 2007.
2. If Class U1B material is encountered in the Works, it shall be disposed of in a manner to be agreed between the Contractor and the Employer's Representative and to comply fully with all relevant Irish environmental legislation.
3. All test methods to be used for chemical analysis of hazardous materials, leachate and contaminated water shall be in accordance with relevant Irish legislation and shall be agreed by the Employer's Representative.
4. All methods of excavation, precautions, and requirements for handling for class U1B and or U2 shall be in accordance with relevant Irish legislation.
5. All methods of special requirements for drainage to be done in accordance with Donegal County Council requirements and relevant Irish legislation. Contractor is responsible for seeking approval for discharge from Donegal County Council

APPENDIX 6/3: REQUIREMENTS FOR EXCAVATION, DEPOSITION, COMPACTION (OTHER THAN DYNAMIC COMPACTION)

Excavation

1. Earthworks requirements should comply with the following.
 - i. Side slopes not steeper than 26° (1:2).
 - ii. Blasting for excavation not permitted.
 - iii. Compaction to comply with requirements of Clause 612
2. The Contractor shall be responsible for the design of all required temporary works for excavations ensuring that it is adequately supported to prevent earthworks failure or any movement or adverse impact on adjacent structures. Excavated materials classified as Class 4 material may be retained on site and deposited in areas designated as landscape areas to facilitate re-profiling and re-grading.
3. All material classified as U2 unsuitable material shall be removed from site by the Contractor and disposed of at a suitably licensed landfill.

Watercourses

1. When excavating near designated or undesignated watercourses, the relevant statutory body should be consulted prior to the commencement of any work taking place and approval sought.
2. At all times, all excavations should be assessed in order that their impact on Environmental Issues are reduced and comply with the current legislation. Pollution prevention measures should be in place prior to the works and the NPWS notified and consulted for guidance.

Compaction

1. Compaction of all materials, other than Class 4 and 5 materials, shall comply with the requirements of Table 6/1 and Clause 612 Method Compaction.
2. All loose material at structural foundation level to be compacted before placing blinding concrete or backfill layer.
3. Compaction of Class 4 materials shall comply with the requirement of Clause 620.
4. Compaction shall be undertaken using the plant and methods described in Table 6/4 appropriate to the compaction requirements as listed in Table 6/1 for the Class of material being compacted.
5. Earthmoving plant shall not be accepted as compaction equipment

APPENDIX 6/4: GEOTEXTILES USED TO SEPARATE EARTHWORKS MATERIALS

Refer to Design Drawings referenced in Appendix 0/4 where appropriate.

APPENDIX 6/6: FILL TO STRUCTURES AND FILL ABOVE STRUCTURAL FOUNDATIONS

1. The following materials are permitted for use as fill to structures within acceptable limits:
 - a) Materials Class 6N/P are permitted for use as fill to structure within acceptable limits.
 - b) Effective angle of internal friction to be a minimum of 35°.
 - c) Effective cohesion to be zero.
2. These materials shall be tested in accordance with Clause 636. Refer to Appendix 1/5.
 - a) Granular Regulating material layer shall be Class 6B as defined in Table 6/1.

- b) Imported topsoil shall be Class 5B as defined in Table 6/1. 1. Acceptable limits for the fills in Table 6/1 appropriate to the Contract [Table 6/1, 602.1 and 608.1] and refer to drawing 24103-DID-ZZ-XX-DR-C-1001 for asphalt surface, base and subgrade fill specification:
 - c) permitted Classes where alternatives are listed in the Specification.
 - d) those materials, which may be used for landscape fill Class 4.
 - e) cross-references to Drawings showing location of 'zoning' of general and selected fills.
 - f) additional sub-divisions of Classes in Table 6/1 required for the Contract.
 - g) alternative and additional requirements for triaxial and shear box tests [633 and 636].
3. Special requirements for determining acceptability, who classifies and where, and whether trial pitting is required [See NG 602.1]. Where the Contractor is responsible for testing, the tests required should be scheduled in Appendix 1/5 and cross-referenced here.
4. Any requirement for processing to render unacceptable material Class UI acceptable, cross-referring to Drawings where necessary, for each type of material to be processed and class of material to be produced. Wherever possible the means of processing should be left to the Contractor.

0700 – Road Pavements (General)

APPENDIX 7/1: PERMITTED PAVEMENT OPTIONS

1. For the specification of road build-ups and pavement types, refer to design drawings referenced in Appendix 0/4.

APPENDIX 7/2: EXCAVATION & REINSTATEMENT OF EXISTING SURFACES

1. The existing road surfacing over the bridge span will be excavated and removed using mechanical plant. This process will be carried out with care to prevent damage to the underlying structural slab. All removed surfacing material will be appropriately disposed of offsite in accordance with waste management protocols.
2. Further excavation will be undertaken to expose the full extent of the existing concrete bridge slab. This operation will involve the removal of granular fill or sub-base material down to the original structural slab level.
3. The road is to be reinstated as per design drawings referenced in Appendix 0/4.

1100 – Kerbs, Footways and Paved Areas

For the specification of all kerbs, footways and paved areas, refer to design drawings referenced in Appendix 0/4.

1700 – Structural Concrete

APPENDIX 17/1: CLASSIFICATION OF MIXES

These mixes below shall be supplied as designed mixes in accordance with the relevant clauses of I.S. EN206-1.			
1. Mix reference		1 Concrete Deck & Bank Seat	2 Abutment Extension & Abutment Fill
2. Strength class		C40/50	C45/55
3. Nominal maximum size of aggregate, in mm (D)		20	20
4. Types of aggregate: Course Other (specify requirements) Fine Other (specify requirements)	IS EN 12620 IS EN 12620		
5. Sulphate class (ring as appropriate)	XA 1 XA 2 XA 3	N/A	N/A
6. Cement type(s) or combinations complying with (underline those permitted) CEM I N IS EN 197-1 CEM I <u>N</u> IS EN 197-1 CEM I SR B.S. 4027 Others (specify requirements)	CEM I N CEM I R CEM I SR	IIB-P, IIB-Q, IIB-V, IIIA	IIB-P, IIB-Q, IIB-V, IIIA
7. Exposure Class (As in IS EN 206-1) (or combination)	X0 XC1, XC2, XC3, XS1, XS2, XS3, XD1, XD2,	XC3/4 XD3 XF2	XC1 XD3 XF3

	XD3, XF1, XF2, XF3 XA1, XA2, XA3		
8. Chloride Class	CI 1,0 CI 0, 30 CI 0, 20 CI 0, 10	CI 0, 30	CI 0, 30
9. Minimum cement content, kg/m ³		380	380
10. maximum free water / cement ratio		0.35	0.35
11. Quality assurance requirements		(1)	(1)
12. Rate of sampling intended by the purchaser for strength testing (for information)		Refer to Appendix 1/5	Refer to Appendix 1/5
13. Other requirements (alkali, colour, etc as appropriate)		Freeze/thaw resisting aggregates	Freeze/thaw resisting aggregates
14. Consistence	Slump Class	S4	S4

General

Each constituent material shall be obtained from a single consistent source.

APPENDIX 17/3: SURFACE FINISHES**General**

1. Hidden / un-exposed formed concrete surfaces shall be to class F2 finish to Clause 1708.
2. All other formed concrete surfaces (exposed) shall be to class F4 finish to Clause 1708.
3. Hidden / un-exposed unformed concrete surfaces shall be to class U2 finish to Clause 1708.
4. All other unformed concrete surfaces (exposed) shall be to class U3 finish to Clause 1708.
5. A regular formwork joining pattern is required at all exposed surfaces.
6. All exposed concrete surfaces shall be of a uniform colour, match the existing concrete colour and are subject to approval by the Employers Representative.
7. Internal ties are permitted on; spandrel, abutment, wing walls and retaining walls, where facing stonework is to be constructed. The Contractor shall propose the use of ties to the Employers Representative for approval and shall ensure that the integrity of the reinforcement shall not be compromised as a result

APPENDIX 17/4: GENERAL**General**

1. All reinforcement shall be in accordance with Clauses 1712 and 1713 of the SHW. All Reinforcement, unless otherwise stated, to be hot rolled high yield bars or cold worked steel bars complying with the requirements of BS 4449 or BS 4483 and shall be cut and bent in accordance with BS 8666 and shall be obtained from a firm holding a valid CARES certificate of approval. Deformed reinforcement bars shall have Type 2 bond strength.

2. Retarding agents shall not be permitted.

3. Sampling and testing of fresh and hardened concrete shall comply with Clause 1707.1. Identity testing is not required.

The positions of construction joints are shown on the Contract Drawings. Additional positions may be proposed by the Contractor subject to submission of details to the Employer's Representative and subject to the additional positions not compromising the integrity, durability or aesthetics of the structure.

4. The Contractor shall design the number, type and location of any embedded lifting devices required for the handling, transport and temporary support of precast concrete members. Precast members shall not be supported on concrete sections of nominal thickness 150mm or less. Embedded lifting devices shall not be located within concrete sections of nominal thickness 150mm or less. Full details and supporting calculations for embedded lifting devices shall be submitted to the Employer's Representative not less than 10 days prior to commencement of casting. Following installation of precast members, any lifting devices shall be covered over with concrete replacement grout of the same colour as the member concrete and the grout finished flush with the concrete face. Where the depth of grout cover to a lifting device does not exceed the nominal cover to reinforcement for the member, the lifting device shall be corrosion resistant.

5. Precast units shall be lifted only from locations shown on the manufacturer's drawings.

6. The Contractor shall submit a Structural Concrete Works Quality Plan to the Employer's Representative within 21 days of the Contract Date or a minimum of 20 working days in advance of the any preparatory works for structural concrete construction, whichever date occurs earlier. The Structural Concrete Works Quality Plan may be separate from, or part of the Quality Plan described in Appendix 1/24, but shall, in either case, be consistent with the Quality Plan described in Appendix 1/24. The Structural Concrete Works Quality Plan shall include:

- i. An inspection plan for all structural concrete as detailed in I.S. EN 13670 Clause B.4.3.2 and B3.3.3.
- ii. A pro forma for a Pre-Pour Inspection Report which makes provision for recording inspection as per the requirements of I.S. EN 13670 Clause 4.3.2 and Clause 4.3.3.
- iii. A pro forma for a Post-Pour Inspection Report which makes provision for recording inspection as per the requirements of I.S. EN 13670 Clause 4.3.2 and Clause 4.3.3.
- iv. Details of the items to be included in the execution record documentation for each structural component, including those listed in I.S. EN 13670 Clause A.4.2.3. For the purpose of these requirements, all structural concrete shall be considered significant for the loadbearing capacity and durability of a structure.

APPENDIX 17/7: PRECAST CONCRETE PRODUCTS

1. Where there is no relevant European Product Standard, manufacture of precast elements shall be in accordance with I.S. EN 13369.
2. Refer to Appendix 0/4 for a list of drawings containing technical data.

2000 – Waterproofing for Concrete Structures

APPENDIX 20/1: WATERPROOFING FOR CONCRETE STRUCTURES

1. As per the drawings referenced in Appendix 0/4, all concrete deck surfaces shall be coated with a Sika® Ergodur® epoxy overlay and Sikalastic® liquid applied membrane, or similar approved in accordance with CC-SPW-02000.
2. Epoxy waterproof coating shall extend a minimum of 500mm below ground level.
3. Epoxy waterproof coating shall be applied more than 300mm wide at any inclination, more than 30 degrees up to and including 90 degrees to the horizontal and shall terminate above the proposed surfacing.
4. All below ground concrete surfaces of the abutments and foundations shall be treated with two coats of bituminous waterproofing such as Fosroc Mulseal DP, or similar approved in accordance with CC-SPW-02000.
5. All blowholes in concrete surfaces shall be cleared out, filled with approved non shrink cementitious filler such as "Fastpatch" or "Fastplug" and the repair work properly cured before application of coating.
6. Immediately before the application of the primer or laying of the waterproofing system or protective layer, the concrete surface or primed surface shall be clean, dry and free from ice, frost, laitance, loose aggregate, dust and other debris and also where the adhesion of the concrete would not be impaired, free from curing liquids, compounds and membranes.
7. The permission of the Employer's Representative shall be obtained before any plant, equipment and traffic is permitted onto the waterproofing system.
8. Rollers shall not be permitted to stand or travel directly on the waterproofing system.
9. Where it is necessary for plant, equipment or traffic to stand or travel on the waterproofing system, suitable temporary protection is to be provided to the satisfaction of the Employer's Representative.
10. Tests shall be carried out in accordance with the Specification CC-SPW-02000.

2300 – Bridge Deck Expansion Joints and Sealing of Gaps

APPENDIX 23/2: SEALING OF GAPS SCHEDULE (OTHER THAN IN BRIDGE DECK EXPANSION JOINTS)

1. Grout shall be High-flow, non-shrink, cementitious grout (Fosroc Conbextra BB or similar approved) and suitable for gap thicknesses of 10 to 100mm. The grout shall have a minimum compressive strength of 50 MPa after 7 days.
2. Grout shall be mixed, placed and cured in strict accordance with the manufacturer's instructions.
3. Expansion Joints on each abutment are to be filled with Fosroc Hydrocell XL Filler Board and sealed with Fosroc Nitoseal PU220PF or similar approved.

2400 – Brickwork, Blockwork and Stonework

APPENDIX 24/1: BRICKWORK, BLOCKWORK AND STONEMASONRY

General

1. All new stonework and repairs to existing masonry structures shall be in accordance with the requirements of Series 2400 of TII SRW. Locations and layouts are detailed on the contract drawings.
2. Deviations in geometry of wall to fall within the limits outlined in Table 3.1 IS EN 1996-2 2

APPENDIX 24/2: BRICKWORK, BLOCKWORK AND STONEMASONRY: NRA STANDARD CONSTRUCTION DETAILS

1. The following TII Standard Construction details are relevant.
 - i. CC-SCD-02404 Walls - Typical Stonework Wall
 - ii. CC-SCD-02407 Walls - Principles of Stonemasonry

Refer to the contract drawings for locations where the above details are to be utilised.

2600 – Miscellaneous

APPENDIX 26/1: ANCILLARY CONCRETE

General

1. Standard prescribed concrete mixes are as defined by IS EN 206:2013+A1:2016, BS 8500-1:2015+A1:2016 and BS 8500-2:2015. The standard mixes to be used are:
 - a. ST1
 - i. Blinding Concrete
 - b. ST4
 - i. Bedding and backing to precast concrete kerbs, channels, edgings and quadrants
 - ii. Bollard and signpost foundations
2. All other concrete shall be designed structural concrete in accordance with Appendix 17/1

3000 – Landscape and Ecology

APPENDIX 30/11: MANAGEMENT OF WATERBODIES

It is the responsibility of the Contractor to ensure no pollution of existing watercourses occurs. The Contractor shall undertake the works in such a manner as to avoid degradation of water quality either by pollution from oil spills or by causing turbidity due to disturbance of silt or spoil from operations.

Specific measures to be taken to prevent the above shall include the following:

1. Contractors plant, equipment etc. Shall be free of any mechanical defects and be well maintained so as to prevent soil, fuel or detergent leaks into the river.
2. The Contractor shall take special precautions in relation to protection of watercourses. The Contractors method statement should make specific reference to measures for the protection of river quality.
3. Measures to ensure no spillage of fuel or cement-based material or any other leakages occur to the watercourse for the duration of the works.
4. All works will be undertaken in accordance with best practice guidelines for working alongside watercourses.

APPENDIX 30/12: SPECIAL ECOLOGICAL MEASURES

1. The bird nesting season in Ireland is from 1st March to 31st August. A closed season on hedge cutting and tree-felling has been adopted under the Wildlife (Amendment) Act 2000. Should the contractor wish to remove trees or hedges during this period a qualified Ecologist should be employed to assess the trees/hedges for the presence of birds/nests. The Employer's Representative shall also be informed prior to commencement of any works, to ensure this procedure has been appropriately followed.
2. Reference to be made to Delichon Ecology Appropriate Assessment Screening and Ecology Reports provided with the Works Information for detailed ecological risk assessments and recommendations to be followed by the Contractor.
3. The Contractor shall implement measures that are imposed by the Environmental Protection Agency (EPA), National Parks and Wildlife Service (NPWS) and any relevant Environmental Organisations to protect any species that are identified within or in the locality of the works area.
4. The following Best Practice guidelines and procedures shall be adhered to by the Contractor:
 - Guidelines on Protection of Fisheries during Construction Works in an Adjacent to Waters, Inland Fisheries (Inland Fisheries Ireland, 2016);
 - Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA 2005a);
 - Guidelines for the Treatment of Otters during the Construction of National Road Schemes (NRA, 2006);
 - Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (Revision 1; NRA, 2010);
 - Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub, Prior, During and Post Construction of National Road Schemes (NRA, 2006);
 - Control of Water Pollution Form Construction Sites (CIRIA C532).
5. All watercourses fall within the remit of Inland Fisheries Ireland (IFI). The requirements of IFI shall be fully complied with. The Contractor shall note the rivers and streams that are liable to flooding.
6. The Contractor shall provide Inland Fisheries Ireland (IFI) with detailed Method Statements when planning to work in water, to ensure that the ecological requirements and fisheries interests are being met, within two weeks of appointment. Approval with IFI to be provided 1 week before any construction work is under-taken.
7. Before any earthworks commence on site, drainage, erosion control and sediment control measures shall be in place and functioning.

8. To ensure establish and ensure compliance with appropriate Environmental Control Measures, it is recommended that the Contractor engages an Ecological Clerk of Works (ECoW) for the duration of the construction works to oversee the site works.