

PART VII

HIGHWAY STRUCTURES

PART 7 TECHNICAL APPROVAL OF HIGHWAY STRUCTURES AND DEVELOPMENT CONTROL

7.1 INTRODUCTION

The Local Roads Authority (LRA) is responsible as Technical Approval Authority (TAA) for the technical approval of structures in schemes on its own roads or those having an effect on its own roads. This applies whether the Design Firm be the Council's own design organisation, a firm of Consulting Engineers, an individual or any other organisation. The LRA is also responsible as TAA, where a developer is to hand-over a structure on completion to the Council. Technical Approval can be obtained by application to the appropriate LRA.

This document outlines the Technical Approval procedures and requirements of the LRA, including review and agreement of design proposals by the TAA, and formal certification by the Designer and Checker. Model pro-forma are contained in Appendices S1 and S2 for the required Technical Approval Schedule (TAS), Approval in Principle (AIP) Form TA1, and Certificates for Design, Checking, Specification and Construction Completion. The procedures described and model pro-forma are intended to be contract-neutral and should be amended and agreed with the LRA to suit specific contract requirements, for example design and construct contracts.

7.2 SCOPE

The procedures described in the document are to be applied to the design, checking and construction of all new structures (whether to be adopted by the LRA or not), partial renewals and maintenance works affecting the integrity or load carrying capacity of existing structures on the local road network. The procedures are intended to ensure that structures are safe and serviceable in use, economic to build and maintain, sustainable with minimal impact on the environment, and satisfactorily perform their intended function. Structures include bridges, tunnels, subways, culverts, of clear span greater than 0.9m, retaining walls, reinforced earth structures and soil strengthening with more than 1.5m retained height, sign-gantries, environmental barriers and temporary structures provided for public use. The procedures also apply to portal/cantilever signs, high masts more than 20m in height for lighting/cameras, highway signs on posts more than 4m high, and cellar roofs and basements, which support the road. This list is not intended to be exhaustive and in cases of doubt, the LRA will advise on the necessity and requirements for Technical Approval.

7.3 DEFINITIONS

LRA	-	Local Roads Authority
TAA	-	Technical Approval Authority
TAS	-	Technical Approval Schedule
AIP	-	Approval in Principle
DMRB	-	Design Manual for Roads and Bridges
MCHW	-	Manual of Contract Documents for Highway Works

7.3.1 The following definitions will apply throughout this document.

“Local Roads Authority” (LRA)

The LRA is the appropriate roads authority, responsible for the Technical Approval procedures by virtue of the location of the scheme proposal to be considered. The LRA shall be one of the following:

East Lothian Council

Environment and Technical Services
John Muir House
Haddington
EH41 3HA

Midlothian Council

Commercial Services, Road Services,
62A Polton Street,
Bonnyrigg, Midlothian
EH19 3YD

Scottish Borders Council

Transport and Environmental Standards
Council Headquarters, Newtown St.Boswells
Melrose, Scottish Borders
TD6 0SA

“Technical Approval Authority” (TAA)

The TAA is the appropriate department in the LRA responsible for implementing the Technical Approval procedures and acceptance of the proposal by endorsement of the appropriate forms and certificates during the Technical Approval procedure.

“Technical Approval”

The submission of design proposals for acceptance by the TAA and the subsequent provision and acceptance of appropriate Certificates (Appendix S2), verifying that the design complies with the agreed standards.

Technical Approval can consist of several stages including outline agreement to form of structure within overall scheme concept, development of the Approval in Principle (AIP) document (Appendix S1) and certification. It is a continuing process and can involve many discussions between the Designer and the TAA. In order to avoid programme delays, it is advisable that preliminary discussions should take place at an early stage before the AIP document is drafted. Any special criteria and departures from standards requiring TAA agreement should be identified as early as possible. Delays can arise when the TAA are brought in at a late stage.

“Approval in Principle” (AIP)

The document which records the agreed basis and criteria for the detailed design of the structure.

“Structure Category”

The classification of design proposals, dependent on structural complexity, size and form, which determines the form of design check to be applied and the Certificate to be presented.

“Designer”

The firm of Consulting Engineers carrying out the design or other organisation which produces a design.

“Checker”

The firm of Consulting Engineers carrying out the check or other organisation which checks the design.

“Design Team”

The Group of people personally engaged in the design.

“Checking Team”

The Group of people personally engaged in the check.

“Technical Approval Schedule” (TAS)

The schedule of standards and technical documents, relating to road (highway) structures, to be used in the design, as confirmed by the Design Team (Appendix S1). The documents must comprise relevant current British Standards and Codes of Practice, appropriate current technical memoranda from the Design Manual for Roads and Bridges (DMRB), and other relevant documents and publications including the Manual of Contract Documents for Highway Works (MCHW).

7.4 THE ROLE OF THE TAA

7.4.1 The role of the TAA will be:

- 7.4.1.1 To examine all proposals at the preliminary design stage and, when satisfied, to give approval in principle by endorsement of the AIP Form TA1, (Appendix S1). It will agree the application of selected documents to be listed in the TAS to particular structures and, exceptionally, give directives on principles to be followed in the AIP document (see paragraph 7.4.3 below)
- 7.4.1.2 To determine, and agree the category of structures and hence the need for approval in principle.
- 7.4.1.3 To be available for consultation by the Design Team or Checking Team and to give advice on interpretations of Codes and Standards
- 7.4.1.4 To consider at any stage any proposals for additional criteria or for departures from the documents listed in the TAS, National Codes or Scottish Office Development Department Standards.
- 7.4.1.5 To resolve any points of difference which occur between the Design Team and Checking Team.
- 7.4.1.6 To receive from the Designer, certificates of compliance with the approval in principle (i.e. Design Certificates and Check Certificates) which will also record:-
 - 7.4.1.6.1 Departures from, and aspects not covered by, Codes and Standards.

7.4.1.6.2 Directives issued by the TAA (see paragraph 7.4.3).

7.4.2 The TAA will not check the calculations nor their translation into design other than to such limited extent as may be required to consider aspects of economic suitability and for the purposes of Paragraphs 7.4.1.4 and 7.4.1.5 above.

7.4.3 Additionally, the TAA will have a policy role in the context of applying special parameters such as:-

7.4.3.1 Any extra criteria suggested for a particular problem and/or any proposed departures from the documents listed in the TAS, National Codes, DMRB or Scottish Office Standards.

7.4.3.2 Resolving points of difference between the Design Team and the Checking Team or the interpretation of items in a Code, DMRB or Standard, on which a directive is required.

Decisions on these questions will be given over the signature of the LRA and it will be the responsibility of the TAA to ensure that these decisions are recorded in the AIP document and on Certificate Nos. 2 and 3 as appropriate. Rulings given for a particular scheme are not to be applied to another scheme without the agreement of the LRA.

Exceptionally, where the TAA and the Design Team cannot resolve a difference, the LRA will issue a directive on a particular subject.

7.4.4 The agreement of the AIP or acceptance of the Design and Check Certificates by the TAA does not relieve the Designer or Checker of the responsibility for the validity and arithmetic correctness of the calculations nor their translations into design details, drawings and specification clauses.

7.5 APPROVAL IN PRINCIPLE

7.5.1 Approval in principle is required for all proposed structures, (including temporary structures), apart from those which fall into Category 0. Approval in principle is also required for all structures under or over roads for which there are special requirements in respect of clearance or heavy routing, existing structures where partial removal, repair or maintenance work affecting the integrity or load carrying capacity is proposed, and structures for which early approval of proposed finishes is required. The purpose of the approval in principle stage is to enable the TAA to be satisfied, before detailed design proceeds as to:

7.5.1.1 The economy of the type and form of structure proposed with particular reference to the evaluation of maintenance costs.

7.5.1.2 Its suitability for the environment and sub-soil conditions.

7.5.1.3 Its appearance, including the standards of finish to be adopted.

7.5.1.4 The adequacy of soil and other investigations.

7.5.1.5 The loading and other design criteria proposed.

- 7.5.1.6 The suitability of the design method(s) and/or computer program(s) proposed for use in the final design.
- 7.5.1.7 The application of selected documents listed in the TAS, and the suitability of any methods or criteria outside existing Codes or Standards proposed for adoption in a particular structure.
- 7.5.1.8 The need for consultation with interested authorities and compliance with statutory requirements.
- 7.5.1.9 The provision made for the inspection and maintenance of the structure.
- 7.5.1.10 The adequacy, in the case of repair, maintenance or partial renewal works, of those parts of the existing structure, which will remain to carry the temporary and new permanent loading.
- 7.5.2 The AIP shall not be given until after the Designer and TAA are satisfied that all foreseeable aspects have been covered and any differences resolved.
- 7.5.3 Designers shall liaise as early as possible with the TAA prior to making a formal submission.
- 7.5.4 Applications for approval in principle should be accompanied by a location plan, 2 copies of a preliminary General Arrangement drawing, relevant parts of the site investigation report and interpretation (if available) and 2 completed copies of the AIP document, with original signatures.
- 7.5.5 Category of Design Proposals:
- 7.5.5.1 The design proposals shall be classified in one of four Structure Categories: 0, 1, 2 or 3, depending on form, scale and complexity. An AIP is required for Categories 1, 2 and 3, but not for Category 0.
- 7.5.5.2 The Category shall be proposed by the Designer and agreed by the TAA. The Designer shall submit brief details of proposed Category 0 to the TAA for agreement of Category.
- 7.5.5.3 Where a structure has been classified as Category 0 or 1, and a proposal arises subsequently requiring a Departure from standards, the category shall be changed to 2 unless the TAA considers the departure has little or no structural significance. In such circumstances for Category 1, an amendment or addendum to the AIP shall be submitted.
- 7.5.6 Structure Categories:
- Category 0** - Minor structures which conform in all aspects of design and construction to the documents listed in the TAS with no departures, provided they also conform to one of the following:
- a) Single span simply supported structures less than 5m span.
 - b) Buried structures of less than 3m clear span diameter and having more than 1m depth of cover.
 - c) Multi-cell buried structures, where the cumulative span is less than 5m, and having more than 1m depth of cover.

- d) Retaining walls and reinforced earth structures with an effective retained height of less than 2m.
- e) Environmental barriers less than 3m high.
- f) Mast structures that are less than 10m in height and less than 3m horizontal arm projection.
- g) Highway signs on posts that are between 4m and 10m in height.

Category 1 - Structures other than those in Category 0, which can be analysed by static methods, and which conform in all aspects of design and construction to the documents listed in the TAS with no departures, provided they also conform to one of the following:

- a) Single span simply supported structures of up to 20m span and 25° skew.
- b) Buried concrete box and corrugated steel buried structures with less than 8m clear span.
- c) Retaining walls and reinforced earth structures with an effective retained height of less than 7m.
- d) Environmental barriers 3m or more in height.
- e) Mast structures that are more than 10m in height but less than 25m in height, or where the horizontal arm projection is more than 3m.

Category 2 - Structures, not within the parameters of Categories 0, 1 or 3.

Category 3 - Complex structures which require sophisticated analysis or with any one of the following features:

- a) High structural redundancy.
- b) Unconventional, innovative or complex design aspects.
- c) Spans exceeding 50m and/or skews greater than 45°.
- d) Difficult foundation problems.
- e) Suspension or cable-stay bridges.
- f) Structures with orthotropic steel decks.
- g) Pre or post tensioned concrete structures.

- 7.5.6 Although a structure may not require approval in principle (Category 0), it will nevertheless require a certificate of compliance with relevant standards and a suitable form of Certificate is that of Certificate 1(a) in Appendix S2. The Certificate must be accompanied by a copy of the General Arrangement drawing of the structure (See also paragraph 7.8.1).
- 7.5.7 At this stage, the relative merits of different forms of construction should be considered, eg steel, concrete, timber, etc., and the most economic span and form of construction assessed. The provision and cost of future access and maintenance should be considered and discussed with the Maintaining Authority where this varies with each type of structure.
- 7.5.8 The information required for approval in principle will vary and is unique for each structure, however, a model AIP document (Form TA1) is given in Appendix S2 which should be suitable for the majority of structures.
- 7.5.9 The AIP is valid for 3 years after the date of acceptance by the TAA.. If construction of the structure has not commenced within 3 years of the date of acceptance, the AIP must be re-submitted in order that the TAA may review if updating or any other

amendment is required. The TAA's agreement or otherwise that the AIP is still acceptable must be recorded and dated at the end of the AIP .

7.6 DESIGN

- 7.6.1 Detailed design should not normally be undertaken until approval in principle has been given. The design must comply with the approval in principle and, should any variations from the approval in principle prove necessary during the design or check, the TAA must agree to them before they are implemented. Such variations must be recorded on an addendum to the AIP, also signed by both the Designer and the TAA.
- 7.6.2 Any addenda to the AIP during the design stage will be subject to the same procedures as the original submission.
- 7.6.3 The Designer shall be responsible for the applicability and accuracy of all computer programs used and shall also ensure the validity of the programs for each application.
- 7.6.4 Computer programs will not be treated as departures from the standard provided they are based on established structural principles. The Designer shall ensure that "small/in-house" computer aided design (CAD) programs, which replace calculations in long hand, are verified by an alternative method. Such programs should not be subject to AIP.

7.7 CHECKING

- 7.7.1 Designs and Contract Drawings (including bar bending schedules) shall be checked as follows:
 - 7.7.1.1 Categories 0 and 1 will require an independent check by another engineer who may be from the Design Team.
 - 7.7.1.2 Category 2 will require a check by the Checking Team, which may be from the same organisation but must be independent of the Design Team.
 - 7.7.1.3 Category 3 will require a check to be carried out by a Checking Team from a separate organisation, proposed by the Designer, agreed by the LRA and appointed by the Designer. The Checking Team should have knowledge and experience relating to the type of structure it is to examine.
- 7.7.2 The Checker shall carry out a comprehensive examination of all aspects of the design and any proposed departures, and shall ensure that it complies with the LRA's requirements. The checker shall ensure that the calculations are translated accurately into design details, drawings and specification clauses.
- 7.7.3 The Checker shall be responsible for checking, with due professional skill and care, in accordance with the AIP, and shall draw the attention of the Designer and TAA to any aspect of the agreed AIP where changes are considered necessary.
- 7.7.4 The Checker's analytical work shall be independent of that of the Designer and carried out without reference to, or exchange of, calculation sheets or similar information between the Designer and Checker.
- 7.7.5 The Checker shall be responsible for the application and accuracy of all computer programs used and shall ensure the validity of the program for each application.

Provided that the Checker agrees with the input, the Checker may use computer output generated by the Designer for the design.

- 7.7.6 It is not intended that the start of the check should await the completion of the design. Both may proceed together as far as possible to ensure that agreement or resolution of differences is obtained progressively through the design period. Although independence between the Design Team and the Checking Team must be maintained, and the methods they employ need not be the same, consultation can take place between the teams to ensure that the results they are obtaining are directly comparable.
- 7.7.7 The TAA may call a pre-certification meeting, for selected structures with the Designer and Checker, to discuss their findings prior to accepting Certificates.

7.8 CERTIFICATION

- 7.8.1 When the design and check of each structure has been completed and the appropriate certificates filled in and signed, 2 copies of each should be sent to the TAA with original signatures, for acceptance and, if appropriate, endorsement. All departures from, and aspects not covered by, standards agreed at the approval in principal stage and entered at paragraphs 4.3 and 4.4 of the AIP Form TA1, must be recorded on the certificates for endorsement by the LRA.
- 7.8.2 A copy of the General Arrangement drawing of the structure must accompany the Certificate for a Category 0 structure.
- 7.8.3 The two signatories submitting the Certificate must clearly indicate their name and office. One, a chartered Engineer, must be the team leader responsible for the design or independent check and the other Partner, (Consulting Engineer) who may delegate this authority for Category 0 and 1 structures.
- 7.8.4 The TAA will complete the Certificates and return one copy to the Designer (and checker where appropriate). The return of the certificate(s) will signify Technical Approval of the design.
- 7.8.5 Any proposed substitute or additional bridge works specification clauses required, and Bar Bending Schedules, should be identified and are to be included on the certificates together with a list of drawings, with appropriate revision markings.

7.9 SUBSEQUENT PROCEDURE

- 7.9.1 Tenders for a scheme must not be invited until Technical Approval procedures have been completed for all structures in it except where temporary and/or proprietary structures are specified in the contract and the choice is to be made after return of tenders.
- 7.9.2 Temporary and/or proprietary structures proposed by a contractor for public use on or over a Public Road will be subject to the normal Technical Approval procedures and subsequent certification by a chartered civil or structural engineer.

- 7.9.3 A set of drawings for each certified structure shall be forwarded to the TAA at the time of tender for reference during the period of Contract.
- 7.9.4 An alternative design by a contractor, which appears to be viable to the Engineer for the Works, will be subject to AIP by the TAA. An AIP document must be submitted with the alternative tender and final approval will not be given until Certificates for the design and independent check have been accepted. The Engineer for the Works will be the Independent Checker unless agreed otherwise with the TAA.
- 7.9.5 It is the responsibility of the Designer to inform the TAA of any amendments to the design, during construction, which have structural implications and such amendments should be included in an addendum to the AIP. Certificates revised to take account of such amendments shall be submitted to the TAA for acceptance. Only where the value of the associated Variation Order is within that for which the Engineer for the Works has delegated powers and the structural input is negligible may the amendment be implemented before the TAA has accepted the Certificates. Additionally, where the proposed erection procedure induces different stresses in the completed structure from those anticipated in the design, the changes will need to be covered by additional certificates from the Designer and Checker, and accepted by the TAA before erection commences.
- 7.9.6 The Designer will assume the responsibility for the design of the permanent works.
- 7.9.7 Works should not commence on site until the entire Technical Approval procedure is complete, that is, all relevant Certificates contained in Appendix S2 have been endorsed by the TAA.

7.10 TESTING

- 7.10.1 The designer must complete a testing schedule in the format outlined in Series 100 of the “Manual of Contract Documents for Highway Works”, for approval. This testing schedule must describe the absolute minimum testing to be undertaken by the Contractor.

7.11 LOADING AND HEADROOM

- 7.11.1 All structures supporting the road must be designed to carry a minimum of full HA loading plus knife edge loading and/or 30 units of HB loading, whichever produces the more severe effects on any structural element. It should be noted that there are many routes that must be designed to carry greater than 30 units of HB loading. Guidance must be sought from the TAA to confirm the number of HB units applicable to the particular structure.
- 7.11.2 Examples of structures which support roads are bridges, tunnels, subways, culverts, retaining walls, reinforced earth/soil strengthened structures, cellar roofs, basement roofs and walls.
- 7.11.3 The minimum headroom for all structures over roads are as follows:-

Overbridge	5.30 m
Lightweight Structures	5.70 m

- 7.11.4 Reference must be made to TD27 regarding geometry implications. Structures such as pends are classified as Lightweight Structures. Guidance must be sought from the TAA regarding underpasses etc.

7.12 INSPECTION PROCEDURES DURING CONSTRUCTION

7.12.1 Notice of Commencement

When a new or modified structure is to be adopted by the LRA, two weeks notice must be given to the LRA of works commencing on site.

7.12.2 Inspection and Testing

During the construction period representatives of the LRA must be afforded access to the site to ensure that the works are being undertaken in conformity with the Road Construction Consent and in accordance with the endorsed design. The developer and /or his contractor shall provide every facility to enable the LRA to examine the works being executed and materials being used. They shall supply, free of cost, samples of the various materials proposed to be used together with particulars as to the source of supply or manufacture of such materials.

7.12.3 Certificate of Inspection

Notwithstanding any use that the developer may make of the professional services of third parties, the developer is advised that any certificate of inspection submitted by a third party will not be accepted. The LRA staff shall undertake all inspection as deemed necessary by them.

7.12.4 Recovery of Expenses

Attention is drawn to section 140(6) of the Roads (Scotland) Act 1984, which entitles a road authority to recover expenses reasonably incurred by them in inspecting the work for compliance with the Construction Consent. The LRA gives notice of its intention to recover expenses from the developer in accordance with the Act.

7.12.5 Notice of Operations

The developer or his contractor must give the LRA a minimum of 48 hours notice (excluding weekends) of the following operations: -

- (a) Commencement of each pavement layer to the carriageways, footways, footpaths and verges.
- (b) Each concrete pour (including blinding) and commencement of steel fixing where reinforced concrete is used.
- (c) Backfilling to abutments and retaining walls.
- (d) Application of waterproof membrane.
- (e) Prior to application of primer to steelwork and each following coating.
- (f) Prior to erection of structural steelwork.
- (g) Prior to pouring sealant/placing expansion joints.
- (h) Prior to taking down any scaffold, after completion of that part of the works.

7.13 HEALTH AND SAFETY FILE FOR ADOPTED STRUCTURES

- 7.13.1 On completion of the works a separate Health and Safety File for each structure is to be prepared and submitted to the LRA prior to adoption.
- 7.13.2 The Health and Safety File is to be completed in accordance with Construction (Design and Management) Regulations 1994. Details of all testing undertaken, manufacturer's literature etc must be included in the Health and Safety File. A statement setting out problems encountered during construction of the works and what corrective action undertaken must also be included in the Health and Safety File.
- 7.13.3 One hard copy of all as-built drawings must be submitted together with an electronic copy supplied in an agreed format.
- 7.13.4 With respect to structures not to be adopted by the LRA, including basement walls and cellar roofs, reference must be made in the Health and Safety File for the structure/building that approval must be sought from the LRA prior to any alterations being undertaken

7.14 ENQUIRES

- 7.14.1 All technical enquiries should be addressed to the appropriate LRA to which this document applies.

APPENDIX S1

TECHNICAL APPROVAL SCHEDULE (TAS)

MODEL APPROVAL IN PRINCIPLE (AIP) FORM TA1

TECHNICAL APPROVAL SCHEDULE (TAS)

TAS

SCHEDULE OF DESIGN DOCUMENTS*

1. BRITISH STANDARDS

BS NO.	PART	DATE	TITLE
.....
.....
.....
.....
.....

2. BRITISH STANDARDS CODES OF PRACTICE

CP NO.	PART	DATE	TITLE
.....
.....
.....
.....
.....

3. TECHNICAL MEMORANDA/DEPARTMENTAL STANDARDS **

DOCUMENT REF.	TITLE
.....
.....
.....
.....
.....

4. OTHER RELEVANT DOCUMENTS/PUBLICATIONS

DOCUMENT REF.	TITLE
.....
.....
.....
.....
.....

Signed Date
DESIGN TEAM LEADER

* To be completed by the Design Team Leader
** For current list, refer to the Design Manual for Roads and Bridges published by the Scottish Office Development Department

TA1

LOCAL ROADS AUTHORITY:

DIVISION:

TECHNICAL APPROVAL OF HIGHWAY STRUCTURES – APPROVAL IN PRINCIPLE

FORM TA1 (Form of certificate to be used by the DESIGN FIRM for Approval in Principle of highway structures)

TECHNICAL APPROVAL AUTHORITY:

DIVISION:

1. NAME OF SCHEME

.....

1.1 Type of Highway

1.2 Permitted traffic speed over and/or under

1.3 Obstacle crossed

2. NAME OF STRUCTURE*

3. BRIEF DESCRIPTION OF STRUCTURE (Include reason for choice)

.....
.....
.....

3.1 Structural type

3.2 Foundation type

3.3 Span arrangements

3.4 Articulation arrangement

3.5 Parapet type

3.6 Proposed Arrangements for inspection and maintenance**

.....

3.7 Materials and finishes

3.8 Estimated cost of proposed structure together with other structural forms considered and the reasons for their rejection - give comparative costs (with date of estimate)

.....
.....

* Insert structure name. Where a scheme includes a number of similar structures, the form may be used to cover them all, but bridges should be listed separately with their span, widths and skews.

** Must be agreed by the Technical Approval Authority in the case of major structures or those structures likely to have difficult maintenance or access problems, i.e. over water, railways or with clearances in excess of 7m.

4. DESIGN CRITERIA

4.1 LIVE LOADING, HEADROOM

- 4.1.1 HA Loading
- 4.1.2 HB Loading units (Reasons should be given for any departure from BD 37)
- 4.1.3 Footway or footbridge live loading
- 4.1.4 Provision for exceptional abnormal loads
- 4.1.5 Minimum headroom provided m (If other than 5.3m is to be provided, state reasons)
- 4.1.6 List of Authorities consulted and any special conditions required
.....
- 4.1.7 Any special requirements in respect of vertical clearance or routing
.....

4.2 Relevant Standards and technical documents are listed on the enclosed TAS, signed by the Design Team Leader and dated (insert date of TAS)

4.3 Proposed departures from Standards given in the TAS (See paragraph 4.4 below)
.....

4.4 Proposed methods of dealing with aspects not covered by Standards in TAS (Give reference)
.....

5. STRUCTURAL ANALYSIS (Use separate sheets as necessary)

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

5.2 Description and diagram of idealised structure to be used for analysis
.....

5.3 Assumptions intended for calculation of structural element stiffness
.....

5.4 Proposed earth pressure coefficients (k_a , k_0 or k_p) to be used in design of earth retaining elements
.....

5.5 List of proposed computer programs
.....

6. GROUND CONDITIONS

6.1 If soil report is available, give the following information:-

6.1.1 Are the recommendations accepted? If not, give points of difference and reasons.

.....
.....

6.1.2 Describe foundations fully. (Give proposed maximum bearing pressures/pile loads, strata in which foundations are located, provision for skin friction effects on piles and for lateral pressures due to underlying strata etc.)

.....
.....

6.1.3 Amount to differential settlement to be allowed for mm.

6.1.4 Is the ground under or adjacent to the structure liable to subsidence, erosion, ground movements or settlement due to embankment loading, mineral extraction, flowing water or any other cause?

.....

If so, give the estimated timescale, the extent (horizontal and vertical) of the anticipated movements, basis of the assessment of movements, any assumptions used and measures proposed to deal with these effects as far as they affect the structure.

.....
.....

6.1.5 State results of tests of ground water (e.g. pH value, chloride or sulphate content) and any counteracting measures proposed.

.....

6.2 If the soil report is not yet available, state when results are expected and list the sources of information used to format the preliminary choice of foundations.

.....
.....
.....

(NOTE: WHEN THE SOIL SURVEY BECOMES AVAILABLE, AN ADDENDUM TO THE FORM TA1, COVERING SECTION 6 MUST BE SUBMITTED TO THE TAA. THE ADDENDUM SHOULD HAVE ITS OWN SECTIONS 8, 9 AND 10 TO PROVIDE A LIST OF DRAWINGS, DOCUMENTS AND SIGNATURES.)

7. CHECKING

7.1 Proposed category of structure

.....

7.2 If Category 3, name of proposed independent Checking Firm

.....

.....

7.3 Will the Contractor be required to arrange an independent check of erection proposals or temporary works ?

YES/NO

If yes, list the parts of the structure affected and give reasons for requiring an independent check.

.....

.....

8. DRAWINGS AND DOCUMENTS

8.1 List of drawings (including numbers) and documents accompanying the submission. Documents should include, but may not limited to, the TAS, departures from Standards and other methods listed in paragraphs 4.3 and 4.4, information requested in Section 5, soils reports and other investigations, relevant consultation correspondence/documents)

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.....

.....

9. THE ABOVE IS SUBMITTED FOR ACCEPTANCE

Signed
DESIGN TEAM LEADER

Name

Engineering Qualifications
(CEng, MICE, MIStructE or equivalent)

NAME of FIRM /
ORGANISATION

.....

.....

Date

**10. THE ABOVE IS AGREED BY THE TECHNICAL APPROVAL AUTHORITY SUBJECT TO
THE AMENDMENTS AND CONDITIONS SHOWN BELOW.**

Signed
FOR TECHNICAL APPROVAL AUTHORITY

Name

Position held

Engineering Qualifications

TAA

Date

APPENDIX S2

MODEL CERTIFICATES

- C1** - Certificate No. 1 - Design Certificate for Category 1 structures
- C1(a)** - Certificate No. 1(a) - Design Certificate for Category 0 structures
- C2** - Certificate No. 2 - Design Certificate for Category 2 or 3 structures
- C3** - Certificate No. 3 - Check Certificate for Category 2 or 3 structures
- C4** - Certificate No. 4 - Specification Certificate
- C5** - Certificate No. 5 - Final Construction Certificate

LOCAL ROADS AUTHORITY:
DIVISION:

TECHNICAL APPROVAL OF HIGHWAY STRUCTURES - DESIGN CERTIFICATE
CERTIFICATE No. 1 (Used by the DESIGN OFFICE for structures in Category 1 only, which have been given Approval in Principle)

TECHNICAL APPROVAL AUTHORITY:
DIVISION:

1. We certify that reasonable professional skill and care has been used in the preparation of the design of * with a view to securing that:-
- i. It has been designed in accordance with the Approval in Principle (Form TA1) dated **
 - ii. It has been checked for compliance with the relevant Standards in 1.i above.
 - iii. It has been accurately translated into Contract Drawings and Bar Bending Schedules all of which have also been checked. The unique numbers of these Drawings and Schedules are:-
.....
.....

Signed
DESIGN TEAM LEADER

Signed
SENIOR OFFICER or PARTNER / DIRECTOR

Name

Name

Engineering Qualifications
(CEng, MICE, MStructE or equivalent)

NAME of FIRM /
ORGANISATION

Date

2. The Certificate is accepted by the Technical Approval Authority.

Signed
FOR TECHNICAL APPROVAL AUTHORITY

Name

Position held

Engineering Qualifications

TAA

Date

* Insert structure name. Where several Category 1 structures occur in a scheme they may be listed on one certificate.
** Insert date of acceptance of the AIP (Form TA1) by the TAA, including the dates of any addenda.

C1(a)

Sheet 1 of 1

LOCAL ROADS AUTHORITY:

DIVISION:

TECHNICAL APPROVAL OF HIGHWAY STRUCTURES - DESIGN CERTIFICATE

CERTIFICATE No. 1 (a) (Used by the DESIGN OFFICE for structures in Category 0, which do not require Approval in Principle) *

TECHNICAL APPROVAL AUTHORITY:

DIVISION:

1. We certify that reasonable professional skill and care has been used in the preparation of the design

of ** with a view to securing that:-

i. It has been designed in accordance with the following Standards:

***
.....

ii. It has been checked for compliance with the relevant Standards in 1.i above.

iii. It has been accurately translated into Contract Drawings and Bar Bending Schedules all of which have also been checked. The unique numbers of these Drawings and Schedules are:-

.....
.....

Signed
DESIGN TEAM LEADER

Signed
SENIOR OFFICER or PARTNER / DIRECTOR

Name

Name

Engineering Qualifications
(CEng, MICE, MIStructE or equivalent)

NAME of FIRM /
ORGANISATION

Date

2. The receipt of this Certificate is acknowledged by the Technical Approval Authority.

Signed
FOR TECHNICAL APPROVAL AUTHORITY

Name

Position held

TAA

Date

* This certificate should be accompanied by a General Arrangement drawing.

- ** Insert structure name. Where several Category 0 structures occur in a scheme they may be listed on one certificate.
- *** Insert relevant current Standards including amendments to date.

LOCAL ROADS AUTHORITY:
DIVISION:

**TECHNICAL APPROVAL OF HIGHWAY STRUCTURES - DESIGN CERTIFICATE
CERTIFICATE No. 2** (Used by the DESIGN OFFICE for structures in Categories 2 and 3)

TECHNICAL APPROVAL AUTHORITY:
DIVISION:

1. We certify that reasonable professional skill and care has been used in the preparation of the design of * with a view to securing that:-

i. It has been designed in accordance with:-

a. The Approval in Principle (Form TA1) dated ** including the following:

***
.....

b. The Technical Approval Authority directive for items listed in 2.ii below.

ii. It has been accurately translated into Contract Drawings and Bar Bending Schedules. The unique numbers of these Drawings and Schedules are:-

.....
.....

Signed
DESIGN TEAM LEADER

Signed
SENIOR OFFICER or PARTNER / DIRECTOR

Name

Name

Engineering Qualifications
(CEng, MICE, MStructE or equivalent)

NAME of FIRM /
ORGANISATION

Date

2. i. The Departures from Standards and additional criteria given in Paragraph 1 above are agreed. +

ii. It has been directed that the following items shall be dealt with as described: +

++
.....
.....

* Insert structure name.

** Insert date of acceptance of the AIP (Form TA1) by the TAA, including the dates of any addenda.

*** List, if any, the Departures from Standards and additional methods or criteria, with references and justification for their acceptability.

+ Delete if not required.

++ Describe the point at issue and the directed course of action.

LOCAL ROADS AUTHORITY:
DIVISION:

C2
Sheet 2 of 2

**TECHNICAL APPROVAL OF HIGHWAY STRUCTURES - DESIGN CERTIFICATE
CERTIFICATE No. 2** (Used by the DESIGN OFFICE for structures in Categories 2 and 3)

TECHNICAL APPROVAL AUTHORITY:
DIVISION:

NAME OF STRUCTURE:

3. The Certificate is accepted by the Technical Approval Authority.

Signed
FOR TECHNICAL APPROVAL AUTHORITY

Name

Position held

Engineering Qualifications
(CEng, MICE, MStructE or equivalent)

TAA

Date

LOCAL ROADS AUTHORITY:
DIVISION:

TECHNICAL APPROVAL OF HIGHWAY STRUCTURES - CHECK CERTIFICATE
CERTIFICATE No. 3 (Used by the CHECKING OFFICE for structures in Categories 2 and 3)

TECHNICAL APPROVAL AUTHORITY:
DIVISION:

1. We certify that reasonable professional skill and care has been used in the checking of the design of * with a view to securing that:-

i. It has been checked in accordance with, and complies with:-

a. The Approval in Principle (Form TA1) dated ** including the following:

***
.....

b. The Technical Approval Authority directive for items listed in 2.ii below.

ii. It has been accurately translated into Contract Drawings and Bar Bending Schedules all of which have been checked. The unique numbers of these Drawings and Schedules are:-

.....
.....

Signed
CHECKING TEAM LEADER

Signed
SENIOR OFFICER or PARTNER / DIRECTOR

Name

Name

Engineering Qualifications
(CEng, MICE, MStructE or equivalent)

NAME of FIRM /
ORGANISATION

Date

2. i. The Departures from Standards and additional criteria given in Paragraph 1 above are agreed. +

ii. It has been directed that the following items shall be dealt with as described: +

++
.....
.....

* Insert structure name.

** Insert date of acceptance of the AIP (Form TA1) by the TAA, including the dates of any addenda.

*** List, if any, the Departures from Standards and additional methods or criteria adopted,

+ Delete if not required.

++ Describe the point at issue and the directed course of action.

LOCAL ROADS AUTHORITY:
DIVISION:

C3
Sheet 2 of 2

TECHNICAL APPROVAL OF HIGHWAY STRUCTURES - CHECK CERTIFICATE
CERTIFICATE No. 3 (Used by the CHECKING OFFICE for structures in Categories 2 and 3)

TECHNICAL APPROVAL AUTHORITY:
DIVISION:

NAME OF STRUCTURE:

3. The Certificate is accepted by the Technical Approval Authority.

Signed
FOR TECHNICAL APPROVAL AUTHORITY

Name

Position held

Engineering Qualifications
(CEng, MICE, MStructE or equivalent)

TAA

Date

LOCAL ROADS AUTHORITY:
DIVISION:

C4
Sheet 1 of 1

**TECHNICAL APPROVAL OF HIGHWAY STRUCTURES - SPECIFICATION CERTIFICATE
CERTIFICATE No. 4** (Used for Specification Variations)

TECHNICAL APPROVAL AUTHORITY:
DIVISION:

1. We certify that reasonable professional skill and care has been used in the preparation/check * of the following additional and substitute clauses:-

**
.....

to the bridgework series clauses of the Specification for Highway Works for:-

..... (Name of Project or Structures).

The text of these clauses is appended to this Certificate.

Signed
DESIGN / CHECKING TEAM LEADER *

Signed
SENIOR OFFICER or PARTNER / DIRECTOR

Name

Name

Engineering Qualifications
(CEng, MICE, MIStructE or equivalent)

NAME of FIRM /
ORGANISATION

Date

2. The additional and substitute clauses listed in Paragraph 1 above and appended to this Certificate are agreed.
3. The Certificate is accepted by the Technical Approval Authority.

Signed
FOR TECHNICAL APPROVAL AUTHORITY

Name

Position held

Engineering Qualifications
(CEng, MICE, MIStructE or equivalent)

TAA

Date

* Delete as appropriate.

** Only clauses that effect the structural integrity, for example new materials, are required to be checked. The Category of check should be the same as in the AIP.

LOCAL ROADS AUTHORITY:
DIVISION:

**TECHNICAL APPROVAL of HIGHWAY STRUCTURES – FINAL CONSTRUCTION
CERTIFICATE
CERTIFICATE No. 5**

TECHNICAL APPROVAL AUTHORITY:
DIVISION:

1. We certify that reasonable professional skill and care has been used in supervising the construction and completion of * with a view to securing that:

i. It has been constructed in accordance with:

- a. The Approval in Principle (Form TA1) dated **
- b. The Design / Check Certificates dated **
- c. The Contract Specification.

ii. The construction of the Works has been accurately translated into As Constructed drawings. The unique numbers of these drawings and schedules are:

.....
.....

Signed
DESIGNER / ENGINEER'S REPRESENTATIVE +

Signed
SENIOR OFFICER or PARTNER / DIRECTOR

Name

Name

Engineering Qualifications
(CEng, MICE, MStructE or equivalent)

NAME of FIRM /
ORGANISATION

Date

2. The receipt of this Certificate is acknowledged by the Technical Approval Authority.

Signed
FOR TECHNICAL APPROVAL AUTHORITY

Name

Position held

TAA

Date

* Insert name of structure.

** Insert date of acceptance of the AIP (Form TA1) and Design/Check Certificates by the TAA, including the dates of any addenda.

+ Delete as required.

