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Transport Infrastructure Ireland

TII Publications

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Technical Acceptance of Road Structures on Motorways and Other National Roads

DN-STR-03001
December 2025

DN Design

Standards

About TII

Transport Infrastructure Ireland (TII) is responsible for managing and improving the country's national road and light rail networks.

About TII Publications

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TII Publications

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Stream:	Structures (STR)
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Contents

Updates to TII Publications resulting in changes to

Technical Acceptance of Road Structures on Motorways and Other National Roads DN-STR-03001

Date: December 2025

Page No:

Section No:

Amendment Details:

Telecom masts changed to “Utility Masts/Pylons” and updated to also include electricity pylons, or similar structures.

General updates to align with the phases and deliverables as defined in PE-PMG-02041.

Contents tables for an SOR, PDR & TAR amended with respect to aesthetic assessment.

Contents Table

1. Introduction

1.1 Scope

This Standard specifies the procedures to be followed within each phase of a National Road Project as defined in PE-PMG-02041 in order to obtain Technical Acceptance for the design and execution of structures, and for the submission of structures' as-built records. The procedures cover the design of all road structures, including but not limited to bridges, tunnels, underpasses, culverts, buried corrugated steel structures, retaining walls, strengthened earthworks structures, gantries, environmental barriers and temporary structures under, over and adjacent to motorways and national roads.

The Technical Acceptance requirements for bridge management schemes including alteration, modification, strengthening and repair of all existing road structures affected by national road projects shall be agreed with the Structures Section of Transport Infrastructure Ireland (TII) in the first instance.

Refer to AM-STR-06042 for information pertaining to requirements and guidance for structural review and assessment of existing structures.

This Standard supersedes NRA BD 02/09 dated January 2009.

1.2 Implementation

The procedures described in this Standard shall be applied to the design of all structures constructed as part of a national road project and meeting any of the following non-exhaustive list of criteria:

a) Bridges, tunnels, culverts etc. with a clear span or internal diameter greater than 2.0m;

b) Retaining structures with over 1.5m design retained height;

c) Reinforced/strengthened soil/fill structures, with hard facings, where the effective retained height is greater than 1.5m;

d) Reinforced/strengthened soil/fill which is an integral part of a bridge structure;

e) Reinforced/strengthened soil/fill structure where hard facings are not provided and the face inclination equals or exceeds 40 degrees;

f) Embankments constructed on stiff, rigid foundation elements such as piles, stone columns, controlled modulus columns, dry soil mixing foundations and including piled rafts and reinforced geotextile load transfer platforms;

g) Soil and rock slopes greater than 2.0m in height and requiring stabilisation with soil nails and or rock bolts/anchors;

h) Environmental Barriers of any height;

i) Gantries extending over trafficable areas;

j) High masts supporting luminaires or CCTV cameras as defined within PLG07.

k) Utility masts/pylons (telecom masts, electricity pylons and other similar structures within a project boundary or which may fall onto a national road route);

l) All temporary structures under or over or adjacent to a motorway or other national road carrying public traffic;

m) Other structure types designated by TII;

n) Proprietary manufactured structures or products to be incorporated into the completed Works;

o) Temporary works (see Chapter 5);

p) Catenary lighting systems, pipe bridges, wind turbines.

The procedures shall also be applied to structures on non-national roads which are required as part of a national road project.

These procedures shall also be applied to all structures built by third parties within the footprint of motorways and national roads.

The Structures Section shall be consulted with regard to any other structure not covered by the above to ascertain whether they fall within the scope of these procedures.

If this Standard is used for the design of local and regional road projects, the Designer should agree with the relevant Road Authority the extent to which the document is appropriate in any particular situation.

The procedures detailed in this Standard are mandatory. Any deviation from these procedures requires the approval of a Departure from Standards.

The Technical Acceptance process shall be completed prior to any detailed design being undertaken by the Designer.

No construction whatsoever shall be executed on a structure prior to the issue of Technical Acceptance (STA-5 certified) by the Structures Section for that structure.

This Standard shall be used forthwith for all projects for the construction and/or improvement of national roads. The Standard shall be applied to the design of projects already being prepared unless, in the opinion of Transport Infrastructure Ireland, application would result in significant additional expense or delay progress. In such cases the Designer shall confirm the application of this Standard to particular projects with Transport Infrastructure Ireland.

Technical Acceptance does not in any way diminish the contractual and statutory responsibilities of any party for the works carried out or the legal responsibilities of professional engineers.

1.3 Definitions

Particular terms used in this Standard are defined as follows:

Bridge Management Organisation - The organisation responsible for the ongoing operation and maintenance of the structure on completion of the Defects/Maintenance Period defined in the construction contract.

CE Marking - Under the Construction Products Regulation (EU) No. 305/2011 (CPR) all products used in construction must have CE marking to demonstrate compliance where a harmonised Euronorm or a European Technical Approval (ETA) is applicable.

Certificate – A document titled 'Design and Check Certificate for Structures' or 'Design and Check Certificate for Temporary Works' with undertakings and conditions confirming that the design or assessment complies with the agreed standards and cost limitations and that the design including relevant drawings have been checked. It is signed by the design engineer, the checking engineer and others as appropriate.

Check - Checking process as per this Standard.

Category 3 Check - A check to be carried out by a Checking Team from a separate organisation with independent professional indemnity, and agreed in writing by the Structures Section, having knowledge and experience relating to the type of structure or geotechnical conditions it is to examine.

Checker – The organisation or firm responsible for the check.

Checking Team – The group of engineers responsible for the check.

Contractor – The organisation or firm contracted by the Employer for the construction of a structure. In the case of Contractor Designed works or elements (D&B, ECI, PPP, Contractor Designed Structures, Contractor's Alternatives, etc), the Contractor is also the Designer. Contractor also refers to the firm who may be tendering for the construction work.

Contractor Designed Structure - Small structures often supplied as a proprietary manufactured product that have been designated to the Contractor for design.

Contractor's Alternative - An alternative structure proposed by a Contractor during construction which has already been fully designed and detailed by the Employer's Designer.

Contractor's Proposals for Structures – Proposals for structures where the Contractor is responsible for both the design and construction.

Departure - A Departure from the mandatory requirements of TII Publications (Standards) submitted in accordance with GE-GEN-01005.

Designer - The organisation or firm responsible for the design of a structure at any particular point in time during a project from inception until the structure is passed to/back to the Bridge Management Organisation.

Design Team – The group of engineers responsible for the design or assessment.

Employer - The Road Authority procuring the works.

Eurocodes - As defined in IS EN 1990.

Execution - As defined in IS EN 1990.

Fall Distance – The distance equal to the proposed total height of the structure (including equipment/antennae) above ground level, when the structure is laid horizontally on the ground.

Geotechnical Design Report - A report setting out assumptions, data, methods of calculation and results of the verification of safety and serviceability as required by IS EN 1997-1. The report shall be compiled in accordance with the requirements of DN-ERW-03083 (to be published).

Ground Investigation Report - A report presenting all available geotechnical information as required by IS EN 1997-1. The report shall be compiled in accordance with the requirements of DN-ERW-03083.

Landmark Structure - Proposed structure which is significantly different to others on the project or in the area, in terms of scale, aesthetics or complexity which may have special architectural, cultural or historical significance in the future.

Project Supervisor Design Process - The Project Supervisor for the Design Process as required in the Safety, Health and Welfare at Work (Construction) Regulations.

Proprietary Manufactured Structure or Products - A structure with CE marking or product with CE Marking manufactured to a system covered by a patent and/or a registered design.

Road Authority (RA) - For the purposes of this Standard only, the Road Authority shall mean:

i. For national road projects, either the Local Authority or TII;

ii. For non-national road projects, the Local Authority.

Strengthened Earthworks – Placed or in-situ soil or other material, the stability of which has been improved by and including without limitation, inclusions in the form of tensile reinforcement acting through interface friction, bearing or other means, e.g. reinforced soil, soil nailing or by external support or other proprietary means.

Structures Section - For national road projects the Structures Section shall mean the Structures Engineering and Asset Management Section of Transport Infrastructure Ireland. For non-national road projects, the Structures Section shall mean the individual nominated by the Road Authority.

The non-exhaustive role of the Structures Section is as follows:

- Examine proposals contained within the Structures Deliverables scheduled in Table 2/1 and when satisfied issue acceptance to proceed to the next stage and ultimately grant Technical Acceptance;
- Agree the application of selected documents and Standards to particular structures and record any directives on principles to be followed in the detailed design;
- Determine and agree the Category of each structure;
- Consider at any stage proposals for additional criteria or for structures departures from relevant documents and Standards;
- Assist with the resolution of differences between the Design Team and Checking Team if necessary;
- Receive Certificates related to the Technical Acceptance process, signed by the Designer, Checker and others as appropriate.

The Structures Section shall neither check calculations nor review their translation into design documentation or construction drawings. That is the sole function of the Designer and Checker. The agreement of the Technical Acceptance Report or the acceptance of certificates by the Structures Section does not relieve the Designer or Checker of any of their responsibilities (including the validity and arithmetical correctness of calculations, methods and techniques and their translation into design details, drawings and specifications). For the avoidance of doubt, this acceptance is procedural acceptance.

Structure Category – The classification of a structure, dependent on structural and geotechnical complexity and/or cost, which determines the form of check to be applied and the Certificate to be presented.

Team Leader - The person responsible for overseeing and coordinating the work of the Design, Check or Assessment Team and having the authority to sign on behalf of the team. The Team Leader shall be a Chartered Engineer appropriately qualified and competent in the relevant fields of engineering related to the work.

Technical Acceptance – Compliance with the submission requirements as scheduled in Table 2.1 leading to Technical Acceptance for Structures (STA-5), and subsequent submission of Design and Check Certificates (STA-6 or STA-7) for Structures and Certificate of Completion (STA-8); As-Built Records; and hand over of the structure to the Bridge Management Organisation.

Technical Acceptance Schedule - The list of relevant documents and Standards applicable in the design or assessment of road structures given as an appendix to the Technical Acceptance documentation.

2. Project Phasing and Procurement

2.1 General

The development of a national road project typically progresses through an eight phase process as defined within PE-PMG-02041:

- Phase 0 - Scope and Strategic Assessment;
- Phase 1 - Concept and Feasibility;
- Phase 2 - Options Selection;
- Phase 3 - Design and Environmental Evaluation;
- Phase 4 - Statutory Processes;
- Phase 5 - Enabling and Procurement;
- Phase 6 - Construction and Implementation;
- Phase 7 - Close out and Review.

Structures Section acceptance is required at each phase of a national road project as specified within Figure 2/1. These acceptances are both technical and project management related. The relationship between the above project phases and the Technical Acceptance Process defined in this Standard will vary depending on the particular procurement process selected. The relationships between the overall road project phases and the Technical Acceptance Process for structures, together with the associated structures related deliverables are scheduled in Table 2/1.

The Structures Section shall have input into the development of all structures on a national road project from options selection stage through the Technical Acceptance process prior to the commencement of any detailed design and shall be kept fully informed as the project progresses thereafter. This is illustrated in Figure 2/1 overleaf and expanded upon in Table 2/1.

The Technical Acceptance Process shall be followed for all Structures regardless of the nature of the contractual arrangements between the various parties. Depending on contractual arrangements there may be several designers involved in a project prior to the handover of a particular structure to the Bridge Management Organisation.

The following sections describe the procedures required as a result of different contractual arrangements. It should be noted that the terms ‘Contractor Designed Structures’ and ‘Contractor’s Alternatives’ have different meanings. The former are small structures often supplied as proprietary manufactured products that have been designated to the Contractor for design while the latter means an alternative to a structure proposed by a Contractor during construction which has already been fully designed and detailed by the Employer’s Designer.

2.2 Works Designed by the Employer at both Preliminary and Detailed Design Stage

In a contract where the works have been fully designed by the Employer, the RA employs the Designer to prepare designs for structures and to prepare construction drawings and contract documents. The STA-6 Certificates signed by the Designer and Checker shall be accompanied by references to all structures related extracts of the relevant tender documents.

2.2.1 Contractor Designed Structures included in Projects where the Majority of the Works have been fully designed by the Employer

In contracts where the majority of the Works have been fully designed by the Employer, it is possible to designate certain small structures to be designed by the Contractor at the discretion of the Structures Section.

The purpose of this arrangement is to take advantage of the cost savings resulting from competition among manufacturers of proprietary manufactured structures or products.

Contractor designed structures included within contracts where the majority of the works have been fully designed by the Employer are limited to the following types:

a) Category 0 structures;

b) Certain Category 1 structures as follows:

   i) buried concrete box type structures with less than 5m span;

   ii) retaining walls with retained height less than 3m and not subject to any traffic surcharge.

Responsibility to achieve Technical Acceptance shall remain the responsibility of the Employers Designer until a Contractor is appointed. Any proposal to designate structures as Contractor Designed Structures shall be highlighted in the Preliminary Design Report and shall be agreed with the Structures Section.

Once appointed, it is the responsibility of the Contractor to obtain Technical Acceptance from the Structures Section for all contractor designed elements prior to any detailed design taking place in accordance with Section 3. The Contractors Designer shall be a Chartered Engineer with appropriate design experience of the structural element under consideration.

The Contractor shall provide signed STA Certificates to the Structures Section for all Contractor designed structures when the design is complete and include the countersigned STA Certificates within the Safety File. The Employer or their nominated Representative shall ensure that the Technical Acceptance Procedures are implemented.

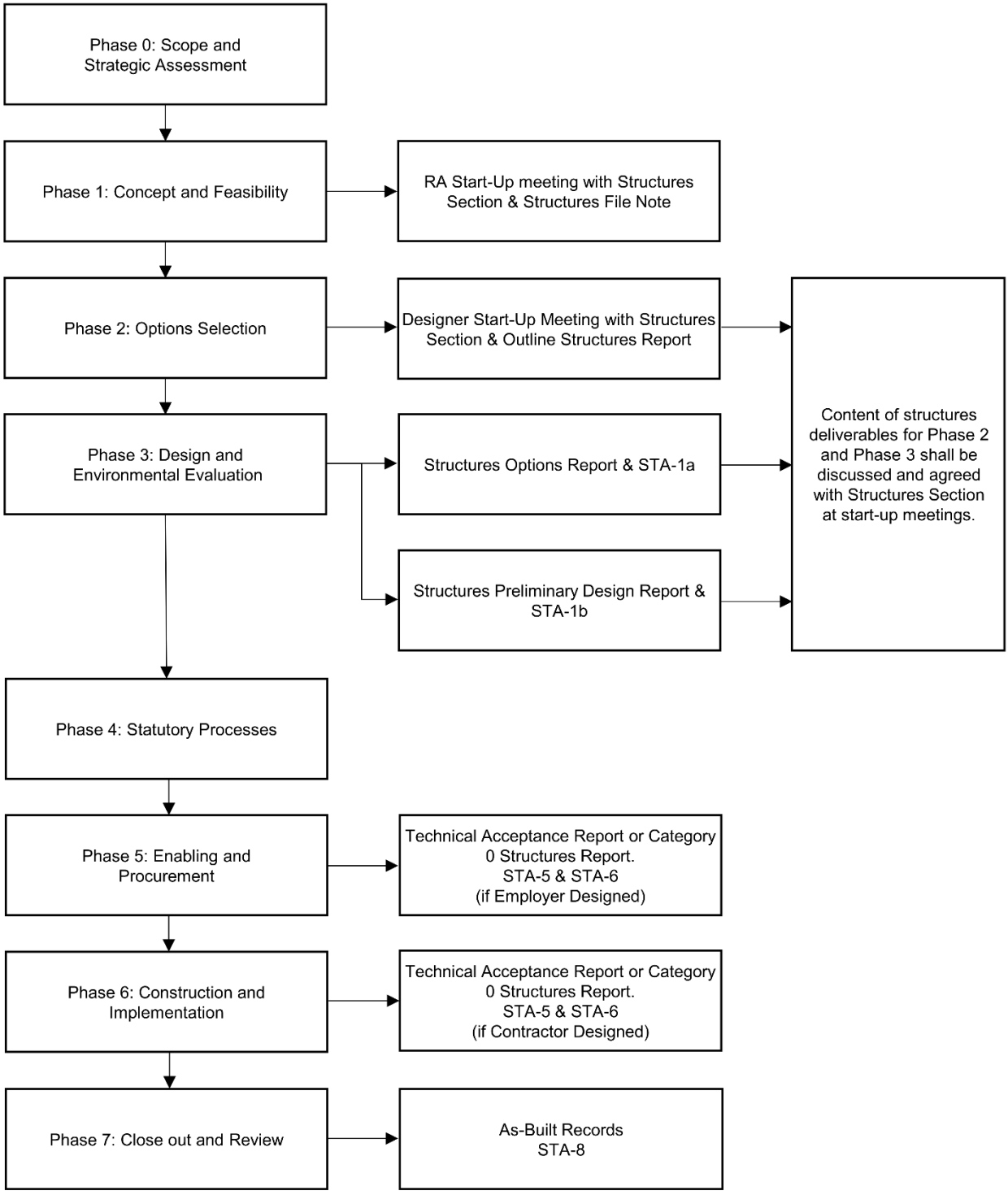


Figure 2.1 8 Phases of TII Project Management of National Road Projects and associated Structures Technical Acceptance Deliverables

2.2.2 Contractor's Alternatives in Contracts for which the Works have been fully designed by the Employer

In a contract where the Works have been fully designed by the Employer the Contractor may be permitted to provide an alternative design for a structure as part of the tender. The Contractor's alternative submission for consideration by the Employer should follow the procedures set out in Sections 2.4 and 2.5.

These procedures and the contract responsibilities of the Parties may be amended by the Instructions to Tenderers in order to suit the actual Contract. Where an alternative is permitted after tender then a similar procedure may be followed.

The Contractor shall provide a Technical Acceptance Report in accordance with Section 3 and will provide the required Certificates when the design is complete. The Employer or their nominated Representative shall ensure that the Technical Acceptance Procedures are implemented.

2.3 Works designed by the Contractor at both Preliminary and Detailed Design (Early Contractor Involvement)

For works procured by means of an Early Contractor Involvement strategy the Employer or their nominated representative or the Contractor has the responsibility to achieve compliance with all aspects of Technical Acceptance and Certification as scheduled in Table 2/1 and in accordance with the requirements of the Contract.

2.4 Works designed by the Employer at Preliminary Design Stage followed by Detailed Design by the Contractor (Design and Build, Private Public Partnership etc.)

For works procured by means of a Design & Build (D&B), Design, Build, Finance & Operate (DBFO)/Private Public Partnership (PPP) or Target Cost strategy, the procedures described in the sections below shall apply.

In D&B / Target Cost works, the Contractor is the organisation responsible for the design, construction and in certain cases maintenance of the works. In DBFO/PPP, the Concession Company has these responsibilities. The term 'Contractor' covers both circumstances. Prior to tender, the Employer's Designer shall submit structures deliverables as scheduled in Table 2/1 in accordance with Chapter 3. Relevant structures related extracts from the Tender Documents and Information Pack shall be submitted to the Structures Section for acceptance at least 8 weeks prior to issue for tender. This shall include the accepted Preliminary Design Reports to be included in the Information Pack.

2.4.1 Contractor's Proposals for Structures

Following issue of tender documents, the Tendering Contractor shall submit documentation in accordance with this Standard and as defined in the Instructions for Tenderers.

During the tender period, it is usual for the tenderers to be required to consult with the Employer with respect to their developing conceptual design proposals. This consultation may be via a series of meetings or otherwise, as defined in the Instructions to Tenderers.

As part of the consultations process the Contractor shall provide details of their developing conceptual design proposals for structures in accordance with the Instructions to Tenderers.

Following receipt of any structures design proposals for consultation the Employer or their nominated Representative shall review the submitted proposals and liaise with the Structures Section to provide appropriate comments and feedback to the tenderers.

At the completion of the consultation process the Contractor's outline consolidated proposals shall be capable of development to a detailed design that satisfies the requirements set out by the Tender Documents.

Following award of the Contract, the Contractor shall prepare the Structures Technical Acceptance Reports as scheduled in Table 2/1 in accordance with Chapter 3. Should the Contractor at this stage propose to modify or amend their conceptual design, they shall submit revised details to the Employer in accordance with any Change Procedure contained within the Contract for review. The Contractor shall also submit a revised Technical Acceptance Report. The submissions shall provide details of the new proposals together with reasons and justification for the proposed changes. The Employer shall not be bound to accept any new proposals, modifications or amendments.

On completion of detailed design and checking of each structure, the Contractor shall provide the Employer with copies of the appropriate Certificates (STA-6) as required in Section 3.

2.5 Compliance with Procedures

Where the Contractor carries out the design of structures under any of the contract arrangements described above or in any other contract arrangement, the Employer or their nominated Representative must put in place an auditing system to ensure that the Technical Acceptance Procedures are implemented.

Where reports, designs, drawings and specifications are prepared by a Contractor for construction, the Contractor shall ensure that the procedures described in this Standard have been adopted and that all documents used for design and construction are as defined within the accepted Technical Acceptance Report.

2.6 Other Acceptance

Bridges and structures constructed on National Roads must comply with all other TII acceptance and approval requirements. Compliance with the Technical Acceptance Process for structures does not replace a requirement to comply with these other acceptance and approval requirements.

2.7 TII Acceptance of Contract Documents

Structures Section Acceptance is required for the structures related components of the Tender Contract Documents. The submission of extracts of structures related Contract Documents to TII shall be as scheduled in Table 2.1.

Table 2.1 Schedule of Structures Deliverables at each project Phase.

Project Phase	Deliverable	Technical Acceptance of Structures Deliverables		
		Employer Designed at both Preliminary and Detailed Design Stage	**Employer Designed at Preliminary Design Stage followed by Detailed Design by the Construction Contractor**	**Contractor Designed at both Preliminary and Detailed Design Stage**
Phase 0: Scope and Strategic Assessment	No deliverable required.	**Responsible party**: RA/Employer's Designer	**Responsible Party**: RA/Employer's Designer	**Responsible Party**: RA/Employer's Designer
		• No action required.		
Phase 1: Concept and Feasibility	1) RA Start-Up Meeting with the Structures Section 2) Structures File Note (SFN) documenting all applicable structures reports available	**Responsible party**: RA/Employer's Designer	**Responsible Party**: RA/Employer's Designer	**Responsible Party**: RA/Employer's Designer
		• Compilation of Reports and studies required to feed into the overall planning aspects of the project, including where appropriate: (i) Assessment Reports, Principal Inspection Reports, Special Inspection Reports for existing structures; (ii) Particular geotechnical aspects which may affect structures; (iii) Particular aesthetic requirements etc. • Identification of the need for structures and the constraints affecting all aspects of the project.		
Phase 2: Options Selection	1) Designers Start-Up Meeting with the Structures Section	**Responsible party**: Employer's Designer	**Responsible Party**: Employer's Designer	**Responsible Party**: Employer's Designer
		• An Outline Structures Report shall be required. Full content shall be agreed with the Structures Section at the start-up meeting however a proposed layout is provided in Appendix A.		

Project Phase	Deliverable	Technical Acceptance of Structures Deliverables		
		Employer Designed at both Preliminary and Detailed Design Stage	**Employer Designed at Preliminary Design Stage followed by Detailed Design by the Construction Contractor**	**Contractor Designed at both Preliminary and Detailed Design Stage**
	2) Outline Structures Report (OSR	• An Outline Structures Report in accordance with Appendix A shall include Layout Plans showing the location of each bridge structure with a unique reference and a schedule which identifies the route, chainage, structure reference and description of the anticipated structure type. • If a requirement for a 'landmark' structure(s) has been identified during this Phase, justification shall be provided and agreement sought from the Structures Section.		
Phase 3: Design and Environmental Evaluation	1) Structures Options Report (SOR) 2) Preliminary Design Report (PDR) 3) Structures Portion of Design Report	**Responsible party**: Employer's Designer	**Responsible Party**: Employer's Designer	**Responsible Party**: Employer's Designer
		• A Structures Options Report may be required. Full content shall be agreed with the Structures Section at the start-up meeting however a proposed layout is provided in Appendix B. • A Structures Options Report for each family of structure, as agreed with the Structures Section, in accordance with Appendix B. **Sign-off**: STA-1a certificate signed by Designer and Structures Section. • In accordance with Section 3.9, a Preliminary Design Report for each family of structure shall be produced for acceptance by the Structures Section in accordance with Appendix C. **Sign-off**: STA-1b certificate signed by Designer and Structures Section.		
Phase 4: Statutory Processes		**Responsible party**: Employer's Designer	**Responsible Party**: Employer's Designer	**Responsible Party**: Employer's Designer

Project Phase	Deliverable	Technical Acceptance of Structures Deliverables		
		Employer Designed at both Preliminary and Detailed Design Stage	**Employer Designed at Preliminary Design Stage followed by Detailed Design by the Construction Contractor**	**Contractor Designed at both Preliminary and Detailed Design Stage**
Phase 5: Enabling and Procurement	1) Technical Acceptance Report (TAR) 2) Tender Documents 3) Consolidated Outline proposals 4) Construction Drawings	**Responsible party**: Employer's Designer	**Responsible Party**: Employer's Designer	**Responsible Party**: Contractor
		• Technical Acceptance Reports for each structure submitted to the Structures Section in accordance with Section 3.11. • Acceptance Issue of structures related extracts of the Tender Documents to be submitted to the Structures Section not less than 8 weeks prior to tender. • If required, revised Acceptance Issue of Tender Documents incorporating responses to comments from Structures Section, shall be issued until accepted. • Prepare Construction Issue Drawings, Specifications and Bar Bending Schedules for each structure.	• The Employer's Designer shall forward relevant extracts from the Tender Documents and information room data relating to structures to the Structures Section for acceptance at least 8 weeks prior to Tender. This shall include the accepted Preliminary Design Reports in accordance with Section 3.9. • If required, revised Acceptance Issue of Tender Documents incorporating responses to comments from Structures Section, shall be issued until accepted. • The Tenderer shall submit Consolidated Outline Proposals required in accordance with the Instructions to Tenderers.	• Technical Acceptance Reports for each structure submitted to the Employer or their nominated Representative in accordance with Section 3.11. • The Technical Acceptance Report shall be reviewed by the Employer or their nominated Representative and forwarded to the Structures Section together with the Employer's Representative's commentary. If on agreement with the Structures Section it is deemed that the Technical Acceptance Report does not meet the requirements of this document, the Technical Acceptance Report shall be rejected and the Contractor shall submit a revised Technical Acceptance Report for Acceptance.

Project Phase	Deliverable	Technical Acceptance of Structures Deliverables		
		Employer Designed at both Preliminary and Detailed Design Stage	**Employer Designed at Preliminary Design Stage followed by Detailed Design by the Construction Contractor**	**Contractor Designed at both Preliminary and Detailed Design Stage**
		Sign-off: STA-5 Technical Acceptance is required prior to commencing Detailed Design Signed STA-6 Form to be submitted prior to Tender.	The Employer's Designer shall forward the Consolidated Outline Proposals to the Structures Section together with their commentary in time for review and comment on the proposals prior to the designated date due for response to the tenderers.	**Sign-off**: STA-5 Technical Acceptance is required prior to commencing Detailed Design.
Phase 6: Construction and Implementation	1) Construction Drawings; Specifications; & Bar Bending Schedules 2) TARs 3) Addendums to TAR 4) Signed STA-6 Certificates 5) Signed STA-7 Certificates	**Responsible party**: Employer's Designer	**Responsible Party**: Contractor	**Responsible Party**: Contractor
		• Compile and submit on an ongoing basis during construction a Schedule of Construction Related Revisions to the Technical Acceptance Report with technical justification for acceptance, as required. This schedule shall form an addendum to the Technical Acceptance Report.	• A Technical Acceptance Report for each structure shall be submitted to the Employer or their nominated representative in accordance with Section 3.11. The Technical Acceptance Report shall be reviewed by the Employer or their nominated Representative and forwarded to the Structures Section together with the Employer's Representative's comments.	• Relevant detailed design documents (Drawings, Specification Appendices, Bending Schedules etc.) relating to structures shall be submitted to the Employer or their nominated Representative in accordance with the certification procedures defined in the Contract. • The Contractor shall compile and submit on an ongoing basis during construction a Schedule of Construction Related Revisions to the Technical Acceptance Report with technical justification.

Project Phase	Deliverable	Technical Acceptance of Structures Deliverables		
		Employer Designed at both Preliminary and Detailed Design Stage	**Employer Designed at Preliminary Design Stage followed by Detailed Design by the Construction Contractor**	**Contractor Designed at both Preliminary and Detailed Design Stage**
			If on agreement with the Structures Section it is deemed that the Technical Acceptance Report does not meet the requirements of this document the Technical Acceptance Report shall be rejected and a revised Technical Acceptance Report shall be submitted for acceptance.	
		• The Contractor shall submit details of Contractor Designed Structures and Contractor's Alternative Designs in accordance with the requirements of Chapter 2. **Sign-off**: Signed STA-7 Forms for Temporary Works in accordance with Chapter 5.	• All relevant Detailed Design documents (Drawings, Specification Appendices, Bending Schedules etc.) relating to each structure shall be submitted to the Employer or their nominated Representative in accordance with the certification procedures defined in the Contract. • During construction, a Schedule of Construction Related Revisions to the Technical Acceptance Report with technical justification shall be submitted on an ongoing basis for acceptance, as required, and finally submitted as an addendum to the Technical Acceptance Report.	for acceptance, as required. This schedule shall form an addendum to the Technical Acceptance Report. **Sign-off:** Signed STA-6 Forms to be submitted once all elements of the structure have been designed, checked and certified under the Contract. Signed STA-7 Forms for Temporary Works in accordance with Chapter 5.

Project Phase	Deliverable	Technical Acceptance of Structures Deliverables		
		Employer Designed at both Preliminary and Detailed Design Stage	**Employer Designed at Preliminary Design Stage followed by Detailed Design by the Construction Contractor**	**Contractor Designed at both Preliminary and Detailed Design Stage**
			Sign-off: Signed STA-5 Technical Acceptance is required prior to commencing Detailed Design. Signed STA- 6 Forms to be submitted once all elements of the structure have been designed, checked and certified under the Contract. Signed STA-7 Forms for Temporary Works in accordance with Chapter 5.	
Phase 7: Close out and Review	As Built Documentation	The Contractor shall submit As-Built records and reports in accordance with Chapter 6 of this document and CC-CMG-04001. On completion of the defects/maintenance period and correction of all defects, the Employers Representative shall inform the Structures Section that the structure is complete (see Section 3.19). **Sign-off**: Signed STA-8 Form to be submitted once all elements of the structure have been constructed.		

3. Technical Acceptance

3.1 General

The procedures for achieving Technical Acceptance shall be followed for all structures as defined in Chapter 1. Technical Acceptance procedures impose a discipline on the design development process that encourage best practice for the required structure execution, refurbishment or demolition.

The purpose of the Technical Acceptance process is to enable the Structures Section to be satisfied as to:

a) The proposed design or assessment criteria, principles or methods;

b) The required working life for the structure and its main components;

c) The Category of the proposals;

d) Compliance with the TII project acceptances and approvals;

e) The economy of the type and form of structure proposed within the overall project concept;

f) Its suitability for the environment and sub-soil conditions;

g) Its appearance, including the standards of finish to be adopted;

h) The adequacy of proposals for geotechnical and other investigations;

i) The loading and other design and durability criteria proposed;

j) The suitability of the design method(s) proposed for use in the final design;

k) The application of selected documents and Standards, and the suitability of any methods or criteria outside existing Codes or Standards proposed for adoption in a particular structure;

l) The need for consultation with interested authorities and compliance with statutory requirements;

m) Constructability issues in the context of the environment, traffic management, services, utilities and timing issues of related work;

n) The life cycle cost of the structure and that provision has been made for the inspection and maintenance of the structure both in the context of the structure itself and the environment in which it will function;

o) In the case of temporary works, the suitability of the proposal and design approach to enable the temporary structure to perform its intended purpose (see Chapter 5);

p) The independence and suitability of the Category 3 Checker based on their relevant experience and competence;

q) The adequacy of existing records and investigation data and appraise the need for further investigations or studies that may be required.

Technical Acceptance shall not be given until the Structures Section are satisfied that all foreseeable aspects have been covered and any differences resolved. Technical Acceptance may be made conditional on specific requirements being addressed during the progress of the detailed design.

Technical Acceptance is a continuing process and the period required for consideration will vary according to the size and complexity of the structure and the items falling outside current design standards.

A start-up meeting with the Structures Section shall be held early in the Technical Acceptance process. Subsequently, one or two presentations using visual aids, together with discussions, have been found to be a useful method of progressing expeditiously to formal submission for Technical Acceptance. Such presentations may deal with some or all of the structures in a road project.

The Technical Acceptance process is completed upon receipt of the signed STA-6 certificate by the Structures Section. Notwithstanding this, all documentation outlined within this Standard shall be supplied throughout all Phases of the project.

The information provided within the Technical Acceptance Report and the Category 0 Structures Report, as well as the Certificates, is held in a database by TII. The database is used for the Acceptance process and to collect statistical information about structures.

3.2 Application for Technical Acceptance for Categories 1, 2 and 3 structures shall include:

a) The form 'Application for Technical Acceptance' (STA-2 completed);

b) One copy of the Technical Acceptance Report;

c) The form 'Structures Information Database (STA-3).

3.3 Design Development

Designers shall liaise immediately on appointment with the Structures Section prior to making any formal submissions. A start-up meeting shall be required. During this liaison, the Structure Category shall be proposed and agreed. In the course of design development, the Designer shall prepare the Deliverables scheduled in Table 2/1 and as described in the sections below. No structures deliverable shall be acceptable prior to receipt of all other preceding structures deliverables.

3.4 Classification of Structures

All road infrastructure structures shall be classified into one of the following 4 categories. The decision of the Structures Section as to the appropriate classification for any particular structure shall be binding.

Category 0 - Simple structures, where all aspects of design, assessment and execution are in accordance with the current TII Publications (Standards) and Specification for Works (SPW) and contain no Departures, provided they also conform to one of the following:

a) Single span simply supported structures with span of less than 5m;

b) Buried concrete boxes or buried rigid pipes greater than 2m clear but less than 3m span/diameter and having more than 1m cover;

c) Environmental barriers less than 2.0m in height.

Category 1 - Simple structures, other than those in Category 0, which can be analysed by the equations of statics and where all aspects of design, assessment and execution are in accordance with the current TII Publications (Standards) and Specification for Works (SPW) and contain no Departures, provided they also conform to one of the following:

a) Single span simply supported structures with spans greater than 5m but less than 10m and having less than a 25° skew;

b) Buried concrete box type structures with spans greater than 3m but less than 7m span and having more than 1m cover;

c) Corrugated steel buried structures less than 5m in span;

d) Retaining walls with a retained height of less than 5m;

e) Portal sign gantries with a span less than 20m;

f) Cantilever sign gantries with an arm span of less than 9m;

g) Environmental barriers 2.0m and greater in height;

h) High masts;

i) Utility masts/pylons (telecom masts, electricity pylons and other similar structures)

Category 2 - Intermediate structures which have redundant features and may contain departures from, or aspects not covered by, current TII Publications (Standards). Category 2 structures include intermediate Structures: i.e. all those not within the parameters of categories 0, 1 & 3.

Category 3 - Complex structures, which require sophisticated analysis of highly redundant features, and where consequences of failure would be severe. Category 3 structures include complex structures with any one of the following features: high redundancy, unconventional design aspects, any span exceeding 50m, skew exceeding 45°, bridges with cable stays and suspension systems, post-tensioned concrete structures, difficult foundation problems including foundation elements for embankments constructed on rigid foundation elements, tunnels, structures with M&E installation i.e. moveable bridges, and retaining structures, including strengthened earthworks, in excess of 10m in height.

3.5 Structures File Note (SFN)

The Structures File Note (SFN) shall be submitted to the Structures Section during the “Phase 1: Concept & Feasibility” of any road project and shall be a compilation of all structures reports and studies pertaining to the project that are required to feed into the planning phase. The main purpose of the SFN is to inform the Structures Section that a project is in planning and that it may contain structures, either new or modified and should contain all Assessment Reports, Principal Inspection Reports & Special Inspection Reports for existing structures; particular geotechnical aspects which may affect future structures; or any particular aesthetic requirements that may be applicable to structures along the project.

3.6 Outline Structures Report (OSR)

The Outline Structures Report (OSR) shall be submitted to the Structures Section during the “Phase 2: Options Selection” of the road project, or before, and shall outline the structures required for a project along the preferred route option. The information required in the Outline Structures Report will vary and is unique for each project, however, a model for an Outline Structures Report is given in Appendix A.

3.7 Category 0 Structures Report

Technical Acceptance of Structures classified as Category 0 is based on a combined Structures Report for each Category 0 structure type contained within the road project. The Category 0 Structures Report shall include:

a) The form 'Application for Technical Acceptance for Structures', (STA-2). One form is sufficient for each Category 0 structure type on a road project (Appendix E);

b) Description of each structure type;

c) The form 'Structures Information Database' (STA-3) completed for each structure type;

d) A general arrangement drawing shall be provided for each structure type;

e) Durability details shall be provided for each structure type;

f) A list of all relevant design and execution documents proposed for use.

The forms STA-2 (Appendix E) and STA-3 (Appendix E) must accompany the report and be bound into the report after the cover.

Technical Acceptance of the Category 0 Structures Report is recorded on form STA-5.

3.8 Structures Options Report (SOR)

The Structures Options Report (SOR) shall be submitted to the Structures Section during the "Phase 3: Design and Environmental Evaluation" of the road project, or before, and shall describe the options considered for each structure or family of structures on the project, with the exception of Category 0 structures. A minimum of 3 options shall be considered for each structure or family of structures unless otherwise agreed by the Structures Section. A family of structures shall have a similar structural and articulation arrangement. The information required in the SOR will vary and is unique for each structure or family of structures, however, a model for a SOR is given in Appendix B. The report shall contain a signed copy of the STA-1a form.

3.9 Preliminary Design Report (PDR)

A Preliminary Design Report (PDR) shall be submitted to the Structures Section during the "Phase 3: Statutory Processes" of the road project and shall describe the recommended option for each structure or family of structures, with the exception of Category 0 structures. However, if a single report is provided for a family of structures certain structure specific information is required. This is described in Appendix C. A family of structures shall have a similar structural and articulation arrangement. The information required in the PDR will vary and is unique for each structure, however, a model for a Preliminary Design Report is given in Appendix C. Innovative or landmark structures may require further studies, investigation and/or specialist reports in addition to the Preliminary Design Reports and specific requirements in this regard shall be agreed with the Structures Section. The report shall contain a signed copy of the STA-1b form.

3.10 Technical Acceptance Report (TAR)

A Technical Acceptance Report (TAR) is required for each structure and shall be submitted during the appropriate phase of the road project as scheduled in Table 2/1 and shall describe the recommended option for each structure.

The information required for the Technical Acceptance Report will vary and is unique for each structure; however, a model for a Technical Acceptance Report, which should be suitable for the majority of new structures, is given in Appendix D. Additional headings may be requested by the Structures Section. The TAR is a comprehensive document drawn up to cover the design of new structures. The report shall only contain information pertinent to the particular structure. Irrelevant information should not be included. Notwithstanding, the Structures Section may ask for additional information before Technical Acceptance can be granted. The report shall contain the names of the individuals proposed to carry out the design and check of the structure and a signed copy of the STA-2 form shall be included.

For bridge management schemes including the alteration, modification, strengthening and repair of all existing road structures affected by national road projects a Technical Acceptance Report shall be submitted at the end of Preliminary Design stage and prior to the commencement of Detailed Design if the Structures Section of TII deem the proposals require Technical Acceptance.

3.10.1 Relevant Design Documents, Standards & Specifications

The Technical Acceptance Report shall contain a list of all relevant design guidance documents, national design codes, standards and specifications proposed for use in design, detailing and construction. The list must set out the name of the actual document to be used together with the relevant date or version number. It is not sufficient to quote standards by general reference to the TII Publications Website. The list may be compiled from the following non-exhaustive list of sources: -

a) The latest relevant structural Eurocodes and associated Irish national annexes;

b) All relevant TII Standards & Technical Publications (http://www.tiipublications.ie);

c) The latest relevant Euronorms (specifications & execution standards);

d) The latest relevant British Standards;

e) The latest relevant BSI Published Documents;

f) The latest relevant product standards.

Where it is considered necessary to provide revisions and there are cost or programme implications, then acceptance shall be sought from TII by submitting an addendum to the Technical Acceptance Report.

3.10.2 Application for Technical Acceptance

The Application for Technical Acceptance shall be made on form STA-2.

The Application form (STA-2) must be signed by the Project Supervisor Design Process to demonstrate that the structure has been taken into account in accordance with the requirements of the Safety, Health and Welfare at Work (Construction) Regulations.

3.11 Technical Acceptance

The Structures Section will issue the Technical Acceptance (STA-5) when satisfied in accordance with Section 3.1 above. The Technical Acceptance may be conditional on the Designer addressing specific requirements in the course of the detailed design.

Together with the Technical Acceptance the Structures Section will issue a blank Certificate (STA-6) which must be completed and returned when the design has been completed and checked but prior to any construction.

Technical Acceptance is valid for two years after the acceptance date. If a structure has not commenced construction within this period, the RA shall review it and decide whether or not updating or any other amendment in the design is required. The RA's decision on a resubmission will be recorded as a revision to the original Technical Acceptance and will then be sent to the Designer.

Where Technical Acceptance has been granted prior to the receipt of Statutory Approvals a further review of the Technical Acceptance must be completed following receipt of such. The Designer will review the Technical Acceptance Report to ensure consistency with the Statutory Approvals and make any modifications that may be required. All modifications will require acceptance by the Structures Section and if accepted will be recorded as a revision to the original Technical Acceptance. Such modifications/revisions must be recorded on an addendum to the Technical Acceptance Report and submitted to the Structures Section.

3.11.1 Proprietary Manufactured Structure or Products

Proprietary manufactured structures or products proposed for inclusion in the Works shall be subject to the same Technical Acceptance procedures as all other structures. Classification of these elements shall be in accordance with Section 3.4.

3.11.2 Utility Masts/Pylons on or near TII Works Lands

Utility masts/pylons (telecom masts, electricity pylons and other similar structures within a project boundary or which may fall onto a national road route) for inclusion in the Works shall be subject to Technical Acceptance procedures as with all other structures. Classification of these elements shall be in accordance with Section 3.4.

Technical Acceptance and Registration of utility masts/pylons can be achieved by two routes, Generic Registration Technical Acceptance and Site Specific Technical Acceptance.

Technical Acceptance of utility masts/pylons is recorded on an STA-5 form. Technical Acceptance of utility masts/pylons shall be sought in accordance with Appendix G. Details of all documentation relating to technical acceptance for utility masts/pylons is included in Appendix G.

3.12 Detailed Design

The detailed design must comply with the Technical Acceptance Report. Should any variations or additions prove necessary during the detailed design, these must be agreed with the Structures Section before they are implemented. Such variations must be recorded on an addendum/revision to the Technical Acceptance Report and submitted to the Structures Section.

The Designer shall be responsible for the applicability and accuracy of all computer programs used and shall also ensure the validity of the program for each application.

Where a structure has been placed in Category 0 or 1, and a need arises subsequently to depart from current standards, the Category will be changed to 2, unless the Structures Section considers, when agreeing the departure, that a change of category is unnecessary.

The change of category shall be recorded in the appropriate Technical Acceptance Report and the design supported by the appropriate Certificate. Any previous Category 0 Structures Report or Category 1 Technical Acceptance shall be endorsed as superseded.

3.13 Checking

Design documentation including Technical Acceptance Reports, Drawings, Schedules, Specification, Contract Documents etc. shall be checked as follows:

a) Categories 0 and 1 will require a check by another Engineer within the Design Team;

b) Category 2 will require a check by a Checking Team, which may be from the same office or firm but must be independent of the Design Team;

c) Category 3 will require a check to be carried out by a Checking Team from a separate organisation with their own Professional Indemnity Insurance and no connection to the project, proposed by the Designer and agreed in writing by the Structures Section, having knowledge and experience relating to the type of structure it is to examine.

Although the form and detail of the check is for the Checker to decide, their analytical work shall be independent of that of the Designer and carried out without reference to the Designer's calculations. The Designer must make the Checker aware of the design assumptions and details of any approved deviations to the design. The Designer shall not give calculation sheets to the Checker.

Independence between the Design Team and the Checking Team must be maintained, and although the methods of analysis they employ need not be the same, they may consult each other to ensure that the results they are obtaining are directly comparable.

The Checker shall carry out a comprehensive examination of all aspects of the design and any proposed Departures, including amended Specification clauses that affect structural integrity, durability and maintenance. The Checker shall ensure that proposals comply with all relevant TII standards and specifications and the Contract Documents.

The Checker shall draw the attention of the Designer and Structures Section to any aspect of the agreed Technical Acceptance Report where changes are considered necessary.

The Checker shall be responsible for the applicability and accuracy of all computer programs used in the check and shall ensure the validity of the programs for each application.

In accordance with DN-ERW-03083 an Independent Check of the Geotechnical Design for a project shall be required. This check shall be undertaken regardless of the category of the structure.

3.14 Certification

When the design and check of each structure have been completed, the following shall be sent to the Structures Section for acceptance:

a) The appropriate Certificates (STA-6) (Appendix E) filled in and signed by the Designer and Checker. They shall be sent by the Designer, with original signatures, for acceptance. The certificate shall reference the final accepted Technical Acceptance Report, recording all Departures and aspects not covered by Standards;

b) For Category 3 structures a letter shall be required from the Category 3 Checker stating their findings and conclusions.

For the avoidance of doubt, any qualifications, conditions or recommendations made by the Category 3 Checker must be mutually agreed and closed out between the Designer and Checker prior to issue of the Check Certificate.

The signatories submitting the Certificate must clearly indicate their name and office. Signatures are required from the Team Leader responsible for the design and check and the Principal in charge of the organisation or firm which is responsible for the design and check.

Any proposed substitute, additional or cancelled specification clauses relating to structures shall require endorsement by the Structures Section prior to submission of the Certificates, together with notes fully explaining the reasons for Specification variations. Endorsement will be recorded on the Certificates.

The persons who sign as Team Leader for design and check on Certificates must be Chartered Civil or Structural Engineers (or equivalent) with appropriate experience.

The Structures Section will acknowledge the Certificate(s) (STA-6) and return a copy to the Designer for inclusion within the Safety File.

3.15 Execution of Structures

Execution of any structure shall not be permitted to be undertaken prior to technical acceptance being obtained from the Structures Section and a receipt of satisfactory responses to all comments and amendments noted on the STA-5 certificate and the subsequent issue of the acknowledged STA-6 certificate.

It is the responsibility of the Designer/Contractor to ensure that the design intent behind all drawings and specifications pertaining to a particular structure is understood onsite and is implemented onsite.

The Structures Section do not check or review the translation of design into the execution of structures. That is a function solely of the Contractor.

Once the execution of a structure is complete, the STA-8 certificate shall be signed and submitted to the Structures Section for acceptance.

3.16 Health and Safety Requirements

The Designer shall inform the Employer of any alterations to design or construction arising from Risk Assessments, Health and Safety requirements, Safety Audits or any other cause related to Health and Safety.

The Employer shall liaise with the Structures Section to decide on the appropriate procedure for dealing with any such changes that would require amendment of the Technical Acceptance or the Certificates.

3.17 Amendments during Construction

It is the responsibility of the Designer to seek acceptance from the Structures Section of any amendments to the design during construction which have aesthetic, structural or durability implications. All such amendments shall be included in an addendum to the Technical Acceptance Report and be shown on As-Built documentation.

4. Geotechnical Requirements

4.1 Geotechnical Reporting

Reports submitted throughout the technical acceptance process shall at each project Phase include information on the geotechnical aspects of the structure as detailed for that Phase within DN-ERW-03083.

The Technical Acceptance Report, submitted in Phases 5 and 6 shall include a completed Geotechnical Data Form, the format for which is included in Appendix F of this document.

The main body of the TAR shall contain details of the Geotechnical Category for the structure, site investigation data applicable to the structure with measured depths of main strata and groundwater levels, additional details of the ground conditions beneath the structure and the soil characteristics used in the design. The report should also note the differential settlement to be used in the design.

4.2 Geotechnical Design Report

The results of all geotechnical investigations for a project shall be compiled in a Ground Investigation Report (GIR) which shall form part of the Geotechnical Design Report (GDR) compiled in accordance with IS EN 1997 and prepared by the Designer for all geotechnical activities on the project. The Geotechnical Design Report shall make specific reference to all structures and strengthened earthworks on a project addressing them to an appropriate level of detail, as outlined in DN-ERW-03083. The Technical Acceptance Report for a given structure shall make reference to the Geotechnical Design Report by name and confirm acceptance of the content of the report with regard to the structure under consideration.

Where the use of Strengthened Earthworks is proposed on any project, irrespective of procurement method, the Designer shall, prior to submission of the GDR to the Road Authority, complete and submit a Strengthened Earthworks Appraisal Form as detailed in DN-ERW-03083.

4.3 Checking of Earthworks

In accordance with DN-ERW-03083 all Geotechnical Designs shall be subject to Independent Checking.

5. Temporary Works

5.1 Introduction

This Chapter describes the Structures Section's requirements for temporary works submissions (including those required for temporary structures that carry live load) and shall be read in conjunction with Chapters 1 to 3. These requirements are in addition to any particular contract requirements.

5.2 Scope

The procedures described in this chapter shall apply without limitation to the following temporary works/structures:

a) Temporary works and falsework for major and complex structures;

b) Any type of travelling formwork;

c) Proposals where erection procedure; method of construction; or the procedure for the demolition or removal of an existing structure is of critical importance to the overall stability of a structure;

d) Purpose built or prefabricated forms of temporary works that are alongside or temporarily support or span live carriageways or railway lines or other areas with public access, including facilities or construction procedures that maintain the structural integrity or safe operation of an existing structure;

e) Temporary works details, erection proposals or construction procedures involving work that affects or potentially affects the structural integrity or operating procedures of a structure during its reconstruction, demolition and removal, maintenance, monitoring, alteration or repair.

5.3 Types of Temporary Works

All temporary works shall be classified as either Type A or Type B as follows:

a) Type A: Erection proposals or temporary works where the works will not affect or potentially affect any road or other way or area used by or accessible to the public. No submission required to the Structures Section.

b) Type B: Erection proposals or temporary works where the works may affect or potentially affect any road or other way or area used by or accessible to the public. Also, temporary structures used during construction to support live loads e.g. bailey bridges. A temporary works TAR submission is required by the Structures Section.

The classification of temporary works shall be agreed with the Structures Section at the commencement of a project.

5.4 Structure Category of Temporary Works

The Structure Category applied to temporary works proposals shall reflect the adverse consequences of any potential failure for that particular element of the Works. The Structure Category shall generally be Category 2 or 3 and shall be agreed with the Structures Section.

5.5 Design Criteria relating to Permanent Works

Design criteria for temporary works shall include all relevant design data concerning the design and construction of the associated permanent works. This includes the protection and/or safe operation of the permanent work or live carriageway during the use of a temporary structure or temporary conditions of construction of new designs or the alteration of existing structures (e.g. allowable deflections, settlements, rotations, loading, jacking forces, propping requirements, clearances, impact protection, erection or demolition procedures etc.). The temporary works design criteria shall also define all traffic management/diversion requirements, carriageway possessions etc.

5.6 Submission Requirements for Temporary Works Proposals

All temporary works proposals shall be submitted to the Employer or their nominated Representative in accordance with the requirements of the Contract. The submission shall clearly define the extent and purpose of the proposed temporary works/erection proposals and construction staging. Proposals shall state the criteria that have been adopted to encompass the technical, operational and safety requirements of the authorities consulted and shall demonstrate to the satisfaction of the Employer that adequate safeguards and contingency measures have been introduced and will be maintained throughout the duration of the work.

For Type B temporary works, the above requirements shall be fully defined in a Technical Acceptance Report (TAR) relating to the proposed temporary works which shall be prepared and submitted to the Structures Section in accordance with the requirements of Chapter 3 (appropriately tailored to capture all relevant data associated with the temporary works). There may be several different temporary works designers and checkers responsible for separate elements of the temporary works (e.g. excavation support to substructures, formwork, working platforms, structure restraint, beam lifting etc). These temporary works elements may be designed and detailed at different times during construction so the temporary works TAR may be a live document that is updated as the relevant data becomes available.

The temporary works Designer shall provide sufficient information within their section of the temporary works TAR to enable the Structures Section to consider the following non-exhaustive list of items:

a) Structural adequacy and stability of all stages;

b) Precautions required during erection / dismantling operations;

c) Protection of the temporary works (including protection against vehicular or other impact);

d) Loading and design criteria, including factors of safety where limit state design codes for bridges are not used;

e) Effects on any existing structures or earthworks;

f) Working spaces for installation and removal;

g) Clearances and access for construction plant and machinery;

h) Provision for periodic inspection and checking.

Prior to the commencement of the relevant parts of the temporary works, a Design and Check Certificate for Temporary Works STA-7 Type B (appropriate to that particular element of the temporary works), in the form given in Appendix E, shall be submitted to the Employer or their nominated Representative, who shall copy these to the Structures Section. These certificates shall be recorded and kept with the Safety File and the As-Built records for the associated permanent structure.

The temporary works certificates are required to be signed by the Designer for that particular element of the temporary works and by a Checker (with the level of independence from the temporary works Designer appropriate to the Structure Category).

6. As-Built Records

On completion of construction the Designer/Contractor shall submit to the Structures Section one electronic copy of the As-Built Records and reports in accordance with the Contract, including but not limited to the following for each structure:

- Section 1: Technical Acceptance Report including all addenda;
- Section 2: As-built Drawings including Fabrication Drawings in accordance with CC-CMG-04001. Photographs of the as-built structure (a minimum of four A4 pages of photographs including anything unusual or noteworthy which occurred or was encountered during construction, an explanation of each photograph shall be included) and reference to the Eirspan number assigned to the structure shall also be included (if available);
- Section 3: Specification by reference plus Appendices;
- Section 4: Datasheets – one for each proprietary item (including but not limited to bearings, expansion joints, waterproofing, vehicle restraint systems, coatings);
- Section 5: Testing – summary report of all testing undertaken and details of any failures or non-conformances;
- Section 6: Geotechnical Design Report and Ground Investigation Report, and any other relevant technical report;
- Section 7: Extracts from the Safety File relating to maintenance of the structure;
- Section 8: Details of PSCS, PSDP and Contractor;
- Section 9: Progress Photos – with labelled photos;
- Section 10: Schedule of relevant Operation and Maintenance issues for each structure. This shall include structure description, schedule of elements, inspection procedures (including description and frequency), maintenance procedures (including description and frequency) and means of access. Where similar issues arise on multiple structures i.e. time of maintenance of paint, design life for joint, these may be scheduled;
- Section 11: Copies of the Signed STA-6, STA-7 and STA-8 Forms.

On completion of the defects/maintenance period and correction of all defects, the Designer shall inform the Structures Section that the structure is complete. A Principal Inspection shall then be carried out and details of the structure shall be entered into the Bridge Management System database.

7. References

7.1 TII Publications (Standards):

TII Publications per https://publications.tii.ie

AM-STR-06042 – Structural Review and Assessment of Road Structures

CC-CMG-04001 – Preparation and Delivery Requirements for As-Built Records

DN-STR-03018 – Design of Support Structures for Roadside Furniture

DN-STR-03021 – Aesthetics of Road Structures

DN-ERW-03083 – Managing Geotechnical Risk

PE-PMG-02041 – Project Management Guidelines

GE-GEN-01005 – Departures from Standards and Specification

7.2 Other TII Publications and Drawings:

NRA BD 02/09 – Technical Approval of Road Structures on Motorways and Other National Roads

7.3 IS EN Standards and British Standards:

IS EN 1990 - Basis of structural design

IS EN 1997 - Geotechnical design

7.4 Other Documents:

Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013)

Construction Procurement Regulations (EU) No. 305/2011 (CPR)

PLG07 High Masts for Lighting and CCTV (2013 Edition)

Appendix A:

Outline Structures Report (OSR)

Outline Structures Report

The requirements for an Outline Structures Report (OSR) shall be agreed with the Structures Section at the start-up meeting.

This appendix illustrates the layout of the Outline Structures Report (OSR).

The accompanying model for an Outline Structures Report should not be regarded as prescriptive nor should its contents be regarded as exhaustive. However, Designers are expected to have considered all of the headings and demonstrate such consideration by developing the heading or stating that it is not relevant. New headings should be introduced at the end of each section if relevant.

Text shall be concise and to the point.

Appendices shall include A3 drawings of the proposed structures location plan.

Reports

The reports shall be in A4 format and portrait page layout. Drawings shall be A3 size folded to A4 size and bound into the document.

Structures Section Agreement

The Designer shall receive written acceptance for the Outline Structures Report from the Structures Section prior to proceeding to the Structures Options Report (SOR) or Preliminary Design Report (PDR).

Outline Structures Report

1. Introduction
2. Project Overview
3. Project Background and Constraints
4. Option Selection Process
5. Landmark Structures Identified
6. Summary of Structures on the Proposed Development
7. Outline Structures Schedule (Structure reference/name; Northing & Easting; Description)
8. Reference Documents

Appendix A – Route Alignment plus Proposed Location Plan for each structure (1:10,000 @ A3)

Appendix B:

Structures Options Report (SOR)

Instructions for Category 0 Structures

Category 0 structures do not require a Structures Options Report (SOR).

Instructions for Category 1, 2 & 3 Structures

This appendix illustrates the layout of the Structures Options Report.

The accompanying model for a Structures Options Report should not be regarded as prescriptive nor should its contents be regarded as exhaustive. However, Designers are expected to have considered all of the headings and demonstrate such consideration by developing the heading or stating that it is not relevant. New headings should be introduced at the end of each section if relevant.

Text shall be concise and to the point.

Appendices shall include A3 General Arrangement drawings, of the options considered and shall be supplemented to include photographs, photomontages, third party reports etc.

Reports

The reports shall be in A4 format and portrait page layout. Drawings shall be A3 size folded to A4 size and bound into the document.

TII Agreement

The Designer shall agree the recommended form of structure/family of structures with the Structures Section prior to proceeding to Preliminary Design Stage.

An STA-1a certificate shall be submitted with the Structures Options Report.

Structures Options Report - Consultation STA-1a

This application shall appear as the first page after the cover of the Structures Options Report. The layout of the application form can be found in Appendix E.

Structures Options Report

Name and Nature of Structure

or

Name and Nature of Family of Structures

1. Introduction
2. Site and Location (Easting and Northings)
3. Description of Structure and Options Considered (3 minimum)
4. Technical Evaluation
5. Economic Evaluation (including Construction and Whole Life Cost Estimates)
6. Aesthetic Evaluation
    6.1 Topography;
    6.2 Function;
    6.3 Adjacent land use and infrastructure features;
    6.4 The presence of other road structures (either adjacent to or along the route);
    6.5 Geotechnical and geological characteristics;
    6.6 Character of landscape or built environment;
    6.7 Ecology/biodiversity;
    6.8 View of and from the structure;
    6.9 Community values and objectives.
7. Evaluation of Durability and Maintenance Requirements
8. Hydraulic Considerations (where applicable)
9. Environmental Considerations
10. Health & Safety Considerations
11. Construction and Buildability
12. Ground Conditions
13. Consultation with Relevant Authorities
14. Conclusions & Recommendations

Appendix 1 – Site Location Plans (1:10,000 @ A3)

Appendix 2 – General Arrangement Drawings (for each option) – drawings shall be adequately detailed to describe the options considered.

Appendix C:

Preliminary Design Report (PDR)

Instructions for Category 0 Structures

Category 0 structures do not require a Preliminary Design Report (PDR).

Instructions for Category 1, 2 & 3 Structures

This appendix illustrates the layout of the Preliminary Design Report.

The accompanying model for a Preliminary Design Report should not be regarded as prescriptive nor should its contents be regarded as exhaustive. However, Designers are expected to have considered all the headings in the model and should demonstrate such consideration by developing the heading or stating that it is not relevant. New headings should be introduced at the end of each section if relevant.

Text shall be concise and to the point.

Appendices shall include A3 General Arrangement drawings, and shall be supplemented to include photographs, photomontages, Third Party Reports and geotechnical information.

Reports

The reports shall be in A4 format and portrait page layout. Drawings shall be A3 size folded to A4 size and bound into the document.

TII Agreement

The Designer shall agree the PDR with the Structures Section prior to proceeding to the Technical Acceptance Report.

An STA-1b certificate shall be submitted with the Preliminary Design Report.

Preliminary Design Report - Consultation STA-1b

This application shall appear as the first page after the cover of the Preliminary Design Report. The layout of the application form can be found in Appendix E.

Preliminary Design Report for Individual Structures or Family of Structures

Name and Nature of Structure

or

Name and Nature of Family of Structures

1.0 Introduction

1.1 Instructions or brief given to the authors, including dates.

1.2 Background information covering the origins for the need for the structure.

1.3 Previous studies and their recommendations.

2.0 Site & Function

2.1 Site location including Northings and Eastings (for each structure).

2.2 Function of the structure and obstacles crossed (for each structure).

2.3 Choice of location (for each structure).

2.4 Site description and topography (for each structure).

2.5 Vertical and horizontal alignments (for each structure).

2.6 Cross sectional dimensions on the alignments (for each structure).

2.7 Existing underground and overground services (for each structure).

2.8 Geotechnical summary (for each structure).

2.9 Hydrology and hydraulic summary (for each structure).

2.10 Archaeological summary (for each structure).

2.11 Environmental summary.

3.0 Structure & Aesthetics

3.1 General description of recommended structure or family of structures and design working life.

3.2 Aesthetic considerations.

- 3.2.1 Integration of structure within the landscape;
- 3.2.2 Proportions of spans and height;
- 3.2.3 Symmetry/rhythm;
- 3.2.4 Materials & components;
- 3.2.5 Potential for developing a family of structures along a route.

3.3 Proposals for the recommended structure or family of structures.

- 3.3.1 Proposed Category
- 3.3.2 Span arrangements (for each structure)
- 3.3.3 Minimum headroom provided
- 3.3.4 Approaches including run-on arrangements
- 3.3.5 Foundation type (for each structure)

3.3.6 Substructure

3.3.7 Superstructure

3.3.8 Articulation arrangements, joints and bearings.

3.3.9 Vehicle Restraint System (for each structure).

3.3.10 Drainage

3.3.11 Durability

3.3.12 Sustainability

3.3.13 Inspection and maintenance

4.0 Safety

4.1 Traffic management during construction including land for temporary diversions (for each structure).

4.2 Safety during construction

4.3 Safety in use

4.4 Lighting (for each structure).

5.0 Cost

5.1 Budget Estimate in current year, including whole life cost (for each structure).

6.0 Design Assessment Criteria

6.1 Actions

6.1.1 Permanent Actions

6.1.2 Snow, wind and Thermal Actions

6.1.3 Actions relating to normal traffic

6.1.4 Actions relating to abnormal traffic

6.1.5 Footway or footbridge live loading

6.1.6 Provision for exceptional abnormal loads

6.1.7 Accidental actions

6.1.8 Actions during construction

6.1.9 Any special loading not covered above

6.2 Authorities consulted and any special conditions required.

6.3 Proposed Departures from Standards

6.4 Proposed methods of dealing with aspects not covered by Standards

7.0 Ground Conditions

7.1 Geotechnical Classification

7.2 Description of the ground conditions and compatibility with proposed foundation design (for each structure).

8.0 Drawings and Documents

8.1 List of all documents accompanying the submission

Appendices to Accompany the Preliminary Design Report

Appendix 1 Photographs and photomontages

Appendix 2 Site Location for each structure; General Arrangement Drawings for each structure drawn to scale with border identifying the project, Employer, Designer and include inter-alia the following details;

Plan

- North arrow
- Lands made available
- Existing topographical survey
- Chainages
- Earthworks profile
- Plan dimension on carriageway(s)/watercourse/rail
- Skew angle
- Structure drainage
- Service ducts/chambers
- Lighting
- Limit and type of river bank protection
- Interface with existing structures
- Direction of flow for watercourses
- Articulation arrangement

Long Section

- Chainage line with levels
- Existing ground profile
- Paving details
- Slope protection
- Rock profile/competent strata
- Access arrangements
- Safety barrier
- Interfaces with existing structures
- Span dimensions
- Water levels (2yr and 100 yr. flood)
- Joint details

Elevation

- Existing ground profile
- Paving details
- Slope protection
- Access arrangements
- Lighting
- Safety barriers
- Interfaces with existing structures
- Clearance envelope
- Overall length
- Water levels (2yr and 100 yr. flood)
- Road/rail under – camber, dimensions and level
- Watercourse cross section dimensions
- Vehicle Restraint System / pedestrian guardrail
- Earthworks profile

Cross Section

- Cross section dimension and clearance envelope
- Camber
- Superstructure cross section
- Interface with existing structures
- Interface with intermediate supports
- Raised verge/footway details
- Drainage
- Services
- Vehicle Restraint System/pedestrian guardrail
- Surfacing and waterproofing
- Cantilever length (superstructure/sub-structure)

End support details

- End support details including dimensions
- Foundations including dimensions
- Wingwall details including dimensions

Intermediate Supports

- Intermediate support details including dimensions
- Foundations including dimensions

Miscellaneous

- Approach arrangements including joint details
- Indicative location of proposed construction joints

Appendix 3 Relevant extracts from Ground Investigation Report

Appendix 4 Other Relevant Documentation/Reports

For M&E installation in moveable structures the following additional headings shall be included in the Preliminary Report:

Section 3

- Proposed mode of operation
- Location of operating and control mechanisms
- Electricity power supply and distribution
- Stand-by power facilities
- Communication systems
- Emergency works testing and site operating conditions
- Fail safe operating safety system
- Commissioning and handover
- Plant room

Appendix D:

Technical Acceptance Report (TAR)

Technical Acceptance Report

This appendix illustrates the layout of the form (STA-2) 'Application for Technical Acceptance for Structures' and the accompanying Technical Acceptance Report. The application form shall be bound into the report inside the front cover**.**

Instructions for Category 0 Structures

Refer to Section 3.7.

Instructions for Category 1, 2 & 3 Structures

The accompanying model for a Technical Acceptance Report should not be regarded as prescriptive nor should its contents be regarded as exhaustive. However, Designers are expected to have considered all the headings in the model and should demonstrate such consideration by developing the heading or stating that it is not relevant. New headings should be introduced at the end of each section.

Text shall be concise and to the point.

Appendices shall be used to include; STA-3 Form, photographs, photomontages, drawings, extracts from factual site investigation data, structure geotechnical summary sheets/extracts from geotechnical interpretative reports, third party reports, and lists of standards to be used. The appendices shall include references to other reports, studies and working papers, which were used to develop the structure to the Technical Acceptance stage.

Reports

The reports shall be in A4 format and portrait page layout. Drawings shall be A3, folded to A4 size and bound into the document.

The executive summaries shall be not more than one A4 page. The body of the Report between 1.0 and 11.0 should be contained in approximately ten A4 pages. The reports should be in 12-point font.

APPLICATION FOR TECHNICAL ACCEPTANCE FOR STRUCTURES STA-2

This application shall appear as the first page after the cover of the Technical Acceptance Report/Category 0 Structures Report. The layout of the application form can be found in Appendix E.

TECHNICAL ACCEPTANCE REPORT FOR {NAME AND NATURE OF STRUCTURE}

Application for Technical Acceptance

Include STA-2

Document Information

TII Reference number
Northings and Eastings
Designation or number.
Revision* number and date. Nature of revision and page reference.
Author name and initials.
Document Reviewer/Checker's name and initials.

Executive Summary (1 A4 page)

1.1.1 Structure

Name:
Primary function:
Check Category:
Loading: Normal Abnormal

1.1.2 Passages

Primary
Number:
Name:
Other (multiple if necessary)
Number:
Name:

1.1.3 Recommendation

Unambiguous recommendations with a clear reference to an option or to a particular drawing.

1.1.4 Cost

The estimated initial capital cost and the discounted whole life cost. Costs should be given both without and with VAT. For Design and Build, Private Public Partnership and Target Cost Contracts indicative cost information only is required (€/m²).

1.1.5 Constraints

Unresolved constraints, conditions or reservations.

* Revision numbers are to be numeric and identified in the text with a reference in the right hand margin

1.0 Introduction

1.1 Instructions or brief given to the authors, including dates.

1.2 Background information covering the origins for the need for the structure.

1.3 Previous studies and their recommendations.

1.4 As required.

2.0 Site and Function

2.1 Site location. Described generally with reference to existing towns and roads.

Reference Location map at 1:50,000 or other agreed scale in Appendix 4

2.2 Function of the structure and obstacles crossed.

2.3 Choice of location.

2.4 Site description and topography.

2.5 Vertical and horizontal alignments

To include both mainline vertical and horizontal alignments and also minor road / railway / watercourse alignment as applicable. Curve radii and gradients to be provided along with design speeds.

2.6 Cross sectional dimensions on the alignments.

To include both mainline and minor road/rail/watercourse cross sections as applicable.

2.7 Existing underground and overground services and proposed services.

2.8 Hydrology and hydraulic summary.

Statement required clearly indicating whether the proposed structure will affect the local hydrology or have a hydraulic impact. If so, details of flood (i.e. levels/flows) events and the effects or impacts identified along with any mitigation measures and reference to the Section 50 application shall be included.

2.8.1 Archaeological summary

Statement required indicating whether any specific archaeological impacts arise due to the structure and any mitigation measures required.

2.8.2 Environmental summary.

Statement required indicating whether any specific environmental impacts arise due to the structure and any mitigation measures required.

3.0 Structure and Aesthetics

3.1 General description of recommended structure and design working life. *Brief summary of number and length of spans, skew, articulation and materials.*

3.2 Aesthetic requirements.

The aesthetic requirements should be developed based on the outcome of the preliminary design aesthetic considerations. They should consider the overall aesthetic vision for the project and the potential for developing a family of structures along a route.

Specific requirements per structure should consider the integration of the structure within the landscape, proportions of spans and height, symmetry/rhythm, materials & components.

A summary shall be provided of cantilever proportions, ratio of span lengths, ratio of deck depth to clearance underneath, setting out of parapet posts, construction joints, fascia joints and other relevant structure specific aesthetic considerations.

Specific requirements during the construction phase should also be considered here, such as any specific requirements for repair procedures to concrete finishes, paintwork, colour matching etc.

3.3 Proposals for the recommended structure:

3.3.1 Span arrangements.

3.3.2 Minimum headroom

3.3.3 Approaches including run-on arrangements.

3.3.4 Foundation type.

3.3.5 Substructure.

3.3.6 Superstructure.

3.3.7 Articulation arrangements, joints and bearings.

Statement of whether the structure is fully integral or not and justification of the proposed articulation arrangement. Description of proposed bearings and movement joint, i.e. saw cut, buried joint, asphaltic plug joint, mechanical joint, etc.

3.3.8 Vehicle Restraint System.

Details of all proposed vehicle restraint systems on the structure including material, containment level, working width, impact severity level, height and infill if appropriate. Details of all transitions and terminals (if applicable).

3.3.9 Waterproofing.

Details of structure waterproofing including list of areas to receive proprietary waterproofing, all areas to receive below ground waterproofing and details of waterproofing systems.

3.3.10 Drainage.

Details of bridge deck drainage, deck subsurface drainage, back of wall drainage and inspection gallery drainage if required. Details of drained area, longitudinal fall, crossfall and maintenance provision.

3.3.11 Construction and buildability aspects.

Identification of any issues relevant to the buildability of the structure.

3.3.12 Inspection and maintenance.

Describe future maintenance requirements for the structure and demonstrate how the structural arrangement minimises maintenance requirements and facilitates inspection and maintenance e.g. abutment gallery.

3.3.13 Materials and finishes.

Details of types of materials used in the structure including grades of steel and concrete for elements of the structure. Details of the concrete mix (i.e. ggbs), grade, exposure class etc. see table below. Details of finishes to steel and concrete including paint specifications, coating types, types of formed or unformed finishes to concrete.

Concrete Element	*Min Concrete Grade*	*Exposure Class*	*Cover* $C_{min,dur}$

3.3.14 Sustainability.

3.3.15 As required.

3.3.15.1 Structure Resilience – statement required indicating the ability of a structure to resist deliberate damage which may arise from the actions of vandals, thieves and terrorists.

3.3.15.2 As required.

4.0 Safety

4.1 Traffic management during construction. Authorities consulted. Proposals for assessment shall include proposals for access, traffic management and intrusive investigation.

4.2 Safety during construction – Health and Safety regulations, etc.

4.3 Safety in use – inspection and maintenance, impact, vandalism, etc.

4.4 Lighting – under, over, supply, fittings and fixtures.

4.5 Deck surface considerations – water disposal, freezing, different users, etc.

4.6 Damage – accidental, age, deterioration, etc.

4.7 Design Supervision Levels

4.8 Classes and levels

4.9 Consequence class

4.10 Reliability class

4.11 Inspection level

4.12 As required

5.0 Cost

5.1 Estimated Construction Cost - State the estimated cost of proposed structure with date of estimates. Whole life costs - Include the effects of traffic management and diversions required during future maintenance. For comparison purposes, the discounted cost for 50 years should be used using a discount rate of 5%. Costs should be exclusive of VAT; however, summaries of Costs should show, the VAT exclusive cost, VAT and total cost.

5.2 Base Year - state the base year and the source of rates and unit costs used in the estimate.

5.3 As required.

6.0 Design Assessment Criteria

6.1 Actions

6.1.1 Permanent Loading.

6.1.2 Snow, wind and thermal actions

6.1.3 Actions relating to normal traffic

LM1, LM2

6.1.4 Actions relating to abnormal loads:

LM3
Footway or footbridge live loading

6.1.5 Accidental actions

Actions in accordance with IS EN 1991-1-7 and DN-STR-03013

6.1.6 Actions during construction

6.1.7 Any special loading not covered above.

6.2 Authorities consulted and any special conditions required.

6.3 Proposed Departures from Standards.

6.4 Proposed methods of dealing with aspects not covered in Standards.

6.5 Proposed substitute or amended specification clauses.

6.6 Serviceability Requirements

6.7 As required.

7 Structural Analysis

7.1 Methods of analysis proposed for superstructure, substructure and foundations.

Details of staged construction, assumed Construction Sequence, description of the model proposed for the analysis.

7.2 Proposed structural analysis software used in the analysis

Including reference to version of software used

7.3 Description and diagram of idealised structure to be used for analysis

7.4 Methods of analysis and design proposed for earth retaining systems.

Including proposed range of soil parameters to be used in the design of strengthened earthworks.

7.5 As required.

8 Ground Conditions

8.1 Geotechnical Classification and Geotechnical summary.

To identify site investigation data applicable to the structure along with the measured depths of the main strata and groundwater level.

8.2 Acceptance of the interpretative recommendations of the Geotechnical Design Report to be used in the design and reasons for any proposed departures.

8.3 Acceptance of the topographical survey.

8.4 Describe the proposals for the foundations and demonstrate the merits (technical and cost) for the adoption of a particular solution.

8.5 Differential settlement to be allowed for in the design of the structure.

8.6 Anticipated vertical or lateral ground movements or settlements due to embankment loading, mineral extraction, flowing water, etc. Measures proposed to deal with these effects as far as they apply to the structure.

8.7 Results of tests on ground water and any particular measures proposed.

8.8 As required.

9 Checking

9.1 Proposed Category of structure.

If Category 3, include name of Category 3 Checker including the letter of appointment.

9.2 Erection proposals or temporary works for which the Contractor will be required to arrange an independent check listing the parts of the structure affected with reasons for recommending the independent check. Temporary Works Design and Design Check Certificate.

9.3 As required.

10.0 Road Design

10.1 Interface with the Road Designer. Demonstrate that there is full agreement between the road and bridge designers regarding alignments, clearance, vehicles restraint systems, traffic management, services, utilities, temporary works and the programming of works.

10.2 Separate construction of structures. Consider the construction, contractual and cost implications of the bridge works progressing as a separate contract before, after or concurrently with the road works. This may only be relevant if advantages have been identified in a procurement strategy previously agreed with the RA.

10.3 As required.

11.0 Drawings and Documents

11.1 List of all documents accompanying the submission. All documents are to be bound into sets. Each set is to contain a revision history together with signatures from the author, QA Checker, etc. A list of drawing titles, numbers and revision designations must be included.

Appendices to Accompany the Technical Acceptance Report

Appendix 1 STA-3

Appendix 2 Technical Acceptance Schedule

Irish Standards Eurocodes

TII Publications, refer to GE-CON-01004

Euronorms

British Standards

BSI Published Documents

Relevant Product Standards

Other publications

Appendix 3 Photographs and photomontages.

Appendix 4 Drawings

Appendix 5 Additional Information as required by IAN 02 Interim Requirements for the Use of Eurocodes for the Design of Road Structures.

Site Location Plan

General Arrangement Drawing(s). General Arrangement Drawings shall be drawn to scale with border identifying the Project, Employer, Designer and include inter alia the following details;

Plan

- North arrow
- Lands made available
- Chainage
- Earthworks profile
- Plan dimension on carriageway(s)/watercourse/railway
- Skew angle
- Structure drainage, chambers and service ducts
- Lighting (where applicable)
- Limits and type of river bank protection
- Interface with existing structures
- Direction of flow for watercourses
- Articulation arrangement

Long Section

- Chainage line with levels
- Existing ground profile
- Paving details
- Slope protection
- Rock profile / competent strata
- Access arrangements
- Vehicle restraint system
- Interfaces with existing structures
- Span dimensions
- Water levels (2yr and 100 yr. flood)
- Joint details

Elevation

- Existing ground profile
- Paving details
- Slope protection
- Access arrangements
- Lighting
- Safety barriers
- Interfaces with existing structures
- Clearance envelope
- Overall length
- Water levels (2yr and 100 yr. flood)
- Road / rail under – camber, dimensions and level
- Watercourse cross-section dimensions
- Vehicle Restraint System/pedestrian guardrail
- Earthworks profile

Cross Section

- Bridge cross section dimensions and clearance envelopes
- Camber
- Superstructure cross section
- Interface with existing structures
- Interface with intermediate supports
- Raised verge/footway details
- Drainage
- Service ducts
- Vehicle Restraint System/pedestrian guardrail
- Surfacing and waterproofing
- Cantilever length (superstructure/sub-structure)

Intermediate

- Intermediate support details including dimensions
- Foundations including dimensions

End support details

- End support details including dimensions
- Foundations including dimensions
- Wingwall details including dimensions

Miscellaneous

- Approach arrangements including joint details
- Finishes
- Concrete grades and Exposure Classes
- Steel grades, protection system etc.
- Waterproofing details
- Indicative location of construction joints
- Vehicle Restraint System Plan

Appendix 5 Relevant extract of the Ground Investigation Report.

Structure Summary Sheets/extracts from Geotechnical Design Report.

Drawing indicating borehole locations

Appendix 6 Other Relevant Documentation/Reports.

Appendix 7 Section 50 Application & Approval

For Tunnels the following additional headings shall be included in the Technical Acceptance Report:

<u>Section 2</u>

- *Tunnel details*

<u>Section 3</u>

- *Description of tunnel traffic and road geometry*
- *Accommodation of M&E services*
- *Emergency communication, escape facilities, fire points, cross passages*
- *Specific drainage details – ground water seepage, accidental spillage, water carried in by vehicles, fire main burst, tunnel washing.*
- *Articulation arrangements*

Section 4

- *Protection of tunnel roof*
- *Compliance with EU Road Tunnel Safety directive*

Section 12

- *Tunnel support system and method of construction*
- *Basis of the design of the tunnel support system for temporary and permanent conditions and any proposals for ground treatment.*
- *Demonstrate the proposed method of construction, i.e. excavation and application of ground support, will ensure the continued safe use of the road and prevent structural failure of the carriageway.*
- *Details of predicted tunnelling effects on adjoining structures and the carriageway; including maximum vertical settlement and trough width.*
- *Proposals to use explosives, if any. State any vibration limits adopted or imposed. Specific site rules relating to charge weight, distance, peak particle velocity and frequency.*
- *Method(s) to be adopted to monitor and control the effects of tunnel construction to ensure compliance with any criteria imposed to limit surface movements or vibration.*

For M&E installation in tunnels the following additional headings shall be included in the Technical Acceptance Report:

Section 2

- *Accommodation of M&E services in the tunnel*
- *Location of tunnel monitoring centre and maintenance building*
- *Location of tunnel services building*

Section 3

- *Environmental conditions within the Tunnel Plant Rooms and building*
- *Ventilation – including description, justification, design criteria, pollution and vehicle emission, fresh air requirements, ventilation system and fans, monitoring and control,*
- *M&E elements of drainage including; general description, design criteria, effluent standard, volumes to be handled pumping equipment*
- *Fire safety*
- *Tunnel operation and plant control including; basis of tunnel operation, plant monitoring and control, data logger and transfer, plant inspection and maintenance*
- *Electrical power supply and distribution including; general description, design criteria, supply distribution, emergency arrangements, cabling.*

Section 4

Communications and traffic control including; general description, design criteria, traffic management, telephone system, emergency procedures, traffic signs, traffic monitoring

For M&E installation in moveable structures the following additional headings shall be included in the Technical Acceptance Report:

Section 3

- *Proposed mode of operation*
- *Location of operating and control mechanisms*
- *Electricity power supply and distribution*
- *Stand-by power facilities*
- *Communication systems*
- *Emergency works testing and site operating conditions*
- *Fail safe operating safety system*
- *Commissioning and handover*
- *Plant room (layout drawings also required)*

Appendix E:

Forms

Introduction

The various forms have a similar appearance. They include the following information:

a) Header with the RA name and the form name;

b) Administrative information and dates of events such as submissions and acceptances;

c) History of Conditions, Revisions, etc;

d) Acceptance text and signatures.

Examples of typical forms are shown overleaf.

The description to be inserted shall define unambiguously the extent of the structure to which the design and check is to be applied. Where necessary the extent of the Works shall be shown on the drawings and the relevant Drawings numbers stated.

A copy of each certificate shall be forwarded to the Structures Section for the permanent structure to which it relates.

Structures Options Report - Consultation STA-1a

Categories 1, 2 & 3

Scheme

Name and Location_____

Structure(s)

Name and nature of the Structure(s)_____

Structures Options Report

Reference _____

Revision _____

Date ___ / ___/ ____

Submitted by

Signed _____

Name _____

Position _____ (Team Leader)

Organisation _____

Date ___ / ___/ ____

Structures Section confirmation of consultation:

Signed: - _____

Name: - _____

Position: - _____

Date: - _____

Preliminary Design Report - Consultation STA-1b

Categories 1, 2 & 3

Scheme Name

Name and Location_____

Structure(s)

Name and nature of the Structure(s)_____

Preliminary Design Report

Reference _____

Revision _____

Date ___ / ___/ ____

Submitted by

Signed _____

Name _____

Position _____ (Team Leader)

Organisation _____

Date ___ / ___/ ____

Structures Section confirmation of consultation:

Signed: - _____

Name: - _____

Position: - _____

Date: - _____

Application for Technical Acceptance for Structures* STA-2

Categories 0, 1, 2 & 3

Scheme Name

Name and Location_____

Structure(s)

Name and nature of the Structure(s)_____

Technical Acceptance/Category 0 Structures Report

Reference _____

Revision _____

Date ___ / ___/ ____

Submitted by

Signed _____

Name _____ Position _____ (Team Leader)

Organisation _____ Date ___ / ___/ ____

Signed _____

Name _____ Position _____ (PSDP)

Organisation _____ Date ___ / ___/ ____

Other Information (signatures are not required)

Name of the Principal responsible
for the Design Organisation: - _____

Name of the checking organisation: - _____

Name of the Team Leader responsible
for the checking organisation: - _____

Name of the Principal responsible
for the check: - _____

* This application shall appear as the first page after the cover of the Technical Acceptance/Category 0 Structures Report.

STRUCTURES INFORMATION DATABASE

STA-3

Local Authority	
Name of Structure	

Scheme	
Designers reference:	

General Information	
NRA ref.	
Design office/firm	
Principal	
Designer (team leader)	
Proj. Superv'r. design	
Check office/firm	
Principal	
Checker (team leader)	
Preliminary Approval or Registration	
Submitted	
Approved/registered	
Design approval	
Submitted	
Accepted	
Other Approvals	
Appr. of Contract Docs	
Appr. of Tender Report	
Appr. of Final Account	

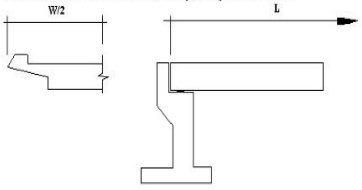
Cost Information		
Costs (excl VAT)	**Date**	**Amount €**
Preliminary estimate		
Pre-tender estimate		
Tendered cost		
Final cost		
Final cost breakdown by Series		
Prelims		
100-1500		
1600		
1700		
1800		
1900		
2000		
2100		
2200		
2300		
2400		
Other		

Category (0, 1, 2 or 3)	Design Load
Over bridge	

Structure Information (see list next page)	
No.	Type
Cross Section	
Elevation	
Superstructure Material	
Pier Type	
Pier Material	
Pier Foundation Type	
Abutment Type	
Abutment Material	
Abutment Foundation Type	
Bridge Type	
Integral pier	
Integral abutment	
Deck Area	**Sq. m**
No. Spans	
Maximum Span	**m**

Notes:

1. Costs are in €.
2. Costs exclude VAT.
3. Costs exclude discounted whole life cost.
4. Where bridges are part of a road scheme then the costs include a relevant proportion of the overall preliminaries.
5. Bridge costs should include their relevant proportion of final account settlements, as preliminaries.
6. Bridge area is based on the length to the centrelines of the abutment bearings and the overall width to the outside of the parapet fascia.



7. For buried structures such as culverts, the deck should be described from the list (e.g. Solid slab, reinforced). The area should be the width x horizontal span.

Quantities information			
Quantities	**F'work**	**Rebar**	**Conc.**
Pre-tender	Sq m	Tonne	Cu m
End supports			
Intermediate supports			
Superstructure			
Final Account			
End supports			
Intermediate supports			
Superstructure			

STRUCTURES INFORMATION DATABASE STA-3

Bridge Information

Cross Section Types
10 Slab
11 Slab/girder, 1 girder
12 Slab/girder, 2 girders
13 Slab/girder, 3 girders
14 Slab/girder, 4 or more girders
30 Box beam, single box
31 Box beam, 2 or more boxes
40 Truss, interior passage
41 Truss below the deck
42 Truss beside the deck
43 Plate girders
50 Arch above the deck
51 Arch (not masonry) below, open
52 Arch (not mas.) below, closed
60 Masonry arch
65 Pipe
70 Retaining wall
90 Other
91 Not applicable
92 Unknown
93 Not registered

Abutment Types
10 Abutm. wall, integ. wing walls
11 Abutm. wall, indep. wing walls
20 Buried, solid
21 Buried, col./pile w. cap beam
22 Bankseat with reinforced earth retaining wall
23 Bankseat (column or pile) with reinforced earth retaining wall
29 Buried, unknown type
30 Buried abutment, unknown type with reinforced earth retaining wall
90 Other
91 Not applicable
92 Unknown
93 Not registered

Elevation Types
10 Simple span, cons. cross sect.
11 Simple span, var. cross sect.
20 Continuous, const. cross sect.
21 Continuous, var. cross sect.
30 Cantilever, const. cross sect.
31 Cantilever, var. cross sect.
40 Frame, constant cross section
41 Frame, varying cross section
42 Box culvert
43 Pipe culvert
44 Semi-integral, constant cross-section
45 Semi-integral, varying cross-section
50 Arch, one or more spans
60 Cable stayed bridge
70 Suspension bridge
80 Bascular bridge
90 Other
91 Not applicable
92 Unknown
93 Not registered

Abutment and Pier Materials
10 Masonry
11 Masonry & concrete
20 Mass concrete
21 Reinforced concrete
22 Post-tensioned concrete
30 Steel
40 Steel and concrete
50 Reinforced earth
51 Reinforced concrete and reinforce earth
90 Other
91 Not applicable
92 Unknown
93 Not registered

Superstructure Materials
10 Mass concrete
20 Reinforced conc., cast in situ
21 Reinforced concrete, precast
22 Precast prestressed concrete
30 Stressed conc., cast in situ
31 Stressed concrete, precast
40 Concrete, in situ and precast
41 Conc., in situ & prec. Prestr.
42 Composite, concrete and steel
50 Steel
60 Stone masonry
61 Brick masonry
90 Other
91 Not applicable

Type of foundation of pier / abutment
10 Spread footing
20 Concrete piles
21 Steel piles
22 Wooden piles
30 Steel caissons
40 Concrete caisson
90 Other
91 Not applicable
92 Unknown
93 Not registered

Pier Types
10 Solid wall
20 Single column
30 2 or more separate columns
31 2 or more col., sep. cap beams
32 2 or more col., comm. cap beam
33 Columns w. bracing & cap beam
40 Piles with common cap beam
41 Piles w. bracing & cap beam
90 Other
91 Not applicable

Bridge Type
10. Crossing a Road
20. Crossing a River
30. Crossing a Railway
40. Footbridge
50. Buried structure

TRANSPORT INFRASTRUCTURE IRELAND

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

_____ **COUNTY COUNCIL**

Technical Acceptance for Structures **STA-5**

Scheme _____

TII Reference _____ Designers Reference _____

Easting _____

Structure Name _____ Northing _____

Category _____

Technical Acceptance Report

Submitted _____ Technical Acceptance Report Reference _____

Accepted _____ Valid Until _____

Technical Acceptance

Conditions / Amendments / Addenda

No	Date	Details

This acceptance is subject to the amendments and conditions shown above

Signed _____

Name _____

Postion _____ **Structures, Transport Infrastructure Ireland**

Date _____

_____ _____TA/1 Page 1

TRANSPORT INFRASTRUCTURE IRELAND

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

_____ **COUNTY COUNCIL**

Design and Check Certificate for Structures **STA-6 Page 1 of 2**

Scheme _____ **Category**

TII Reference _____ Designers Reference _____

Easting _____

Structure Name _____ Northing _____

Technical Acceptance Report

Submitted _____ Technical Acceptance Report Reference _____ TA

Accepted _____ Valid Until _____

Design/Check Certificate

Submitted _____ Certificate Reference _____ DC

Accepted _____ Valid Unitil _____

Design & Check

Conditions / Amendments / Addenda

No	Date	Details

_____ _____DC/1 Page 1 of 2

TRANSPORT INFRASTRUCTURE IRELAND

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

_____ **COUNTY COUNCIL**

Design and Check Certificate for Structures **STA-6 Page 2 of 2**

1.0 Undertaking

1.1 We certify that reasonable professional skill and care has been used in the preparation of the design of this structure and that:-

1.1.1 It has been designed in accordance with the Technical Acceptance Report referenced above and the conditions and amendments listed above;

1.1.2 It has been checked for compliance with the relevant Standards in 1.1.1;

1.1.3 The design has been accurately translated into contract drawings, specifications and bar schedules. The unique numbers of these drawings and schedules are listed in the enclosed Annex 1.

Signed _____

Name _____
Position Team Leader - Design Office or Firm

Signed _____

Name _____
Position Principal Officer or Director - Design Office or Firm

Date _____

Signed _____

Name _____
Position Team Leader - Design Check

Signed _____

Name _____
Position Principal Officer or Director - Design Check Office or Firm

Date _____

2.0 Acceptance of Certificate

Transport Infrastructure Ireland accepts this certificate

Signed _____

Name _____
Position Structures, Transport Infrastructure Ireland

Date _____

_____ _____DC/1 Page 2 of 2

TRANSPORT INFRASTRUCTURE IRELAND

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Category
_____

Design and Check Certificate for Temporary Works **STA-7 TYPE B**

Name of Project: _____

Structure Name: _____ Ref No. _____

1.0 Undertaking

1.1 We certify that reasonable professional skill and care has been used in the design preparation of the design and check for the temporary works comprising:

_____

(Description of temporary works) and design criteria with a view to securing that:

(i) It has been designed and checked in accordance with the Technical Acceptance Report dated __/__/__ including the attached departures and additional methods or criteria, uniquely numbered _____.

(ii) The design proposals reflect the requirements of the relevant authorities.

(iii) The design of the temporary works has been accurately translated into temporary works drawings. The unique numbers of these drawings, specifications and schedules are: _____

Signed _____ Date: _____
Position Principal Officer or Director of the Design Organisation

Engineering Qualifications: _____

Signed _____ Date: _____
Position Principal Officer or Director of the Checking Organisation

Engineering Qualifications: _____

2.0 This certificate is received by _____
Organisation Procuring the Temporary Works

Signed _____ Date: _____

Position Held _____

TRANSPORT INFRASTRUCTURE IRELAND

_____ COUNTY COUNCIL

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Certificate of Completion **STA-8**

Scheme _____

TII Reference _____ Easting _____

Northing _____

Structure Name _____

1.0 Undertaking

1.1 We certify that reasonable professional skill and care has been used in the construction of this structure and that:-

1.1.1 It has been constructed in accordance with the contract drawings, specifications and bar schedules. The unique numbers of these drawings, specification and schedules are listed in the enclosed Annex 1.

Signed _____

Name _____
Position Senior Resident Engineer

Date _____

Signed _____

Name _____
Position Principal Officer or Director – Contractor

Date _____

2.0 Acceptance of Certificate

Transport Infrastructure Ireland accepts this certificate

Signed _____

Name _____
Position Structures, Transport Infrastructure Ireland

Date _____

CC/1 Page 1 of 1

Appendix F:

Geotechnical Data

Geotechnical Data Form: STRUCTURE SUMMARY INFORMATION

STRUCTURE NAME:			**CHAINAGE:**				**COORDINATES:**	
STRUCTURE TYPE:			**Structures Ref No:**				N: E:	
GEOTECHNICAL CLASSIFICATION:								
DESIGN LIFE:							**Reference / Comments**	
SOILS / GEOLOGY								
Strata Levels								
North Abutment (m OD)								
South Abutment (m OD)								
PREVIOUS GROUND HISTORY								
CONTAMINATED GROUND RISK ASSESSMENT REQUIRED								
GROUNDWATER								
EARTH PRESSURE VALUES								
BEARING CAPACITY		**Spread Footings**						**Reference / Comments**
Structure Element (Abutments and Intermediate Supports)	**Founding Stratum**	**Founding Level (mOD)**	**Footing Size (m)**	**Design Resistance DA1(kN/m^2)**		**Design Pressure DA1(kN/m^2)**		
				C1	**C2**	**C1**	**C2**	
				C1	**C2**	**C1**	**C2**	
PILE DESIGN								
Structure Element	**Founding Stratum**	**Toe Level (mOD)**	**Pile dia (mm)**	**Pile length (m)**		**Pile working loads (kN)**		
N/A								
Pile Type		N/A						
Criteria for selecting Pile toe level								

Geotechnical Data Form: STRUCTURE SUMMARY INFORMATION

Allowance for negative skin friction						
SETTLEMENT/DEFLECTIONS						**Reference / Comments**
Structural Element	**Founding Level (mOD)**	**Immediate Settlement (mm)**	**Total Settlement (mm)**	**Time for 90%**	**Settlement Remaining at Completion (mm)**	
Differential settlement between structure and embankment						Contract requirement :
Differential settlement to be allowed for across structure will depend upon construction sequence adopted.						
BURIED CONCRETE CLASSIFICATION (IS EN 206-1:2005)						
OTHER DESIGN FEATURES						
NOTES 1.						
REFERENCES: 1.						
General Arrangement Drawings: **Exploratory Hole Plan & Long-Section:**						

Appendix G:

Utility Masts/Pylons Registration Procedure and Construction Stage Acceptance

Utility Masts/Pylons Registration Procedure

Technical Acceptance of utility masts/pylons applies to proposals, including private development, within the boundary of a motorway or national route, including where masts/pylons may fall onto the motorway or national route.

There are two routes to Technical Acceptance for utility masts/pylons, details of which are in the text and Table 1 provided below:

Option 1: Generic Registration Technical Acceptance

In order to avoid Utility Companies having to submit full technical acceptance of a mast/pylon system for each individual site to the TII Structures Section, they have agreed, in consultation with Utility Companies, to a Generic Registration Technical Acceptance. The Designer shall submit mast/pylon registration documentation comprising a Technical Acceptance Report, in the format outlined in Appendix D:, along with STA-5 and signed STA-6 certificates for the mast/pylon system in question. In summary, the Designer shall certify that the mast/pylon has been designed/checked for a range of generic design parameters that will allow the proposed mast/pylon system to be used throughout Ireland wherever those parameters are not exceeded. For each mast/pylon system, this will only have to be done once.

The Technical Acceptance Report for Generic Registration Technical Acceptance shall list all of the design parameters and basic structural information that has been used for the design of the mast/pylon. The Technical Acceptance Report for Generic Registration Technical Acceptance (in the format given in Appendix D:), shall include a Data Sheet with all of the design parameters and basic structural information that has been used for the design of the mast/pylon. A sample data sheet is included in this Appendix. It should be noted that separate acceptance of the mast/pylon foundation shall be required in accordance with the Standard.

For each proposed new site the Utility Company shall provide copies of the mast/pylon system registration documents (TAR, STA-5, STA-6, Compliance Certificate and Statement of Registration) to the Structures Section. General arrangements and site details are not required for this technical acceptance (they form part of the Construction Stage Acceptance).

Following receipt of the documents described above a Statement of Registration will be issued by the Structures Section recording registration details of the Utility Company, the mast/pylon system and a named contact. The registration shall be in the name of the Utility Company (not the manufacturer/designer). It is the Utility Company, which is guaranteeing and taking responsibility for the validity of the information supplied. A sample Statement of Registration is included in this Appendix for information.

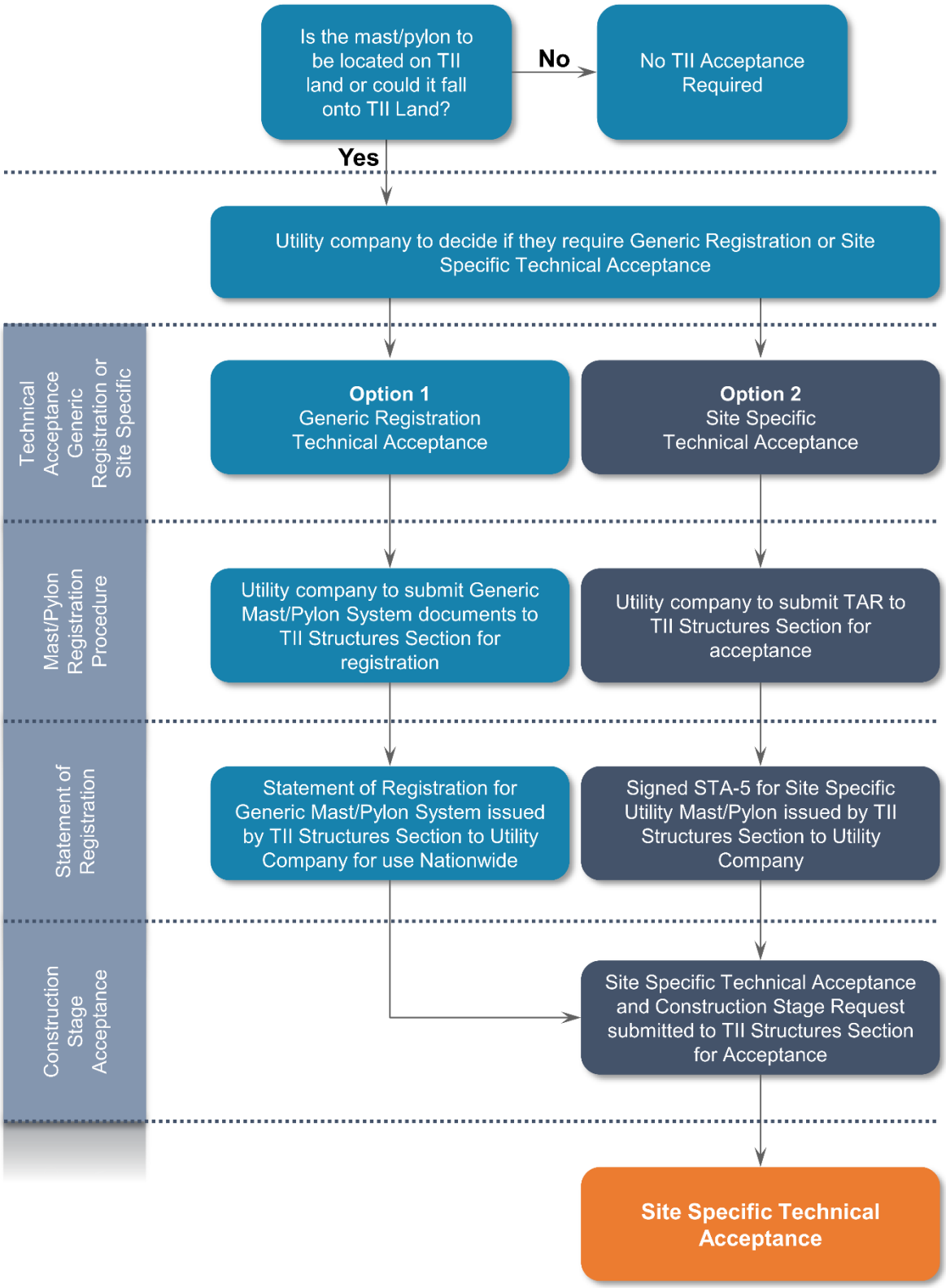
Option 2: Site Specific Technical Acceptance

Site Specific Technical Acceptance is to be used for individual structures that are designed for use in only one location, for example, a mast/pylon at high altitude or subject to high wind speeds, a lattice tower or other unique structure.

The Utility Company shall submit full details of the mast/pylon, and confirmation that the design has been carried out to the appropriate standards in accordance with DN-STR-03001. This will require the submission of a Technical Acceptance Report.

The Technical Acceptance Report shall provide all the relevant design parameters and end user requirements for the structure. For example, it should include appropriate statements regarding appearance, environmental and maintenance considerations. Drawings should be provided including a location plan together with any other relevant details of any possible effect on the national road network and/or anything else that may affect the Road Authority.

Table 1: Utility Masts/Pylons Registration Procedure and Construction Stage Acceptance



Utility Masts/Pylons Registration Procedure

The Utility Company is required to compile details of the proposed generic mast/pylon system or the site-specific utility mast/pylon and submit these to the Structures Section. The purpose of these forms is to describe the typical information required when submitting a request to TII.

Statement of Registration

To be completed as per the template included within this appendix.

Drawings

Drawings should contain the basic information required to identify the utility mast/pylon listed on the STA-6 certificate and within the Technical Acceptance Report.

This typically includes details of the general arrangement of the utility mast/pylon, the attachments, the number of antennae, microwave dishes, etc.

In some instances, the Utility Company may wish to include additional generic details, for example, details of the foundation designs. If separate acceptance is required, it is expected that separate drawings will be submitted for the structure and foundations.

Construction Stage Acceptance

Construction Stage Acceptance is required regardless of which Technical Acceptance route is adopted.

Following receipt of a Statement of Mast/Pylon Registration, the Utility Company is required to apply for Construction Stage Acceptance to the Road Authority by submitting the following information:

Compliance Certificate

The Utility Company shall confirm that Site Specific checks have been carried out to confirm that the design is suitable for use at the proposed location, including details of safety barriers and any other restrictions/planning issues that may apply.

A signed statement by the Utility Company, that the mast/pylon is suitable for use at this specific location shall be provided. A sample of a Compliance Certificate is included in this Appendix.

Construction Drawings including Foundations

The general arrangements of the mast/pylon, foundation layout and all other relevant information shall be included as part of the submission.

Foundations shall be designed in accordance with relevant geotechnical design standards. The actual ground/soil conditions at each site shall be confirmed as being in accordance with the foundation design which should form part of this submission.

Planning

The Utility Company shall also provide the following information that will assist the Acceptance of the Construction Stage.

i) Construction and erection programme.

ii) Plant movements during construction and erection stages on TII land that may affect the network.

iii) Details of future access requirements for the mast/pylon and equipment/antennae that may affect the network.

iv) Any other information that may assist the Road Authority.

Statement of Registration

Utility Mast/Pylon System Statement of Registration

TII Reference No.

Name and address of registration holder	Mast/Pylon information
	Reference No.* Revision No.* Date *

This is to confirm that Transport Infrastructure Ireland has registered the following Utility Mast/Pylon System for installation along national and motorway roads.

This Registration relates only to the Mast/Pylon System that is described on the appropriate Data Sheets and the Design/Check Certificates. Any parameters exceeding those on the Data Sheets shall require a separate Registration.

For any particular site the Registration Holder (or Agent) will be required to obtain the necessary planning approvals and to liaise with the Road Authority to agree the terms and conditions of the installation and maintenance of the System including any control equipment on the ground. The requirements for a suitable vehicle restraint system to be agreed on a site specific basis with the Road Authority.

Copies of the Data Sheets and Design/Check Certificate shall be provided to the Road Authority for a particular site.

**This information shall be the same as that on the Data Sheet and the Design/Checker Certificate.*

Date

Structures Section
Transport Infrastructure Ireland
Parkgate Business Centre
Parkgate Street
Dublin 8
D08 DK10
Ireland

Sample Data Sheet

Utility Mast/Pylon System Sample Data Sheet

Data sheet No.

Mast/Pylon information	
Reference No.*	
Drawing No.*	
Date *	

Part A - General

Mast/pylon nominal height		(m) Maximum, including antennas
Mast/pylon material		
Material grade		e.g. IS EN 10025 S275JR
Exposure class		
Corrosion protection system		

Mast Dimensions

	Section 1(top)	Section 2	Section 3	Section 4	
Section length					(m)
Diameter					(m)
Wall thickness					(mm)
Tapered (Y/N)					

Note: if tapered, give diameter at top and bottom of each section

Door openings

	Section 1(top)	Section 2	Section 3	
Height to bottom of door				(m)
Length of opening				(m)
Width of opening				(m)

Partial factors

Wind	Dead load	Material strength

Meteorological parameters

Characteristic wind pressure, q(z)		In N/m^2 at z = 10m above ground level
Terrain category		

It is certified that the information given in the Data Sheet has been obtained in accordance with the requirements of the Documents listed on the Design Certificate dated

Signed on behalf of (Utility Company)

Sample Data Sheet

Utility Mast/Pylon System
Sample Data Sheet

Data sheet No.

Mast/Pylon information	
Reference No.*	
Drawing No.*	
Date *	

Part B – Foundation data

Design load effects at base

Shear		(kn)
Moment		(kNm)

Note: unfactored reactions used for foundation designs shall be at ground level

Planted base only

Planting depth		(m)
Standard soil type factor		Refer to DN-STR-03018
Planted base diameter		(m) Including concrete surround, if any.

Flange plate base only

No. of bolts					
Bolt hole centres					(mm) PCD
Bolt diameter					(mm)
Bolt grade					(e.g. 8.8)
	Length	Width	Depth		
Foundation size (m)					

Note: for flange plates with slotted holes a diagram shall be included with this data sheet.

Part C – Antennas, mountings and other attachments

Attachments	No.1	No.2	No.3	No.4	
Shape factor, c					
Projected area, A					(m^2)
Weight					(kg)
Mounting mid-height					(m)

Antenna mounts

Drawing No.		Date	
Revision No.			

It is certified that the information given in the Data Sheet has been obtained in accordance with the requirements of the Documents listed on the Design Certificate dated

Signed on behalf of (Utility Company)

Compliance Certificate

Utility Mast/Pylon System Compliance Certificate

TII Reference No.

Name and address of registration holder	Mast/Pylon information
	Reference No.* Revision No.* Date *

We certify that:

1. The utility mast/pylon identified above has been checked and the generic parameters assumed in the design are appropriate for the following site:

Address/location of site	Drawing Nos.

2. Site specific design elements (i.e foundations) have been designed/checked and the global design has been checked in accordance with the following documents and are suitable for use at the above location:

   i. *DN-STR-03001 Technical Approval of Road Structures on Motorways and Other National Roads*
   ii. *The following standards*

Signed: .....

Name (printed): .....

Position held (including qualifications): .....

Telecom Company Name: .....

Date: .....

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Ionad Ghnó Gheata na Páirce,
Stráid Gheata na Páirce,
Baile Átha Cliath 8, D08 DK10, Éire

Parkgate Business Centre,
Parkgate Street,
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