



Comhairle Chontae Liatroma
Leitrim County Council

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Shesknan Bridge Works

Works Information

Volume A – Part 1 – Specification

25319-DID-03-A-SP-C-7001

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PREAMBLE TO THE SPECIFICATION

1. The Specification referred to in the Contract shall be the Specification for Works (SPW) in TII Publications (Standards) published by TII as a collective group of documents under the Construction and Commissioning activity within the online TII Publications system (<http://www.tiipublications.ie/>), current on the date 10 working days prior to the tender returns date or, if applicable, the extended tender returns date and incorporating all amendments current on that date and as 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 listed in Appendix 0/3;
 - iv) Appendix 0/4 containing a list of the drawings referred to in the Specification.
2. An Additional Clause as indicated by a suffix 'AR' in Appendix 0/1 is a Contract-specific alteration.
3. A Substitute Clause as indicated by a suffix 'SR' in Appendix 0/1 is a Contract-specific alteration.
4. A Cancelled Clause indicated by a suffix 'CR' in Appendix 0/1 is a Contract-specific alteration.
5. Insofar as any of the Numbered Appendices may conflict or be inconsistent with any provision of the SPW the Numbered Appendices shall always prevail.
6. Any reference in the Contract to a part of the SPW or Appendix shall be deemed to refer to the corresponding Substitute part of the SPW or Appendix listed in Appendix 0/1 or 0/2.
7. Where a part of the SPW is altered, any original Table/Figure referred to in the part of the SPW shall apply unless the Table/Figure is also altered. Where a Table/Figure is altered, any reference in a part of the SPW to the original Table/Figure shall apply to the altered Table/Figure.
8. Where a part of the SPW relates to work goods or materials that are not required for the Works it shall be deemed not to apply.
9. Any Appendix referred to in the SPW that is not used shall be deemed not to apply.
10. References in the SPW to "NRA Road Construction Details" shall be taken to refer to Standard Construction Details (SCD) in TII Publications (Standards) published by TII as a collective group of documents under the Construction and Commissioning activity within the online TII Publications system (<http://www.tiipublications.ie/>), current on the date 10 working days prior to the tender returns date or, if applicable, the extended tender returns date.
11. Text shown in grey highlight applies only to Contracts where the applicable Conditions of Contract is the Public Works Contract for Civil Engineering Works Designed by the Employer, the

Public Works Contract for Minor Building and Civil Engineering Works Designed by the Employer.

12. Text shown in square brackets immediately following text shown in grey highlight, if any, is deemed to replace the text in grey highlight for Contracts where the applicable Conditions of Contract is the Public Works Contract for Civil Engineering Work Designed by the Contractor.
13. Throughout the SPW and Appendices to the SPW, the following interpretations shall apply:
 - “Base Course” shall mean “Binder Course”
 - “Roadbase” shall mean “Base”
 - “Wearing Course” shall mean “Surface Course”
 - “Department of Transport” shall mean “Transport Infrastructure Ireland”

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

(i) List of Additional Clauses, Tables and Figures

Clause No.	Title
133 AR	Protection of Watercourses from Pollution
134 AR	Protection of Existing Works and Amenities
135 AR	Waste Management
170 AR	Temporary Construction Access Platforms

(ii) Additional Clauses, Tables and Figures

Clause No.	Title and Written Text
133 AR	<u>Protection of Watercourses from Pollution</u> The Contractor shall ensure that waste products of whatever description associated with the execution and completion of the Works shall not enter watercourses, whether dry or not, which are adjacent to the execution and completion of the Works.
134 AR	<u>Protection of Existing Works and Amenities</u> Prior to the commencement of the execution of the Works, the Contractor shall provide to the Employer's Representative complete records (photographic or otherwise) of existing structures and other properties that shall or may be affected by the execution and completion of the Works. The Contractor shall ensure that all times that existing structures are not undermined or damaged during the repair process.
135 AR	<u>Waste Management</u> The Contractor shall exercise due care in the handling and disposal of any potentially contaminating material. Appropriate site management control shall be demonstrated at all times to minimise the potential for pollution of the environment. The Contractor shall submit a Waste Management Plan to the Client's Representative for approval, a minimum period of 2 weeks in advance of any works commencing on the site. This shall include details of the following items: All proposed methods of waste disposal (reuse, recycle, landfill, discharge to drain, etc). Details of the proposed licensed waste disposal contractors and licensed disposal sites, to be used by the Contractor. The Contractor shall maintain detailed records and receipts for all movements of waste materials from the site, for inspection by the Employer's Representative. The Contractor shall carry out the works in accordance with the "Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998)

Clause No.	Title and Written Text
	and Waste Management (Hazardous Waste) (Amendment) Regulations 2000”.
170 AR	<u>Temporary Construction Access Platforms</u> The Contractor shall construct, maintain and remove temporary construction platforms in accordance with the requirements stated in Appendix 1/71.

APPENDIX 0/2: CONTRACT – SPECIFIC MINOR ALTERATIONS TO EXISTING CLAUSES, TABLES AND FIGURES INCLUDED IN THE CONTRACT

None.

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 a 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 providing 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
E	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
E	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	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
E	1/25	Product Certification Schemes
Not Used	1/26	NSAI Agrément Certificates
E	1/70	As-Built Record Drawings
E	1/71	Temporary Construction Platforms
E	1/72	Leitrim County Council Liaison
Site Clearance		
E	2/1	List of Buildings, etc., to be Demolished
Not Used	2/2	Filling of Trenches and Pipes
Not Used	2/3	Retention of Material Arising from Site Clearance
Not Used	2/4	Explosives and Blasting
E	2/5	Hazardous Materials
E	2/70	Vegetation Clearance
Fencing and Environmental Noise Barriers		
E	3/1	Fencing, Gates and Stiles
E	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
E	4/7	Vehicle Parapet Systems
Drainage and Service Ducts		
E	5/1	Drainage Requirements
Not Used	5/2	Service Duct Requirements

Not Used	5/3	Surface Water Channels and Drainage Channel Blocks
E	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: TII 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)
Not Used	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
E	6/70	Scour Protection
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
Not Used	7/5	Road Pavements: TII 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 Pavement
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
E	11/3	Kerbs, Footways and Paved Areas: TII Road Construction Details
Traffic signs		
Not Used	12/1	Traffic Signs: General
E	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
Structural Steelwork		
E	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
Not Used	19/3*	(Specification for Road Works) Form BE/P3 Paint Sample Despatch List: Sheet 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		
Not Used	20/1	Form PWS Proprietary Waterproofing System Data Sheet (1991 & Annex 'A')
E	20/2	Waterproofing for Concrete Structures
Bridge Bearings		
Not Used	21/1	Bridge Bearing Schedule
Bridge Expansion Joints and Sealing of Gaps		
E	23/1	Bridge Deck Expansion Joint Schedule
Not Used	23/2	Sealing of Gaps Schedule (other than in Bridge Deck Expansion Joints)
Brickwork, Blockwork and Stonework		
E	24/1	Brickwork, Blockwork and Stonework
E	24/2	Brickwork, Blockwork and Stonework: TII 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		
E	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

List of Contract – Specific Numbered Appendices – List B

Contract for Works Designed by the Employer	Appendix No.	Title
Compiled/ Completed By		
E	70/1	Ecological Measures
E	70/2	IFI Engagement

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

Contract-specific Drawings Supplied to Each Tenderer

Drawing Number	Title
25319-DID-03-XX-DR-C-1001	Shesknan General Arrangement
25319-DID-03-XX-DR-C-1002	Shesknan Sections and Details

Standard Drawings

(i) Supplied to Each Tenderer

Not used

(ii) Inspected by tenderers

Not used

(iii) Brought into the Contract by Reference

For specific additional information brought into this contract by reference, please refer to:

- Volume 3: Information Pack supplied with this Tender.

Other Documents under Information Pack

Company	Title
Inland Fisheries Ireland	Guidelines on Protection of Fisheries during Construction Works in an Adjacent to Waters, Inland Fisheries (Inland Fisheries Ireland, 2016)
National Road Schemes	Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA 2005a)
National Road Schemes	Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub, Prior, During and Post Construction of National Road Schemes (NRA, 2006)
National Road Schemes	Guidelines for the Treatment of Otters during the Construction of National Road Schemes (NRA, 2006);
National Road Schemes	Guidelines for the Treatment of Bats during the Construction of National Road Schemes (NRA, 2005b)
National Road Schemes	Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (Revision 1; NRA, 2010)
CIRIA	Control of Water Pollution Form Construction Sites (CIRIA C532)

APPENDIX 1/4: WORKING AND FABRICATION DRAWINGS

General

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.

1. 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 Reinforced 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 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 1/11)

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

General

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.

Plate Bearing Tests

1. Contractor to carry out 2 No. plate bearing tests per abutment at proposed formation level

Plate Bearing Test Specification				
SLS Bearing Pressure (kN/m ²)	Factor of Safety	Test Pressure (kN/m ²)	Test Plate Diameter (mm)	Minimum Kentledge (T)
250	2	500	450	9
Each test to be a Plate Bearing Test, to EC7 and BS 1377, to demonstrate that the proposed locations can provide the minimum Bearing Capacity required with suitable settlement characteristics. A minimum 450mm plate diameter is required to simulate the area of imposed ground bearing and to prevent damage to the existing surface, such as rutting/deformation. Design ID are to be informed should this occur.				

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
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Series 600						
601, 631 to 637 and 640	Acceptable Material					
	Class	General Description				
	1	General	Granular Fill	Grading/uniformity	Twice a week*	Required
				coefficient		
				mc/MCV (N)		
				SMC of chalk (N)		
			1C only	Resistance to	Weekly*	[LA category]
	2	General cohesive fill	Grading		Twice a week*	Required
			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*	
			Resistance to fragmentation (N)		Weekly for on-site material*	

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
		SMC (N)	Weekly*		[At least 5 tests per source for sulfur compounds over the course of the contract in accordance with TRL Report 447, tests 1-5]	
		omc/mc, mc or MCV (N)	1 per 400 tonnes*			
		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 IS EN 13242		
			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
			SMC of chalk (N)	Twice a week*		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
		PI/LL (N)	Daily*		<i>provided for Class 6F4 and Class 6F5 - see Annex C of BS EN 13242 and Annex D of BS EN 13285]</i>
		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		<i>[At least 5 tests per source for sulfur compounds over the course of the contract in accordance with TRL Report 447, tests 1-5]</i>
		Oxidisable sulfides (OS) and total potential sulfate (TPS) content (N)	Twice a week* or daily when sulfides are expected		<i>[At least 5 tests per source for sulfur compounds over the course of the contract]</i>
		pH/chloride ion content (N)	Weekly*		
		Resistivity (N)	<i>[As required]</i>		
		Undrained and drained shear parameters (N)	<i>[As required]</i>		<i>[Cross-reference should be made to any requirements in Appendix 6/1]</i>
		Permeability (N)	<i>[As required]</i>		
	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*	<i>[As appropriate to properties stated in</i>

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
					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*		†
Series 700					
705	Sub-base and roadbase material beneath surface of a road or paved central reserve	Frost heave (IL)	1 per 500m³*		
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*		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900					
901	Aggregates for bituminous mixtures				
925		Determination of resistance to fragmentation – Los Angeles coefficient (IL)	Monthly*		
938					
942		Determination of percentage of crushed and broken surfaces in coarse aggregate particles (IL)	Monthly*		
		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*		
	Binders for bituminous materials	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*		
		Penetration (IL)	1 per 750 tonnes*		(More frequent test samples should be scheduled for
		Softening point (IL)	1 per 750 tonnes*		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
		(other NBS tests)			modified binders)
903 to 914	Bituminous mixtures	Determination of particle size distribution (IL)	1 per 75 tonnes* (min 2 per day)		
916, 925, 930, 932 to 934		Binder content (IL)			
911	Rolled asphalt surface course (design mix)	Stability value	1 per contract*		
		Flow value			
		Density			
915	Coated chippings	Determination of resistance to fragmentation – Los Angeles coefficient (IL)	Monthly*		
925		Determination of particle size distribution (IL)	1 per 75 tonnes*		
		Binder content (IL)	1 per 75 tonnes*		
		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*		
		Hot sand test (IL)	(as required)		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700					
1702	Cement				Certificate to be provided monthly* for each type of cement. Quality management and product certification schemes apply.
1703				Required (IS 1)	
1704	Normal and Rapid Hardening Portland				
	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*		
1703		Chloride content (IL)	Daily		
		Sulphate content (IL)	Monthly*		
1709		Test specified in BS 3148	(As required)		
(c/d)	Water	Chloride content	Monthly*		
		Sulphate content	Monthly*		

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
	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)

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
			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			
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	Reinforcement					Product certification scheme applies.
		Steel bars			Required (BS 4449)	
		Steel wire			Required (BS 4482)	
		Steel fabric			Required (BS 4483)	

Clause	Work, Goods or Material		Test		Frequency of Testing	Test Certificate	Comments
1727	Inspection and testing of structures and components						Tests should be schedules as appropriate and requirements given in Appendix 17/4).
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)	
2406	Bricks						
		Clay	(Soluble salt content Efflorescence				(Tests/samples (in accordance with IS 91) should be schedules as

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
		Compressive strength			required)
		Water absorption			
	Calcium silicate	Initial rate of suction) (IS 91)		Required (BS 187)	
	Concrete			Required (IS 189)	
2407	Blocks				
	Concrete			Required (IS 20)	
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)	
	Bars			Required (BS 6744)	

APPENDIX 1/6: SUPPLY AND DELIVERY OF SAMPLES TO THE EMPLOYER'S REPRESENTATIVE

The following samples shall be provided or made available by the Contractor for testing to the Employer's Representative. Please note the following:

Series	Sample Description	Frequency Of Sampling	Delivery Location	Comments
2400	Sample panel of unreinforced stone parapet	1 No panel	Site	Sample panel 1.0m x 1.0m to be constructed in stone on a plywood backing to demonstrate size and jointing arrangement.

APPENDIX 1/7: SITE EXTENT AND LIMITATIONS ON USE

1. Extent of the Sites

The extent of the works area on each site is shown on the relevant Works Information drawings.

In addition to the extent of site, additional areas may be temporally occupied by the Contractor to allow construction of the permanent works subject to agreement by the Contractor with the Relevant Authority.

The Site crosses through private land owned by various landowners. The Contractor shall liaise with each landowner prior to carrying out works that are on or will impact their property.

The Contractor shall keep open and maintain access facilities to properties for all landowners during the Works.

The Contractor is limited to the use of access routes by means of public roads to the site as stated in Appendix 1/19.

2. Limitations on the Use of the Sites

The normal working hours within the Site shall be Monday to Friday between 08.00 and 18.00 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 Contractor shall undertake the Works in such a manner as to not allow degradation of the water quality of the rivers and streams within the Duff_010 Catchment area, in accordance with Clause 133 of this specification.

The Contractor shall maintain adequate routes for traffic and pedestrian rights of way across the Site or provide temporary diversions. Diversions to be approved by the Employer's Representative prior to any closures of existing public rights of way.

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. Construction Compounds

The Contractor shall be responsible for making all arrangements for providing any land required for offices and other temporary site facilities. It may be possible to use the area of land noted as under construction by Leitrim County Council.

APPENDIX 1/9: CONTROL OF NOISE AND VIBRATION

Noise

1. The Local 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 Local Authority's formal consent to their proposed methods of work and to the steps they propose in order to minimise noise.
2. 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.
3. 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 they intend to take all reasonable measures to mitigate the noise nuisance. After consultations with the Local Authority and any other interested bodies a decision will be given within 7 days of receipt of the notice.
4. The Contractor shall employ the best practice 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).
5. 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 where directed by the Employer's Representative.
6. 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. The Contractor shall organise

their operations with regard to the positioning of plant, etc., so it minimises construction noise to adjacent properties.

7. The Contractor shall carry out noise monitoring in accordance with the standards referenced in this Appendix.
8. The period referred to as “night” shall be from 2200 hrs to 0600 hrs.
9. The use of explosives is not permitted.

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 20 away from the works or at Building Facades
Monday to Friday	08.00hrs to 18.00hrs	70	1 hour	80
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 existing bridge structure under repair, nor 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 ground vibrations do not exceed the following peak particle velocities:
 - (i) 4 millimetre per second at any location within 100 metres of freshly poured concrete, that is to say concrete placed within the previous seven days; and
 - (ii) 12 millimetre per second at completed structures.
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 Leitrim County Council.

Control of Dust

1. The Contractor shall produce and implement a dust minimisation plan that shall include but not be limited to the following:
 - (i) Any roads or haul routes within the Site affected by the execution and completion of the Works shall be regularly cleaned and maintained as appropriate.
 - (ii) Hard surface roads shall be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential Site traffic only.
 - (iii) Any roads or haul routes within the Site with the potential to give rise to dust shall be regularly watered, as appropriate, during dry and/or windy conditions.
 - (iv) All vehicles using site roads shall have their speed restricted and this speed restriction shall be rigidly enforced.
 - (v) Public roads outside of the Site shall be regularly inspected for cleanliness and cleaned as necessary.
 - (vi) Material handling systems and Site stockpiling of materials shall be designed and laid out to minimise exposure to wind.
 - (vii) Water misting or sprays shall be used as required if particularly dusty Works activities shall be necessary during dry or windy periods.
 - (viii) Vehicles either delivering or removing material from Site, which have a dust potential, shall be covered with a tarpaulin or the like to minimise the release of dust.

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

1. The Contractor shall be responsible for the design of the structures below.

Structure & Dimensions	Drawing Reference
MY1 beams to be designed by appointed Precast Beam supplier / designer	25319-DID-03-XX-DR-C-1001 25319-DID-03-XX-DR-C-1002

2. The Contractor shall carry out all necessary checks 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 €6.5m.
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

Further performance specification information is presented on the Drawing Notes.

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

Structural Element	Location / Drawing Reference	Design Specification
Precast MY1 Beams		The Contractor shall carry out all necessary works to validate precast dimensions and bridge deck preliminary design set out on the Works Information Drawings.
Temporary Works – General	Appendix 0/1	- The Contractor to specify and design and temporary works required to facilitate the construction and sequencing of the works. This includes any access, propping or temporary retention (Please Note: this is not an exhaustive list of anticipated Temporary Works). - All Temporary Works are to be designed in accordance with relevant Eurocode Design Standards and their associated Irish National Annexes together with BS 5975:2019. - All Temporary Works shall be designed to avoid adverse impacts on existing assets or services in close proximity to the works.
Temporary Works – Retention/Extension Works	Appendix 0/1	- It is anticipated that temporary works in the form of a trench box or suitable sheet pile cofferdam will be required to facilitate construction of the foundation structures. - Any Temporary Sheet Pile Design should be carried out in accordance with IS EN 1997-1 and IS EN 1993-5.

APPENDIX 1/12: SETTING OUT AND EXISTING GROUND LEVELS

1. Topographical Survey is provided for each of the bridge locations as produced by Apex Surveys. For further information, please refer to Volume 3: Information Pack supplied with this Tender.
2. 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.
3. 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.
4. The completion of the Works shall ensure that the new/repared road levels tie in satisfactorily with the existing road 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 locations prior to the works being completed.

APPENDIX 1/13: PROGRAMME OF WORKS

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.

2. Schedule of Stated Constraints

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 in formulating their programme. For clarity, refer to Design ID Drawing 25319-DID-03-XX-DR-C-1001.

- i. Traffic safety and management including notice requirements and restrictions arising from the use of substances hazardous to Health.
 - ii. Staging of works for minimal impact on pedestrian & vehicle users
 - iii. Difficult access across the site
 - iv. Provision of environmental protection prior to the main construction operations
 - v. Trials and demonstrations in advance of main construction.
 - vi. Approval by the Employer’s Representative of subcontractor nominations.
 - vii. The contractor must schedule any and all advance environmental works, permits and licences including sufficient time for notice periods.
 - viii. Compliance with planning and other environmental legislation.
3. The level of detail should be not less than the following:

The programme shall be split up individually for each element of work. The works in different sections may be programmed to run consecutively or concurrently. The programme should show as a minimum include the following detail:

- Mobilisation
- Site set-up
- Site walkover to confirm extent of works
- Set up temporary diversions / path closures
- Temporary Works and access requirements to facilitate bridge repairs.
- Transport of materials
- Bridge Repair / Construction

- Installation of Scour Protection
 - Demobilisation
4. 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.
 5. 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.
 6. 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.
 7. 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.
 8. 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.
 9. Narrative Report

The programme submitted by the Contractor and any revision thereof shall include a narrative report which shall contain, as a minimum, the following information: -

- i. 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
- ii. all relevant data, calculations and assumptions used in deriving all quantities and durations; and
- iii. resource planning and sub-contract/supply procurement details to meet the programme requirements; and
- iv. anticipated periods for approvals, notifications and procurement items; and
- v. sequence and inter-dependence of all activities including logic links and float; and
- vi. identify the critical path and critical resources; and
- vii. access proposals; and

- viii. submittal schedule of data for the Employer's Representative's acceptance/approval; and
- ix. Any other information that the Contractor deems is relevant to explain the order of procedure and timescales within which they propose to carry out the Works and/or as requested by the Employer's Representative.

10. Monthly Programme

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.

The Monthly Programme shall be in exactly 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 current status of the Works.

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.

In the narrative report accompanying the Monthly Programme, the Contractor shall: -

- i. 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
- ii. 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
- iii. 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
- iv. make particular reference to critical path activities and shall include delay mitigation proposals, where appropriate; and
- v. Include new or revised programme assumptions to be employed in achieving timely completion of the Works.

11. As Built Programme

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 story of the Works.

12. Other Programmes

During the course of 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.

13. Extensions of Time

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 any and all work related to each claim.

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 they are making their claim.

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.

Submission of the programmes and reports specified therein shall not relieve the Contractor of their responsibility to separately make application for instruction, drawings etc. in accordance with the Contract.

14. Format of Reports

All programmes and reports specified therein shall be submitted to the Employer's Representative, unless expressly stated otherwise.

The size, number of copies and electronic format of copies of the programmes and reports to be submitted by the Contractor as specified therein shall be as agreed with the Employer's Representative.

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.

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

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 heading 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.
2. The Contractor shall make arrangements with the Statutory Undertakers and others concerned, for the co-ordination of their work with all work which needs to be done by them or their contractors concurrently with the Works.
3. Private services to individual properties have not generally been listed or shown on the Drawings. The Contractor shall make arrangements with the Statutory Undertakers and others concerned for the phasing of all necessary disconnections and diversion of private services affected by the Works.
4. Disconnected apparatus shall be removed by the Contractor only with the prior consent of the Authority concerned.
5. The names, addresses and telephone numbers of the authorities serving in the locality are listed below.

Names	Address and Tel No.
Leitrim County Council	As per the Works Information
ESB Networks	Cranmore, Sligo F91Y36K +353 21 238 6555
Uisce Éireann	24-26 Talbot Street Dublin 1 D01 NP86TBC +353 1800 278 278
Eir Networks	Click Before You Dig: https://cbyd.emaps.eircom.ie/Eircom-CBYD/ Emergency: +353 1800 372 999

6. No known or unknown existing services have been uncovered in any of the bridge areas as 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).
7. Should the Contractor damage any services identified, they shall contact the relevant service provider. Any costs and penalties resulting from this disruption shall be borne by the Contractor and not the Employer.

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT

1. The Contractor shall be responsible for the planning, implementation, maintenance and removal of traffic safety and management measures required, this may include lane and or road closures, in order to facilitate the work.
2. The Contractor shall comply at all times with the requirements of the Traffic Signs Manual, and any additional requirements detailed in the TII DMRB.
3. The Contractor shall, within two weeks of the commencement of work On-Site or Off-Site 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:
 - (a) Geometric Design.
 - (b) Position of traffic signals.
 - (c) Width of lanes.
 - (d) Working areas.
 - (e) Safety zones.
 - (f) Crossovers .
 - (g) Running lane for emergency vehicles.
 - (h) Location for emergency vehicles.
 - (i) Access and exit locations for construction.
 - iii) Timing of operations.
 - iv) Road lighting requirements
 - v) Requirements for Temporary Emergency Telephones.
 - vi) Whether hazard warning lights are an acceptable alternative to a roof-mounted amber flashing lamp and if so, in what circumstances.
 - vii) Whether a traffic safety and control officer is required.
 - viii) Restrictions arising from the use of substances hazardous to Health

APPENDIX 1/18: TEMPORARY DIVERSIONS FOR TRAFFIC

1. The Contractor shall provide a detailed Traffic Management Plan to the Employers Representative for the bridge site 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 a short a time frame as possible. A minimum of a further 2 weeks is to be allowed for reasonable statutory processes or stakeholder liaison to enable a decision to be made.
4. 2nr Electronic Variable Message Signs are required to facilitate the communication of basic information along the road on either side of the 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

1. The Contractor shall provide, erect and maintain such traffic signs, lamps, barriers, and the like, complying with Clause 117 of the Specification for Road Works as may be required to ensure the observance of the requirements and restrictions detailed in this Appendix.
2. The Contractor shall restrict the passage of constructional plant, equipment and materials, to and from each Site and off site areas, to Permitted Access Routes.
3. The Contractor shall establish and comply with the requirements of Leitrim County Council in respect to loaded dump trucks using public roads.
4. Site and off site areas access/egress points shall be designed taking into account existing traffic volumes and anticipated type and volumes of site generated traffic.
5. Permitted Access Routes To and From the Site
 - a. Not applicable.
6. Prohibited Access Routes
 - a. Not applicable.
7. Movement of Machinery and Plant Across Public Roads;
 - a. The provisions for the Contractor's haul route crossings of public roads detailed in this Appendix shall be read in conjunction with the requirements of Appendix 1/17 of the Specification.
 - b. The Contractor shall, where they propose to move machinery and plant across public roads, seek the approval of Leitrim County Council. In seeking Approval the Contractor shall submit details of the layout of the crossing, and all proposed signing, safety equipment and controls proposed.
 - c. At any Site and off site areas haul route crossing of a public or private right of way, a speed limit of 16kmph shall be enforced on the haul route within 50 metres of the crossing.
8. The Use of Permanent or Temporary Works by Construction Traffic
 - a. The existing bridge's associated approaches or paths may be used to carry construction traffic, only when measures approved by the Employer's Representative have been taken to protect these from damage.
 - b. The approval of the Employer's Representative to proposals to use any of the Permanent Works to carry construction traffic shall not relieve the Contractor of their other responsibilities under the Contract.

APPENDIX 1/22: PROGRESS PHOTOGRAPHS

1. The following schedule describes the progress photographs to be taken

Type	No.	Aerial / Ground	Frequency required	Remarks
Digital Photos of minimum size 5 Megapixels	20	Ground	Prior to starting date and at weekly intervals until completion	
Digital Photos of minimum size 5 Megapixels	20	Aerial	Prior to starting date and completion of the project	<i>To be used as a general review of before and after site condition.</i>

APPENDIX 1/23: SUBSTANCES HAZARDOUS TO HEALTH

1. The Contractor shall be required to provide temporary screening to protect members of the general public, including motorists and other road users, in close proximity to the works. 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. 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.
2. The following list details materials which may require such particular precautions:
 - i) Concrete dust
 - ii) Cement dust
 - iii) Aggregate dust
 - iv) Bituminous Materials
 - v) Lime
 - vi) Concrete Additives
 - vii) Paint (including hydrophobic impregnation, primer, colour and anti-graffiti coatings).
 - viii) Siloxane concrete protective coatings.
 - ix) Deck waterproofing.
 - x) Sealants.
 - xi) Weed killers
 - xii) Fertilisers
 - xiii) Solvents
 - xiv) Acids
 - xv) Asbestos
 - xvi) Lead

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

3. 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.

4. 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.
5. 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.
6. Refer to the Preliminary Safety & Health Plan (Volume 3 Information Pack).

APPENDIX 1/24: QUALITY MANAGEMENT SYSTEM

1. The following is a list of accepted quality management schemes:

- a. **Description: Manufacture of Portland Cement**

Certification Body:

The Certification & Inspection Dept

National Standards Authority of Ireland, Eolas, Glasnevin, Dublin

Specification:

Cement shall be in accordance with the 500, 900, 1000, 1700, 2400 Series of the Specification and shall be manufactured to comply with all of the appropriate requirements of the following Irish Standards:

IS EN 197-1 Cement. Composition, specifications and conformity criteria for common cements

IS EN 197-2 Cement. Conformity evaluation

IS EN 197-4 Cement. Composition, specifications and conformity criteria for low early strength blast furnace cements

- b. **Description: Manufacture of Industrial Fasteners and Associated Items**

Certification bodies:

NSAI or equivalent (with the approval of Leitrim County Council)

Specification

Nuts, bolts and fixings shall be in accordance with the 300, 400, 500, 1300, 1800 and 2500 Series of the Specification and shall be manufactured to the requirements of the following Standards:

BS 3410 – Specification for metal washers for general engineering purposes

BS 4320 – Specification for metal washers for general engineering purposes

EN 14399 – High-strength structural bolting assemblies for preloading

BS 4933 – Specification for ISO metric black cup and countersunk head bolts and screws with hexagon nuts

ISO 898 – Mechanical properties of fasteners

- Part 1: Bolts, screws and studs
- Part 2: Nuts with specified proof load values

ISO 4014 – Hexagon head bolts, Product grades A and B

ISO 4016 – Hexagon head bolts, Product grade C

ISO 4017 – Hexagon head screws, Product grades A and B

ISO 4018 – Hexagon head screws, Product grade C

ISO 4032 – Hexagon nuts, style 1, Product grades A and B

ISO 4034 – Hexagon nuts, Product grade C

APPENDIX 1/25: PRODUCT CERTIFICATION SCHEMES

1. The following is a list of accepted product certification schemes referred to in Clauses 104.4 and 104.6. of the Specification. This is not an exhaustive list.
2. Marked Schemes
 - a. Kitemark or Irish Standard Mark ISM
 - b. Certification body: The Certificate and Inspection Department, National Standards Authority of Ireland, Eolas, Glasnevin, Dublin 9, Ireland.

BS No, Equivalent Irish Standard or Euronorm	Title	Specification Series
I.S. 1:1991	Specification for Portland Cement	500 900 100 1600 1700 2400
BS 1247	Manhole Steps Part 1: Specification for galvanised ferrous or stainless steel manhole steps Part 2: Specification for plastic encapsulated manhole steps	500
BS 3506	Specification for unplasticised PVC pipe for industrial purposes	500
BS 4346	Joints and fittings for use with unplasticised PVC pressure pipes	500
BS 4962	Specification for plastics pipes and fittings for use as sub-soil field drains	500
BS 5481	Specification for unplasticised PVC pipe and fittings for gravity sewers	500
BS 5911	Precast concrete pipes, fittings and ancillary products Part 100: Specification for unreinforced and reinforced pipes and fittings and fittings with flexible joints	500
	Part 103: Specification for prestressed non-pressure pipes and fittings with flexible joints	500
	Part 110: Specification for ogee pipes and fittings (including perforated)	500
	Part 114: Specification for porous pipes	500

	Part 200: Specification for un-reinforced and reinforced manholes and soakaways of circular cross section	500
	Part 230: Specification for road gullies and gully cover slabs	500
BS 6044	Specification for pavement marking paints	1200
BS 6087	Specification for flexible joints for grey or ductile cast iron drainpipes and fittings (BS 347) and for discharge and ventilating pipes and fittings (BS 416)	500
BS 6088	Specification for solid glass beads for use with road marking compounds and for other industrial uses	1200
IS EN 124	Gully tops and manhole tops for vehicular and pedestrian areas. Design requirements, type testing, marking, quality control.	500
IS 1	Portland Cement	500 900 1600 1700 2400
IS 5	Aggregates for concrete	500 900 1600 1700 2400
IS 6	Concrete sewer pipes	500
IS 58	Standard Specification (Clayware land drainage pipes) Order 1953	500
IS 166	Concrete surface water pipes	500
IS 424	Unplasticised polyvinyl chlorine (PVC-U) pipe and fittings for buried drainage and sewage systems specification	500

3. Other Marked Schemes

- a. Reinforcing and Prestressing Steel
- b. Certification Body: UK Authority for Reinforcing Steels (CARES), Pembroke House, 21 Pembroke Road, Sevenoaks, Kent TN13 1XR.
- c. The Certification & Inspection Department, National Standards Authority of Ireland, Eolas, Glasnevin, Dublin 9

BS No, Equivalent Irish Standard or Euronorm	Title	Specification Series
BS 4449	Specification for carbon steel bars for the reinforcement of concrete	1000 1700 2500
BS 4466	Specification for scheduling, dimensioning, bending and cutting of steel reinforcement for concrete. (Except that the Contractor or the manufacturer of precast products may opt to obtain straight bars from a firm within the Scheme and cut and bend them on the Site or at the pre-casting works respectively provided the levels of inspection and quality assurance specified in BS 4466 are maintained)	1700
BS 4482	Specification for cold reduced steel wire for the reinforcement of concrete	1700
BS 4483	Specification for steel fabric for the reinforcement of concrete	1700

4. Non-marked Schemes

- a. Ready Mixed Concrete
- b. Certification Body: The Quality Scheme for Ready Mixed Concrete, Wolsey House, 3 High Street, Hampton, Middlesex TW12 2SQ
- c. The Certification & Inspection Department, National Standards Authority of Ireland, Eolas, Glasnevin, Dublin 9
- d. Specification: The supply of ready mixed concrete shall comply with the Specification for Road Works, in particular the 1000 Series and 1700 Series Specification.

BS No, Equivalent Irish Standard or Euronorm	Title	Specification Series
BS 146	Specification for Portland blast furnace cement	1000 1700
BS 882	Specification for aggregates from natural sources for concrete	500 1000 1100 1700 2600
BS 1014	Specification for pigments for Portland cement and Portland cement products	1700
BS 1305	Specification for batch type concrete mixers	1000 1700
BS 1881	Testing concrete Part 106: Methods for determination of air content of fresh concrete	1000 1700 2600
BS 3148	Methods of test for water for making concrete (including notes on the suitability of the water)	1700 2400 2600
BS 3797	Specification for lightweight aggregates for masonry units and structural concrete	1700
BS 5075	Concrete admixtures Part 1: Specification for accelerating admixtures, retarding admixtures and water reducing admixtures Part 2: Specification for air-entraining admixtures Part 3: Specification for superplasticising admixtures	1000 1700
BS 5328	Concrete	1000

	Part 1: Guide to specifying concrete Part 2: Methods for specifying concrete mixes Part 3: Specification for the procedures to be used in producing and transporting concrete Part 4: Specification for the procedures to be used in sampling, testing and assessing compliance of concrete	
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APPENDIX 1/70: AS-BUILT RECORD DRAWINGS

1. All drawings submitted for formal review shall be provided in the following format, to be agreed with the Employer's Representative:
 - a. AutoCAD DWG format.
 - b. PDF Format
2. The following standards shall also apply:
 - a. 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.
 - b. Each transfer shall be fully documented to detail items such as level use cross-referenced files, necessary directory structure, etc.
 - c. Full details of the programs used to generate the DWG format file shall be attached for reference.
 - d. 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.
3. 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.

APPENDIX 1/71: TEMPORARY CONSTRUCTION PLATFORMS

1. Temporary Construction Access Platforms (TCAPs) shall include any temporary works platforms required to support any plant or part or all of the Works during construction at the site.
2. The Contractor shall design, construct and maintain all Temporary Construction Access Platforms, which shall be designed to resist the loads from the Works requiring support. All such platforms shall be fully boarded out and sheeted to prevent any material from the construction of the Works entering any watercourse. The Contractor shall clean each TCAP at the end of each shift and shall not allowing excessive amounts of debris to build up on the platforms.
3. The Contractor shall keep the number of in-river supports to their TCAPs to an absolute minimum and shall not completely block any river channel with their temporary works.
4. The Contractor shall provide and maintain safe means of access/egress to/from their TCAPs, both for their personnel and for those of the Client and the Employer's Representative.
5. The Contractor shall maintain Temporary Construction Access Platforms in a condition fit for the onsite works activities occurring at the time. This shall include maintenance of the boarding and sheeting. The Contractor shall remove Temporary Construction Access Platforms and reinstate the area to its original condition as soon as is reasonably practicable following completion of onsite works activities.

APPENDIX 1/72: LEITRIM COUNTY COUNCIL LIAISON

1. Leitrim County Council is the Employer for the Works. Throughout the Works, liaison may be required with landowners and LCC as the bridge location may interface with private land owned by independent landowners. The Contractor shall 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 Contract shall be directed to the Employer's Representative.

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

1. Full demolition and rebuild of Shesknan Bridge (refer to Works Information).
2. All demolition must be carried out in accordance with the Safety, Health & Welfare at Work (Construction) Regulations 2013, and any subsequent relevant legislation
3. The existing bridge structure is to be demolished prior to the proposed bridge works. The existing bridge is to be disposed of off-site.
4. The existing abutments are to be demolished as per Contract Drawings in Appendix 0/4.

APPENDIX 2/5: HAZARDOUS MATERIALS

1. Appropriate measures must be taken to safeguard the Health of the Contractor's operatives and the general public.
2. 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.
3. All waste waters and contaminated effluents must be collected and removed from the site to a suitable location.

APPENDIX 2/70: VEGETATION CLEARANCE

1. The Contractor shall be required to remove any vegetation from the face of all structures, before progressing any works noted on the design drawings referenced within Appendix 0/4.
2. Any structures subject to very heavy vegetative growth shall be treated with a systemic herbicide approved by the Employer's Representative. The Contractor shall engage a qualified horticulturist to ensure that the use of any herbicide product does not have any adverse environmental impacts, and written evidence of this opinion will be provided along with the proposals.
3. Reference should be made to the Ecological Reports produced by Coisceim with respect to the works with respect to vegetation clearance.

APPENDIX 3/1: FENCES, GATES AND STILES

1. The Contractor shall supply and maintain their own temporary fencing or hoarding around the Contractor's Area to prevent unauthorised access to potentially dangerous working areas.

APPENDIX 3/2: FENCING: TII ROAD CONSTRUCTION DETAILS

1. The following TII Standard Construction Details are relevant:

- i. CC-SCD-00321 Fencing Post and Tension Mesh Stud Fence

Post and rails are to be pressure treated with Creosote under controlled Vacuum and Pressure Processes in accordance with the Rueping Method. The fencing materials are to be creosote impregnated as PDM fencing or similar approved.

Fencing to be installed to close gaps between parapet wall ends and existing hedging/fencing. 5m of fencing to be installed at each corner of the bridge.

APPENDIX 4/7: VEHICLE PARAPET SYSTEMS

1. The location, extents and proposed construction details for the bridge parapet are outlined on the Works Information Drawings.
2. A stonework restraint system is be installed on the bridge.
3. For all design requirements refer to Appendix 1/11.
4. The connections of the VRS shall be designed to be concealed as far as possible and designed to ensure a low risk of vandalism.

APPENDIX 5/1: DRAINAGE REQUIREMENTS

1. Refer to Works Information Drawings for locations of drainage. The Contractor shall confirm the exact setting out of the proposed perforated pipes and seek approval from the Employer's Representative prior to construction.

APPENDIX 5/4: FIN DRAINS AND NARROW FILTER DRAINS AND GEOTEXTILES FOR FILTER DRAINS

1. The following TII Standard Construction Details are relevant:
 - a. CC-SCD-00520 – Filter Drains Trench and Bedding Material
2. For back of wall drainage 150mm diameter narrow filter drains (perforated pipes) should be used.
3. Geotextile wrap to perforated pipes should be Terram T1000.
4. The trench backfill material should be D15 particle size for granular material in narrow filter drain Type 8 or 10mm clean stone.

APPENDIX 6/1: REQUIREMENTS FOR ACCEPTABILITY AND TESTING OF EARTHWORKS REQUIREMENTS

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.
2. Materials for use as landscape fill shall be Class 4 and shall comply with the requirements of Clause 601.2.
3. The Contractor's should show the location of general and selected imported granular fill proposals on drawings.
4. The classification and confirmation of acceptability of the earthworks 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.
5. If in the opinion of the Employer's Representative the material has altered its classification or become unacceptable for whatever reason, they may require the Contractor to repeat the classification and acceptability tests given in Table 6/1 and Appendix 1/5.
6. 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.
7. 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.
8. Class 3 material shall not be used.
9. The Contractor shall take full responsibility for dealing with known or suspected U1 materials.
10. Construction areas shall be kept free of groundwater, and all reasonable measures shall be taken to ensure that any constructed sub-grade is protected.
11. Excavations should be kept free of standing water by either pumping from sumps or installing temporary drainage.
12. Acceptable material excavated on site shall be as classified in CC-SPW-00600 Table 6/1. The Employer's Representative shall decide upon the suitability of excavated material for reuse, taking due cognisance of seasonal variation and ground conditions.
13. 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.

14. Trial pits shall be carried out as directed by the Employer's Representative.

15. Logging and sampling shall be carried out as per the requirements of Appendix 1/5

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 council 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.

1. 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.

Requirements for fills to structures.

1. The following materials are permitted for use as fill to structures within acceptable limits:-
 - i. Material Class 6F5 are permitted for use as fill to structure within acceptable limits.
 - ii. Effective angle of internal friction to be a minimum of 35°.
 - iii. Effective cohesion to be zero.
2. These materials shall be tested in accordance with Clause 636. Refer to Appendix 1/5.
 - i. Granular Regulating material layer shall be Class 6B as defined in Table 6/1.
 - ii. Imported topsoil shall be Class 5B as defined in Table 6/1.

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 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 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 Leitrim County Council requirements and relevant Irish legislation. Contractor is responsible for seeking approval for discharge from Leitrim County Council.

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

Excavation

1. Earthworks requirements to be determined by Contractor's designer and 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

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.

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.

Temporary Earthworks Support System

1. The contractor shall design, install, maintain and remove on completion of the works, temporary earthworks support systems as required for each bridge, where the temporary support of earthworks is required (for example in the installation of scour protection or precast box culverts). Details of the contractor's proposed systems shall be submitted to the employer's

representative at least one week before installation on site, including calculations and temporary works design certificates.

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

1. The following TII Standard Construction details are relevant.

- i. CC-SCD-0609-01 Fill to Structures

Refer to the contract drawings for locations where the above details are to be utilised. With respect to the Pricing Document Bill of Quantities, all materials and operations required to enable the construction of the proposed detail are taken to be included within the rate provided against this item

2. Fill to structures and fill above structural foundations shall be Class 6N material as described in Table 6/1 and compacted to Clause 612, unless otherwise agreed or stated on the drawings. The Employer's Representative may require laboratory and in-situ density testing to be carried out to confirm that the required level of compaction has been achieved on site. This shall be carried out by the Contractor at no additional cost to the contract.
 3. All backfill shall be placed in layers not exceeding 225mm thick and compacted in accordance with Clause 612.
 4. Full scale determination of the stable slope for materials of Class 6N/6P as described in Clause 610.6 is not required.
 5. Refer to Appendix 6/1 for further details.

APPENDIX 6/70: SCOUR PROTECTION

1. The Contractor shall install Rock Armour Scour Protection, as set out on the Works Information Drawings and re-instate the surrounding riverbed as necessary. The installation extent shown is an estimate only and shall be agreed with the Employer's Representative following appointment. (Tenderers are encouraged to attend site and visually inspect the riverbed, to inform their Tender Submission.)
2. Shape and profile of the proposed rock armour walls should not reduce available cross-sectional area available to the flow.
3. Cut Stone River Training Walls:
 - a. To be a minimum of 1m wide.
 - b. To span under bridge and extend 10m from either face of the proposed bridge upstream and downstream.
 - c. To retain a maximum of 1.5m of riverbank (typical). Where the retention exceeds 1.5m, the Contractor is to liaise with the Employer's Representative to confirm a suitable construction detail.
 - d. To be set a minimum 500mm below bed level, bearing on a subgrade with an allowable bearing capacity of 150kPa.
 - e. Stone Grading 300-1000kg to IS EN 13383-1 Table 4.
4. The Contractor shall take care and ensure that existing bridge structures are not undermined during the installation of rock armour at depth alongside them.
5. The formation level of the proposed rock armour wall shall be no lower than the formation level of the existing bridge abutments. Should abutment formation level dictate that the proposed depth below existing bed level cannot be achieved, whilst tying in with surrounding riverbed levels, the Contractor shall advise Employer's Representative, prior to commencement of installation.
6. The edge detail of the rock armour wall is to be keyed into the surrounding riverbanks as agreed on site with the Employer's Representative.
7. All works are to be completed in a dry environment, so far as is reasonably practicable, with appropriate access and Temporary Works to ensure this, to be proposed by the Contractor.

APPENDIX 7/1: PERMITTED PAVEMENT TYPES

1. The following TII Standard Construction Details are relevant:
 - a. CC-SCD-00701-4 Free Pavement Edge Detail
 - b. CC-SCD-00702-02 Kerbed Pavement Edge Detail
 - c. CC-SCD-00703-02 Transverse Joint Between New Construction and Existing Road
2. Whilst the above details are not directly referenced on the Works Information Drawings, it is clear when each detail will be required as a result of new surfacing or kerbing to be installed.
3. The Contractor shall undertake pavement condition surveys of both the new build and the existing Binder Course following planing in accordance with Clause 702.5 of Series 700 in advance of resurfacing.
4. All longitudinal surface course joints shall be under the line of proposed road markings unless otherwise directed by the Employer's Representative.

All Pavement Types

1	Location: Shesknan Bridge	General Requirement
2	Grid for checking surface levels of pavement courses, if different from the requirements of CI 702.4:	N/A
3	Surface regularity: (CI 702.7 and 702.8); Category of Roads: Long Reg: Trans Reg:	A Each wheel track of each lane 5m every 50m
4	Requirements for coarse aggregates - Polished Stone Value (PSV), Aggregate Abrasion Value (AAV) (Series 900 CI 3.2.2, 5.2.2, 6.2.2, 8.4.1.1, 8.6.1.1): PSV is to be determined as per TII Publication DN-PAV-03023 Section 3.1.1	PSV 60 AAV 16
5	Requirements for pre-coated chippings - Polished Stone Value (PSV) for general use mixtures, PSV for mixtures for roundabouts, Aggregate Abrasion Value (AAV) (Series 900 CI 4.2.4):	N/A
6	Requirement for testing for Polished Stone value using the friction after polishing test (DN-PAV-03023 Section 3.1)	Yes
7	Freezing and thawing (soundness) category if different from the requirements of Series 900 Tables 1, 4, 7, 10 and 17:	N/A
8	Compaction control and extraction of cores if different from the requirements of Series 900 CIs 10.1.9, 10.1.9.1, 10.1.9.2, 10.1.9.3, 10.1.9.4.	N/A
9	Requirements for monitoring resistance to permanent deformation of HRA (Series 900 CI. 10.1.10.1)	N/A
10	Sealant to be applied to the whole of any freestanding edge on the outside of the finished pavement on the low side of the camber (Series 900 CI 10.1.8):	No
11	Any tests additional to those required by IS EN 13108–20, IS EN 13108–21 or the relevant SRW (Series 900 CI 1.2 and 1.3):	N/A

Pavement

Layer	Clause	Mixture Designation / Material	Thickness
Surface Course	Series 900	AC 14 dense 70/100 des	45 mm
Binder course	Series 900	AC 20 dense bin 40/60 des	55mm
Base Course	Series 900	AC 32 dense base 40/60 des	100mm
Sub Base	Series 800	UGM A	350 mm
Capping	Series 600 6F2	Selected granular material	250mm

Total Pavement Thickness up to 650 mm

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. All removed surfacing material will be appropriately disposed of offsite in accordance with waste management protocols.
2. The road is to be reinstated as per design drawings referenced in Appendix 0/4.

APPENDIX 11/1: KERBS, FOOTWAYS AND PAVED AREAS

1. The following TII Standard Construction Details are relevant for the proposed concrete rumble strip:
 - a. CC-SCD-01105-01 Concrete Footway (Type 1 Required)
2. The proposed concrete verge is to have the following composition:

Regulating:	Acceptable material to Appendix 6/1
Sub-base:	150mm Type B imported crushed rock granular material to Series 800 Clause 804 Table 8/6.
Surface Course:	200mm thick raised concrete verge with a minimum slope towards the carriageway of 1:40. Concrete Surface to be in accordance with CC-SPW-1100 with A393 mesh reinforcement.

APPENDIX 11/3: KERBS, FOOTWAYS AND PAVED AREAS: TII ROAD CONSTRUCTION DE- TAILS

1. The following TII Standard Construction Details are relevant for the proposed concrete rumble strip:
 - a. CC-SCD-01105-01 Concrete Footway (Type 1 Required)
2. Refer to Appendix 11/1: Kerbs, Footways and Paved Areas for further information.

APPENDIX 12/2: TRAFFIC SIGNS: REFLECTIVE MARKERS

1. The following TII Standard Construction Details are relevant for the proposed flexible bollard to be installed on the verges:
 - a. CC-SCD-01206 Information Signs Delineator Posts

APPENDIX 17/1: SCHEDULE FOR THE SPECIFICATION OF DESIGNED CONCRETE

2. 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 Substructures (Abutments, Foundations)	2 Infill for Precast Prestressed Bridge Beams, Bridge Deck	3 Run on Slab
2. Strength class		C45/55	C45/55	C25/30
3. Nominal maximum size of aggregate, in mm (D)		20	20	20
4. Types of aggregate: Coarse 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			
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, IIA	IIB-P, IIB-Q, IIB-V, IIA	IIA
7. Exposure Class (As in IS EN 206-1) (or combination)	X0 XC1, XC2,	XC1 XD3	XC3 XC4	XC1

	XC3, XS1, XS2, XS3, XD1, XD2, XD3, XF1, XF2, XF3 XA1, XA2, XA3	XF4	XD3 XF4	
8. Chloride Class	CI 1,0 CI 0, 30 CI 0, 20 CI 0, 10	CI 0, 30	CI 0, 30	CI 0, 30
9. Minimum cement content, kg/m ³		380	380	380
10. Maximum free water / cement ratio		0.35	0.35	0.40
11. Quality assurance requirements		(1)	(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	Refer to Appendix 1/5
13. Other requirements (alkali, colour, etc as appropriate)		Freeze/thaw resisting aggregates	Freeze/thaw resisting aggregates	Freeze/thaw resisting aggregates
14. Consistence	Slump Class	S4	S4	S4

APPENDIX 17/3: CONCRETE – SURFACE FINISHES

- General surface finishes shall be outlined as below. Where an element includes portions below ground (unexposed) and above ground (exposed), exposed surface finish shall be used for the full element.

Surface Finishes	Locations	Comments
F2	Foundation faces	Un-exposed surfaces
	Back face of walls	Un-exposed surfaces
F4	Wall faces	Exposed surfaces
	Soffit finish	Exposed surfaces
	Parapet upstand	Exposed surfaces
U2	Top of foundation bases	Un-exposed surfaces
U3	Top of plinths/abutments	Exposed surfaces
Other	Top of abutment within pathway	Finish in accordance with Manufacturer's specifications for application of Resin Bonded Surfacing

APPENDIX 17/4: CONCRETE – 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. Nominal cover shall be as shown on the Works Information Drawings.
3. Contractor to submit concrete mix design for review at least 2 weeks prior to the scheduled pour.
4. All reinforcement to be fixed securely in the correct position, and to the specified cover, using suitable spacers and chairs, all in accordance with the concrete specification.
5. Retarding agents shall not be permitted.
6. 25mm x 25mm chamfer shall be provided to all reinforced concrete arises, except where otherwise noted.
7. Contractor to submit the details of all proposed construction joints to the Employer's Representative for review and acceptance.
8. Welding of reinforcement shall not be permitted.
9. All high yield reinforcement shall be Grade B500B.
10. The Contractor shall design the number, type and location of any embedded lifting devices required for the handling, transport and temporary support or precast concrete members. Precast members shall not be supported on 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 no less than 10 days prior to the 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. When 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.
11. Precast units shall be lifted only from locations shown on the manufacturer's drawings.

Inspection and Testing

1. The Contractor shall submit a Concrete Works Quality Plan to the Employer's Representative within 21 days of the Contract Date or a minimum of 20 days in advance of any preparatory

works for concrete construction, whichever date occurs earlier. The Concrete Works Quality Plan may be separate from, or part of the Quality Plan described in Appendix 1/24.

2. The Structural Concrete Works Quality Plan shall include:

- a. An inspection plan for all structural concrete as detailed in I.S. EN 13670 Clause B.4.3.2 and B.3.3.3.
- b. 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.
- c. 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.
- d. 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 load bearing capacity and durability of a structure.

Precast Concrete Products

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

APPENDIX 18/1: REQUIREMENTS FOR STRUCTURAL STEELWORK

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. Nominal cover shall be as shown on the Works Information Drawings.
3. Welding of reinforcement shall not be permitted.
4. All high yield reinforcement shall be Grade B500B.
5. Run on slab to be dowelled to bridge deck. 2 No. 900mm long, 25mm diameter dowel bars at 300mm centres per reinforced concrete infill section avoiding prestressed beams. To be placed at mid-depth. To be debonded in sleeve, debonding length 450mm.

APPENDIX 20/2: WATERPROOFING FOR CONCRETE STRUCTURES

1. Waterproofing extent as per Works Information Drawings. Waterproofing specification to be Sika Ergodur epoxy overlay and Sikalastic liquid applied membrane or similar approved for the bridge deck and associated bank seats.
2. Waterproofing specification to be 2 No. Coats of bituminous waterproofing Fosroc Mulseal DP to the entire back face of buried concrete abutments.
3. All blowholes in concrete surfaces shall be cleared out, filled with approved nonshrink cementitious filler such as “Fastpatch” or “Fastplug” and the repair work properly cured before application of coating.
4. The Contractor shall supply all specifications of the proprietary below ground resin waterproofing to the Employer’s Representative for acceptance.
5. 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.

APPENDIX 23/1: BRIDGE EXPANSION JOINT SCHEDULE

1. Bridge Expansion joints to be filled with Fosroc Hydrocell XL Filler Board and sealed with Fosroc Nitoseal PU220PF.

APPENDIX 24/1: BRICKWORK, BLOCKWORK AND STONEMASONRY

General

1. The following TII Standard Construction Details are relevant:
 - a. CC-SCD-02404-02 Typical Stonework Wall
 - b. CC-SCD-02407-01 Principles of Stonemasonry

Whilst the above details are not directly referenced on the Works Information Drawings, it is clear and obvious when a new stonework wall is required to be installed, which is clearly referenced. With respect to the Pricing Document Bill of Quantities, all materials and operations required to enable the construction of the proposed detail are taken to be included within the rate provided against this item.

2. All new stonework shall be in accordance with the requirements of Series 2400 of TII SRW. Locations and layouts are detailed on the contract drawings.
3. All mortar for stonework masonry walls shall be NHL5 mortar designation (iii) as per Table 24/1 in NRA SRW Series 2400 and shall comply with Clause 2404 of this document.
4. Any Anchorages, dowels, fixings and ties required shall be stainless steel in accordance with Clause 2411 of TII SRW.

Masonry Construction

1. Deviations in geometry of wall to fall within the limits outlined in Table 3.1 IS EN 1996-2 2006.
2. All local replacement of masonry to structures as noted on the design drawings within Appendix 0/4 shall satisfy the general criteria for new stonework.
3. All other collapsed walls shall be replaced such that they match the geometry and form of the existing wall lengths. For clarity, refer to the design drawings referenced within Appendix 0/4.

APPENDIX 24/2: BRICKWORK, BLOCKWORK AND STONEMASONRY: TII ROAD CONSTRUCTION DETAILS

1. The following TII Standard Construction details are relevant.
 - i. CC-SCD-02404-02 Typical Stonework Wall
 - ii. CC-SCD-02407-01 Principles of Stonemasonry

APPENDIX 26/1: ANCILLARY CONCRETE

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.
2. Use of standardised prescribed concrete should be as per sub-Clause 2602.6 and as defined in the contract drawings.

APPENDIX 27/1: REQUIREMENTS FOR WATER-MAINS

Temporary Diversion of Watermain

1. The Contractor shall liaise with Uisce Éireann to plan the diversion of services.
2. The works include the temporary diversion of the existing watermain to facilitate the bridge replacements, and its subsequent replacement with a new permanent watermain.
3. The temporary water main shall be constructed using high-density polyethylene (HDPE) pipes with a minimum pressure rating approved by Uisce Éireann.
4. All fittings and valves shall comply with the relevant standards.
5. The temporary water main shall be installed using trenchless technology where feasible to minimise disruption.
6. All connections to the existing main shall be undertaken by certified personnel.
7. The diverted main shall be pressure tested to the operating pressure specified by Irish Water and disinfected in accordance with Uisce Éireann standards before being commissioned.
8. The temporary main shall be protected against damage from construction activities and vehicular traffic.
9. Suitable markers and signage shall be provided to indicate the presence of the temporary main.

Permanent Replacement of Watermains

1. Following the completion of the bridge replacement, the Contractor shall install a new permanent watermain to replace the temporary diversion.
2. The Contractor shall liaise with Uisce Éireann to plan the replacement of services.
3. The permanent watermain shall be constructed to match existing pipe diameter and type, or similar approved, in agreement with Uisce Éireann.
4. The permanent main shall be installed within the specified alignment, maintaining a minimum cover stipulated by Uisce Éireann.
5. All joints, fittings, and appurtenances shall be designed to withstand a minimum working pressure as stipulated by Uisce Éireann.
6. The contractor shall connect the new main to the existing network in a manner that minimises disruption to the water supply.
7. Any switchover operations shall be pre-approved by the local water authority and conducted during off-peak hours.

8. The new main shall be flushed, pressure tested and disinfected in accordance with the relevant standards.
9. Upon successful commissioning, the temporary diversion shall be decommissioned and removed.

APPENDIX 70/1: 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 Coisceim 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 to 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 Bats during the Construction of National Road Schemes (NRA, 2005b);
 - 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 that the rivers and streams are liable to flooding at all locations, with the flood waters having previously damaged the structure and the surroundings.
6. The Contractor shall provide Inland Fisheries Ireland (IFI) with detailed Method Statements 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 undertaken.

7. Before any earthworks commence on site, drainage, erosion control and sediment control measures shall be in place and functioning.

APPENDIX 70/2: IFI ENGAGEMENT

1. The Contractor will be required to communicate and engage with IFI throughout the construction process. Additional information with respect to working in and around the watercourses is provided in the Works Information Volume 3 Information Pack.