ESSEX COUNTY COUNCIL

RINGWAY JACOBS | ESSEX COUNTY COUNCIL

DESIGN SERVICES
HIGHWAYS (STRUCTURES)

TECHNICAL APPROVAL OF

THIRD PARTY STRUCTURES

NOTES FOR GUIDANCE FOR APPLICANTS

Version 15 May 2024

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Notes for Guidance for Applicants

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TECHNICAL APPROVAL OF THIRD PARTY STRUCTURES.

TECHNICAL APPROVAL REQUIREMENTS FOR HIGHWAY STRUCTURES WHICH ARE TO BE DESIGNED AND CONSTRUCTED BY THIRD PARTIES, OVER, UNDER OR ADJACENT TO THE HIGHWAY

NOTES FOR GUIDANCE FOR APPLICANTS V15

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1 Design Approval

1.1 Essex County Council is the Technical Approval Authority (TAA) for all structures, which are to be designed and constructed over, under or adjacent to highways for which Essex County Council are, or are to become, the Highway Authority. The Council's approval to the design of structures is subject to the general principles and procedure laid out in the Highways England's Standards for Highways DMRB CG 300, as amended below.

Essex County Council has employed consulting engineers, Ringway Jacobs, to administer this procedure and to make recommendations. The address of Ringway Jacobs is:

Ringway Jacobs | Essex County Council
Seax House,
2nd Floor
Victoria Road South
Chelmsford
Essex CM1 1HQ

Initial point of contact for third-party structures matters:

Name: Callum Gillett
Tel: 07548779519
Email: Callum.Gillett@essexhighways.org
Copy Email to: Structures.ThirdParties@essexhighways.org

Free online viewing of CG 300 and all other Highways England Standards for Highways that comprise the Design Manual for Roads & Bridges (DMRB) is available at:
https://www.standardsforhighways.co.uk/ha/standards/index.htm

1.2 The applicant is required to get involved in early liaison with the TAA at the Pre- Application Stage, to confirm the category of the structure and discuss the TAA requirements.

1.3 Following the agreement of structural form with the TAA and before carrying out technical approval, details of the structures are to be submitted to the appropriate planning authority to obtain planning consent. Written confirmation of planning approval shall be supplied to Development Management.

1.4 Technical approval (TA) procedures shall be applied to all proposals, including third party proposals and private developments, that are:

- within the highway boundary.
- outside the highway boundary, where the structures are to be adopted by the Overseeing Organisation.
- outside the highway boundary where works can affect the highway or highway structure; and,
- outside the highway boundary where works can affect the safety of the highway user.

Note: Proposals can relate to construction, widening, assessment, improvement, repair (where structural integrity is implicated), and demolition.

1.5 A structure requiring Technical Approval is defined as being over, under, or adjacent to a highway and:

- It is a bridge, culvert or tunnel or a drainage structure (e.g., chamber, cover slab, shaft, manhole, and soakaway) that has a clear span or internal diameter equal to or greater than 0.9m. (Please note structures <1.2m span will not be maintained by the Structures Team).
- It is a retaining wall, or headwall, with a retained height from finished ground level in front of the wall to the top of the wall or to the top of the retained embankment, equal to or greater than 1.5m.
- It is a noise attenuation barrier exceeding 1.8m high (standard ECC/Dept. of Transport barriers would not require Technical Approval).
- Traffic sign/signal posts equal to or greater than 7.0m in height.
- It is a high mast of greater than 20.0m in height for lighting/lighting systems and/or television cameras.
- It is a sign/signal gantry.
- It is a canopy or building overhanging the highway.
- It is a basement beneath or adjacent to the highway.
- It is designated by the County Council to be a highway structure because of its particular construction and status.
- It is a modification or addition to an existing structure as defined above.
- It is a buried, water attenuation structure within or adjacent to the highway that has a clear span equal or greater than 0.9m (Please note structures <1.2m span will not be maintained by the Structures Team).
- Safety critical fixings (as defined in CD 372 [Ref 3.N]).

Structures retaining the highway, or supporting an embankment adjacent to the highway, which are located **more than 6m from the highway**and are **less than 4m** in height shall not require TA. However, if there is no physical barrier (Road Restraint System), highway loading would be applicable to the back of the retaining wall and Technical Approval would be required.

1.6 The applicant shall submit to Ringway Jacobs the name of one person, who, for the purposes of technical approval, shall be nominated as coordinator for the design and construction. Ringway Jacobs will expect to deal only with the nominated coordinator.

1.7 The applicant shall submit to Ringway Jacobs the name of the principal designer at the Design stage.

1.8 In the case of a structure to be adopted, the applicant should note that Essex County Council is the ultimate owner of the structure.

1.9 Technical Approval for a highway structure is a certification process that follows several distinct stages:

a. Acceptance of the Approval in Principle (AIP) or Design Rationale (DR) document. These documents agree the form of the proposed structure, the principal details, the traffic loadings, the technical standards to which it will be designed to and the category of the design check. A General Arrangement drawing should be included in the AIP or DR.
b. Acceptance of a Design Certificate.
c. Acceptance of a Check Certificate. Or in some circumstances a combined Design and Check Certificate.
d. Acceptance of detailed design submission, including a copy of detailed design and check calculation and "For Construction" drawings.
e. Acceptance of a Construction Compliance Certificate including submission of as constructed drawings
f. Maintenance Manual incorporating the Health and Safety File.

The applicant should note that a review of the applicant's calculations by Essex County Council or Ringway Jacobs **is not included** in the Technical Approval process in the first instance. However, Ringway Jacobs may request that the designer shall submit calculations for review at any time during the Technical Approval process. Note that for approval of the design and check certificate, submission of designer's calculations will be required for **record purposes** for all structures to be adopted by the County Council.

1.10 Initially, the applicant shall submit to Ringway Jacobs for their observations, a copy of a draft AIP or DR document (as appropriate) and associated drawings for each structure. The drawings shall include the following:

- A location plan for the structure showing the structure in relation to nearest town or village. A further larger scale location plan should also be provided to show the location of the structure within a new development if applicable.
- Extents of the existing Highway Boundary.
- The structural form, including articulation and preliminary substructure proposals.
- Proposed construction materials and their properties.
- The proximity and effect of the proposals on any existing highway structure.
- If applicable, the structural elements to be eventually offered for adoption by the Highway Authority.
- The obstacle to be crossed, including clearances.

1.11 A single AIP for the whole structure should be submitted to the TAA by the Principal Designer (CG300, 2.44.1).

1.12 Ringway Jacobs (TAA) will review the submission and reply accordingly to the applicant. The applicant should allow 20 working days for each iteration for their submission to be reviewed by the TAA.

1.13 The applicant should submit any Departures from Standards with the AIP, to be reviewed by the TAA and signed off prior to AIP approval.

1.14 When Ringway Jacobs consider the submission to be acceptable, the applicant will be asked to submit a complete digital copy of the AIP or DR and the associated drawings to Ringway Jacobs. The AIP or DR shall be digitally signed by the designer at the appropriate place. Please note only digital signatures will be accepted. Ringway Jacobs will forward the AIP to Essex County Council with a recommendation for acceptance. The applicant should note and allow in their programme that it may take several draft submissions before Ringway Jacobs are able to recommend a submission for formal approval by Essex County Council.

1.15 The applicant should also note that unless agreed otherwise with Ringway Jacobs, Category 0 structures, as defined in CG 300, shall require a Design Rationale.

An example of the layout and detail required for the AIP and DR is shown in Appendix C and Appendix F to these Notes for Guidance, respectively. Each page of the AIP or DR shall have the structure name printed at the top and shall bear original signatures, not photocopies. Schedules of the standards to be used in the design of the structure shall be appended to the AIP. These schedules shall take the form given in Appendix H of CG 300. The schedules comprise a list of British Standards, Eurocodes (including associated UK national annexes) and other design documents. The applicant should strike through those standards which do not apply to the applicant's design.

1.16 Following formal approval by Essex County Council, the AIP or DR, signed as accepted by the TAA, will be returned to the applicant.

1.17 During the detailed design stage, the designer shall continue to liaise with Ringway Jacobs, and detailed drawings shall be submitted as required. In general terms, thedesign shall be in accordance with National Standards (Eurocodes) and the documents listed in the Schedule "TAS".

1.18 Checking: The applicant should note and allow in his programme that the design and contract drawings together with bar bending schedules shall be checked as follows:

- Structure Categories 0 and 1 (as defined in CG 300): As a minimum, shall be checked by another Engineer within the design team.
- Structure Category 2: Shall be checked by a checking team, which may be from the same office but must be independent of the design team.
- Structure Category 3: Shall be checked by a checking team from a separate organisation, proposed by the designer and agreed by the TAA, having knowledge and experience relating to the type of structure it is to examine.

1.19 Following Approval in Principle or Design Rationale and upon completion of the design, the designer shall forward the relevant design and check certificates to Ringway Jacobs. Examples of the certificates relevant for each category of structure are shown in Appendix D to these Notes for Guidance. All certificates shall have the structure name at the top of each page and shall bear original signatures. The signed copy, as accepted by the TAA, will be returned to the designer.

1.20 The applicant should note that temporary works shall go through the same process and get reviewed by the TAA before works can commence on site (this includes AIP, Design & Check Certificate and Construction Compliance Certificate if applicable).

1.21 The applicant should submit a Specification for Highway Works to the Development Management team, for review and approval. The Specification for the works shall be in accordance with the latest published edition of the Specification for Highway Works(SHW) as part of the Highways England (HE) Manual of Contract Documents for Highway Works (MCHW), in accordance with the Notes for Guidance on The Specification for Highway Works. The Specification should include all contract specific appendices.

1.22 Design changes made subsequent to Technical Approval being obtained, shall be submitted as an addendum to the TAA for approval.

1.23 The Approval in Principle and Design Rationale are valid for three years from the date of acceptance by the TAA. If the construction has not commenced within this period, the AIP or DR shall be reviewed by the designer against current standards and amended as necessary. The document shall then be submitted to Ringway Jacobs and Essex County Council for review and acceptance as if it were a new submission.

1.24 Any previously agreed Design and Check Certificates are also required to be updated and resubmitted.

1.25 For structures to be adopted, and structures to remain in private ownership, an acceptance inspection undertaken by Essex Highways Structures Inspection team, that meets the requirements of a Principal Inspection in accordance with CS 450, is required to confirm the structure is in acceptable condition. Appropriate access for this inspection is to be provided by the developer. Two months' notice is required to be given to the Technical Approval Team of the proposed inspection date.

2 Construction Stage

2.1 Construction shall not proceed until the design approval procedures have been completed.

THE APPLICANT SHOULD BE AWARE THAT ESSEX COUNTY COUNCIL WILL NOT ADOPT STRUCTURES THAT HAVE BEEN CONSTRUCTED BEFORE THE TECHNICAL APPROVAL PROCEDURES HAVE BEEN COMPLETED.

2.2 The applicant shall submit to Ringway Jacobs a works programme prior to works commencing on site.

2.3 During construction, Ringway Jacobs will undertake site monitoring to ensure compliance with standards and the approved design. The applicant will be required to supply up to date drawings and information to Ringway Jacobs as construction proceeds.

2.4 The applicant shall provide Ringway Jacobs a minimum of 4 working days' (excluding weekends) notice for any site visits for inspections and/or testing. Notice shall be given formally by email.

2.5 The contract specification should be submitted to TAA at the detailed design stage.

2.6 The general items that will require inspection include, but are not limited to,:

- Formation for foundations
- Piling operations
- Insitu structural concrete;
    - Fixing of reinforcement before the concrete pour
    - Concrete pour (including insitu testing)
- Waterproofing to concrete surfaces
- Structural steelwork fabrication and/or installation

- Protective system to structural steelwork
- Placement and compaction of structural fill
- VRS/pedestrian guardrail installation
- Road construction over bridge

2.7 The testing shall comprise of:

- Concrete slump testing – one slump to be taken from each concrete wagon before concrete pour to ensure appropriate consistency and workability.
- Concrete cube strength testing – a minimum of 8 cubes per pour, subject to the size of the pour; refer to Series 1700.
    - 3no. cubes at Day 7
    - 3no. cubes at Day 28
    - 3no. cubes at period in between 7 and 28 (typically Day 14)
    - 3no. reserve cubes in case of anomalies
- Backfill compaction – end product compaction testing to ensure maximum dry density and optimum moisture content is achieved; refer to Appendix 1/5 of SHW.
    - Minimum 3no. tests per compacted layer, subject to area of backfill.

NOTE: The above is not an exhaustive list and additional requirements will vary on a case-by-case basis.

2.8 During construction, copies of all delivery tickets, evidence of material testing and certificates shall be collated and provided in the Maintenance Manual upon completion of the works.

3 Information Required for Record Purposes

3.1 For structures to be adopted by Essex County Council, the applicant will be required to supply, to Ringway Jacobs, the following documentation on completion of construction:

- A Certificate of Construction Compliance with original signatures shall be submitted confirming that the structure has been built in accordance with the agreed drawings and specifications. This Certificate shall follow the format set out in the Appendices to CG 300 and list the unique numbers of all "As Constructed" drawings and bar bending schedules to CG302. The requirements for other information to be included within the Health and Safety File is included in Appendix 4 of “Managing Health and Safety in Construction” CDM Regulations 2015 Guidance on Regulations
- A full set of as constructed drawings for each structure, in accordance with Appendix A of these notes.
- A Structure Maintenance Manual for each structure in accordance with Appendix B of these notes. The applicant should note that information for the Health and Safety File will be required to be gathered during the construction phase.
- One complete set of calculations, separately bound for each structure, with all sections of the design separately titled and indexed with page numbers.
- An interpretive geotechnical report (a geotechnical summary already submitted with the AIP will satisfy this requirement).
- A full Ground Interpretative Report (GIR), Ground Development Report (GDR), Ground Field Report (GFR).
- The Health and Safety File and “As Constructed” records shall be provided to the TAA **within four weeks** of the construction completion date (as agreed with the TAA) **of that structure and not the scheme as a whole**. The "As Constructed" records should comprise drawings and a maintenance report, together with a copy of the final calculations.

THE APPLICANT SHOULD NOTE THAT RECOMMENDATION FOR ADOPTION WILL ONLY BE MADE ON RECEIPT OF ALL OF THE RELEVANT DOCUMENTATION.

3.2 The applicant should also note that the Health and Safety File (as required by the Construction (Design and Management) Regulations 2015.) shall be passed to Essex County Council at the time of adoption.

3.3 For structures, which are to remain in private ownership, the applicant will be required to supply to the Council the following documentation on completion of construction:

- A certificate stating that the structure has been constructed in accordance with the approved documents and drawings (Construction Compliance Certificate).
- A full set of as constructed drawings for each structure in the format specified in Appendix A.
- A Structure Maintenance Manual for each structure in accordance with Appendix B of these notes.

THE APPLICANT SHOULD NOTE THAT FOR STRUCTURES WITHIN THE HIGHWAY BOUNDARY THAT ARE TO REMAIN IN PRIVATE OWNERSHIP, A LICENCE FOR THE STRUCTURE SHALL ALSO BE REQUIRED FROM THE COUNCIL. FOR MATTERS CONCERNING THE LICENCE, THE APPLICANT SHALL LIAISE DIRECTLY WITH ESSEX COUNTY COUNCIL.

3.4 Examples of Construction Compliance Certificates are given in Appendix E to these Notes for Guidance.

4 Provision of Statutory Undertakers Services

Where possible, services shall be sited away from structures. The accommodation of services on a structure shall be subject to the approval of Ringway Jacobs. When services can be located within the fill material over a structure, without interference with expansion joints, then this approval is likely to be given.

5 Legally Enforceable Requirements of Other Authorities.

5.1 The requirements of all other authorities shall be notified to Ringway Jacobs and copies of those authorities' written approval to the design proposals shall be supplied to Ringway Jacobs. Details shall be provided under clause 4.4 of the Approval in Principle submission.

5.2 For Structures affecting main rivers, an agreement in principle from the Environment Agency is required before the AIP/DR can be approved and signed off.

5.3 For Structures affecting non main rivers, an agreement in principle from the local drainage authority is required before the AIP/DR can be approved and signed off.

6 General Guidelines

6.1 The Applicant's Consultant MUST be a Chartered Civil or Structural Engineer, competent in highway structure works.

6.2 The category of the structure should be confirmed by the TAA prior to the proposal being Approved in Principle. These categories are graded from 0 to 3 depending on complexity of

the structure as defined in CG 300, but TAA may request a change of category.

6.3 Where doubt on Category exists, e.g., if a Departure from Standards is proposed, which may result in a change in category, the applicant should contact the TAA for guidance.

6.4 Once the AIP/DR is agreed to by the TAA, the document should be **signed digitally** and submitted to the TAA. When approved, the AIP will be endorsed and returned to the designer.

6.5 Detailed Design work should ONLY commence once the design principles are agreed, and the AIP is formally signed and approved.

6.6 The Design and Check certificate should make reference to the approved AIP (signed by the TAA) and include the date on which the AIP was signed off by the TAA.

6.7 For CAT 1 structures, where the "design/assessment" and the "check" have been completed by engineers within the same team, the Team Leader for that team could sign the "Design/Assessment Team Leader" and "Check Team Leader". For CAT 2 and 3 structures, two certificates are required, one signed by design team leaders and one by check team leader (both need to be chartered).

9. THE ABOVE IS SUBMITTED FOR ACCEPTANCE

We confirm that details of the temporary works design will be/have been[1] passed to the permanent works designer for review.[16]

Signed _____

Name _____ Design/Assessment[1] Team Leader

Engineering Qualifications _____ [17]

Name of Organisation _____

Date _____

Signed _____

Name _____ Check Team Leader

Engineering Qualifications _____ [17]

Name of Organisation _____

Date _____

6.8 The designer should include an additional signature page (sections 10 and 11) for Ringway Jacobs and TAA Approval.

10 - THE ABOVE IS REJECTED/ ACCEPTED[1] AND RECOMMENDED FOR ACCEPTANCE

Signed ----------

Name ----------

Engineering Qualifications ----------

Name of Organisation Ringway Jacobs

Date ----------

11 - THE ABOVE IS REJECTED/AGREED[1] SUBJECT TO THE AMENDMENTS AND CONDITIONS SHOWN BELOW

Signed ----------

Name ----------

Position held ----------

TAA Essex County Council

Date ----------

6.9 The applicant should give at least two weeks' notice of commencement of construction to the Development Management team and the TAA.

6.10 The applicant should give at least 4 working days' (excluding weekends) notice to the TAA for any site visits for inspections and testing.

6.11 If the structure is to be adopted, a commuted sum to cover future maintenance and

replacement, will be payable by the applicant prior to adoption. The commuted sum calculation carried out by ECC will be based upon the principles of the “ADEPT” guidance considering a 120-year scenario period and discount rate in accordance with current ECC policies.

6.12 If the technical approval procedures have not been followed and endorsed by the TAA, construction will not be permitted and approval for adoption would not be given, in cases where the highway is proposed to be adopted.

7 Design Guidelines

7.1 The design life of all highway structures shall be 120 years.

7.2 In addition to complying with all appropriate standards, the applicant must bear the following additional objectives in mind:

- Safe passage for pedestrians, cyclists and other vehicles
- Minimising future maintenance
- Minimising risk of vandalism
- Aesthetics and harmony with the surroundings.

7.3 Careful consideration must be given when designing supporting structures for areas such as footways, verges, etc. If TAA agrees that a physical barrier could be eliminated, the retaining structure must be designed for the appropriate accidental vehicle load and surcharge.

7.4 Long culverts (in excess of 20 meters length) and/or low headroom (less than 1.8 metres above invert, which could become classified as a confined space, shall be avoided unless agreed in advance with the TAA (to avoid the health and safety risks associated with confined spaces).

7.5 All highway structures must be designed for Full Highway Loading and the relevant SV vehicles (Level of SV to be confirmed with TAA).

7.6 To enable access for future inspection and maintenance, the applicant shall ensure that a hardstanding easement of 3 metres minimum width is provided.

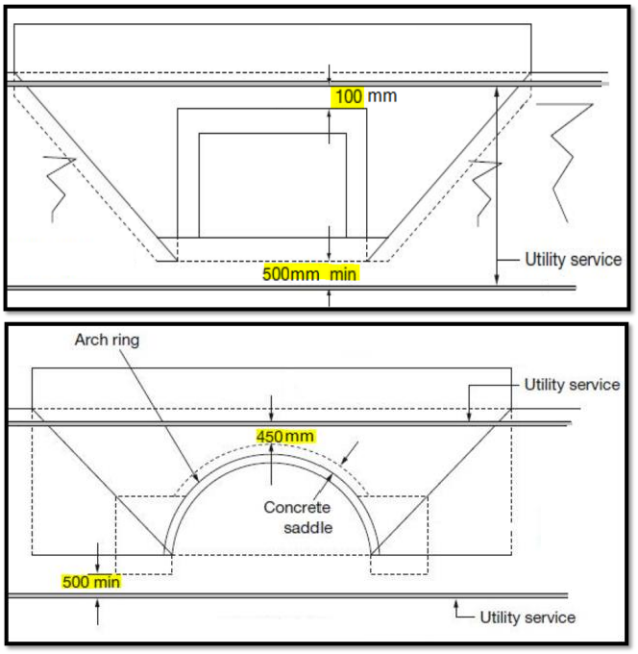
7.7 The use of high containment kerbs (Trief Kerbs) must be avoided as a permanent solution.

7.8 A Design Rationale shall be provided for making redundant any structure supporting or upholding the highway e.g., filling-in of buried structures. This shall be accompanied by all necessary design documentation e.g., drawings, specification, method statements, risk assessments etc. to satisfy the TAA on the suitability of the proposed works to make the structure redundant. The designer shall confirm to the TAA in a design and check certificate that the design meets the requirements of the Design Rationale. On completion of the works a Construction Compliance Certificate should be provided to the TAA with as built information.

7.9 The requirement to provide protection for errant vehicles in the event of an accident should be assessed wherever:

- The highway cross-section is altered
- A new hazard is introduced
- Works are undertaken in the vicinity of an existing road restraint system, which has reached the end of its serviceable life.
- A Risk Assessment should be carried out in accordance with the RRRAP (Road

Restraints Risk Assessment Process) for all sites. Where the RRRAP is not applicable, and only with the agreement of the TAA, the Design and Maintenance Guidance for Local Authority Roads may be used.



7.10 For concrete structures, a minimum of 100mm gap is required between the waterproofing and the bottom of a service duct. For masonry arched structures, a minimum of 450mm clearance is required from the crown of the arch to the top of the duct (NRSWA 1991 Code of Practice, Appendix D Works near highway structures).

7.11 Chambers within or upholding the highway:

- Standard proprietary manufactured drainage chamber rings, cover slabs, bases etc. within or upholding the highway greater than or equal to 1.2m clear span will require full structures technical approval with the exception of those that comply with the requirements of the Construction Products Regulations (CPR) and are used for their intended purpose.
- Where the chamber is considered compliant with the CPR requirements, sufficient information shall be provided with a Design Rationale by the Design Organisation to the Overseeing Organisation to confirm compliance with CPR (under a CE mark) and that the intended use is appropriate. The designer shall confirm to the TAA in a certificate that they have inspected the declared performance under the CE mark and that the declared performance of the item meets the requirements of the Design Rationale accepted by the TAA.

7.12 The principles of BSI PAS 2080:2023 *'Managing Carbon in Infrastructure'* should be followed. Appraisal of carbon reduction opportunities considering the whole-life should be undertaken at key project stages from option identification stage through to delivery.

- A baseline whole-life carbon emissions estimate should be provided for the chosen option in the Environment & Sustainability section of the Approval in Principle, using a tool such as the freely available IStructE carbon calculation tool or National Highways Carbon Accounting tool.
- A carbon optimisation review and final carbon report, using the template provided in Appendix I or similar, should be provided at key project stages (optioneering, feasibility, detailed design, tender, construction) to identify reduction opportunities and barriers to further reduction, and evidence measures implemented.
- The TAA should be consulted throughout the project to discuss reduction opportunities and innovative materials or ways of working that have the potential

to substantially reduce whole-life carbon emissions.

8 Works Examiner

8.1 The Works Examiner is an Organisation overseeing the construction works and shall sign the Construction Compliance Certificates upon completion of the project.

8.2 CG300 defines this role as:

Works Examiner	the organisation nominated in the contract to undertake independent examination of the execution, commissioning (of M&E) or testing of works carried out by the Contractor

8.3 The Organisation undertaking the Works Examiner role is to be clearly identified in the developer's contract and they are to be formally appointed by the developer/contractor at the outset of the project and before progressing into the design stage.

8.4 The role, responsibilities, qualifications, and any specific requirements are to be clearly identified in the contract.

8.5 The Project and ECC's requirements are to be communicated clearly to all relevant parties involved in the project to ensure they are fully aware of the importance of identifying and appointing the Works Examiner.

8.6 Periodic audits to be carried out to verify if the Works Examiner is appropriately identified and they are fulfilling their roles as per the contract requirements.

APPENDIX A

SPECIFICATION FOR AS CONSTRUCTED DRAWINGS FOR ECC BRIDGE RECORD SYSTEM

A full set of as constructed drawings for the structure are required. These drawings are required to be supplied in digital format, one copy in **.pdf** format and one copy in Autocad© **.dwg** format.

APPENDIX B

SPECIFICATION FOR STRUCTURE MAINTENANCE MANUAL

Where the bridgeworks have been undertaken as part of a roadwork's scheme and a Health and Safety File is to be produced for the scheme, the Structure Maintenance Manual shall be a separate document forming part of that Health and Safety File. The Structure Maintenance Manual shall be incorporated into the Health and Safety File by reference and shall be of A4 format with hard cover and as a minimum contain the following elements:

a) Cover page, with Structure Name, ECC Number and date when completed.

b) List of contents.

c) Location plan and grid reference.

d) Copy of accepted Approval in Principle form complete with TA Schedule and Appendix.

e) Copy of accepted Design and Check Certificates.

f) Copy of Construction Compliance Certificate.

g) Description of structure with small general arrangement drawing.

h) Copy of any licenses required for construction.

i) Plan showing the highway boundary, and any agreement for access for future inspection and maintenance.

j) Details of any plant running over or under the structure.

k) Details of construction methods used for the structure where these may have health and safety implications for future work.

l) Details of materials used in the construction of the structure where these may have health and safety implications for future work.

m) Details of specific maintenance requirements and procedures for the structure.

n) Details of access to the structure for Inspection.

o) List of designers, principal designer, principal contractor, sub contractors and suppliers for all work and materials used in the construction of the structure, together with their addresses.

p) List of As Constructed drawings.

q) Copies of test results and certificates (cube results, Agreement Certificates etc.) for all materialsused in the construction of the structure.

r) Copies of proprietary products brochures and pamphlets (Annotated).

s) If applicable, a diagram showing minimum headroom over carriageways, footways and central reserve.

t) Photographs showing the bridge elevations and the road scene.

Further guidance can be obtained from CG 302.

APPENDIX C

GUIDANCE FOR THE PRODUCTION OF AN AIP.

Third Party Approval in Principle submissions shall take the following format. Text in italics is intended as a guide to the response required.

1. The following format shall be retyped, with the applicant answering all relevant questions, or stating “not applicable”, under the headings and sub-headings shown below.

2 Each page shall be numbered.

3 The Project Name, Structure Name, ECC Structure number shall appear at the top of pages, as shown in the following example.

3 A version number or letter and issue date shall be included on each page as a footer.

4 Add as appendices to the AIP, drawings, diagrams of the idealised structure, schedule of standards (TAS) and any supporting documents and correspondence.

5 Drawings shall clearly show plans, elevations and sections of the proposed highway structure in accordance with paragraph 1.7 of the Notes for Guidance. The applicant shall note that this is particularly important in the case of buildings or parts of buildings that are to uphold the highway. In this case, the drawings shall clearly show that part of the building that will uphold the highway. Extraneous details of the remainder of the building are not required unless requested. **The applicant is advised to contact Ringway Jacobs prior to preparing the submission in these cases.** The proximity of the highway shall also be clearly shown.

ESSEX COUNTY COUNCIL.
RINGWAY JACOBS|ESSEX COUNTY COUNCIL, DESIGN SERVICES.
HIGHWAYS (STRUCTURES).
TECHNICAL APPROVAL OF THIRD-PARTY STRUCTURES.

APPROVAL IN PRINCIPLE

Name of Project: _____

Name of Structure: _____

ECC Structure No: _____

Summary: set out a brief summary of what this AIP covers, why it is necessary and anticipated construction dates.

1.0 HIGHWAY DETAILS

1.1 Type of highway

1.2 Design traffic speed
Give speed over and or under bridge - depending on type

1.3 Existing Restrictions

2.0 SITE DETAILS

2.1 Obstacles crossed

3.0 PROPOSED STRUCTURE

3.1 Description of structure and design working life

3.2 Structural type

3.3 Foundation type
Include reasons for choice

3.4 Span arrangements

3.5 Articulation arrangements

3.6 Classes and levels
- 3.6.1 Consequence class
- 3.6.2 Reliability class
- 3.6.3 Inspection Level

3.7 Road restraint system requirements

3.8 Proposals for water management

3.9 Proposed arrangements for future maintenance and inspection
- 3.9.1 Traffic Management
- 3.9.2 Arrangements for future maintenance and inspection of structures. Access arrangements to structure.

3.10 Environment and sustainability

3.11 Durability - Materials and Finishes

3.12 Risks and hazards considered for design, execution, maintenance and demolition. Consultation with and/or agreement from Overseeing Organisation.

3.13 Estimated cost of proposed structure together with other structural forms considered (including where appropriate proprietary manufactured structure) and the reasons for their rejection (including comparative whole life costs with date of estimates). Reference should be made to any options reports done.

3.14 Proposed arrangements for construction
- 3.14.1 Construction of Structure
- 3.14.2 Traffic Management
- 3.14.3 Service Diversions
- 3.14.4 Interface with Existing Structures

3.15 Resilience and security

4.0 DESIGN CRITERIA

4.1 Actions
- 4.1.1 Permanent Actions
- 4.1.2 Snow, wind and thermal actions
- 4.1.3 Actions relating to normal traffic under AW regulations and C&U regulations
- 4.1.4 Actions relating to General Order traffic under STGO regulations.
- 4.1.5 Footway or footbridge variable actions
- 4.1.6 Actions relating to Special Order traffic, provision for exceptional abnormal indivisible; loads including location of vehicle track on deck cross-section.
- 4.1.7 Accidental actions.
- 4.1.8 Actions during construction.
- 4.1.9 Any special action not covered above.

4.2 Heavy or high load route requirements and arrangements being made to preserve the route, including any provision for future heavier loads or future widening

4.3 Proposed minimum headroom provided

4.4 Set out measures that will be incorporated into design to minimise maintenance

4.5 Authorities consulted and any special conditions required

4.6 Standards and documents listed in the technical approval schedule (TAS)

4.7 Proposed departures from standards listed in 4.6

4.8 Proposed departures from standards concerning methods for dealing with aspects not covered by standards listed in 4.6

4.9 Proposed safety critical fixings

5.0 STRUCTURAL ANALYSIS

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

5.2 Description and diagram of idealised structure to be used for analysis.
Include a diagram of the idealised structure or model used for computer analysis. The diagram may be included as an Appendix.

5.3 Assumptions intended for calculation of structural element stiffness.

5.4 Proposed range of soil parameters to be used in the design of earth retaining elements.

6.0 GEOTECHNICAL CONDITIONS

6.1 Acceptance of recommendations of the ground investigation report (reference/dates) to be used in the design and reasons for any proposed changes.

6.2 Summary of design for highway structure in the ground investigation report

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

6.4 If the ground investigation report is not yet available, state when the results are expected and list the sources of information used to justify the preliminary choice of foundations.

7.0 CHECK

7.1 Proposed category and Design Supervision level

7.2 If category 3, name of proposed independent checker

7.3 Erection proposals or temporary works for which Types S and P proposals will be required, listing structural parts of the permanent structure affected with reasons.

8.0 DRAWINGS AND DOCUMENTS

8.1 List of Drawings (including numbers) and documents accompanying the submission

9.0 THE ABOVE IS SUBMITTED FOR ACCEPTANCE

We confirm that details of the temporary works design will be/have been passed to the permanent works designer for review

Signed: ……

Name: ……
Design Team Leader

Engineering Qualifications: ……

Name of Organisation: ……

……

……

Date: ……

Signed: ……

Name: ……
Check Team Leader

Engineering Qualifications: ……

Name of Organisation: ……

……

……

Date: ……

10.0 THE ABOVE IS AGREED AND SUBMITTED FOR ACCEPTANCE

Signed: ……

Name: ……

Engineering Qualifications: ……

Name of Organisation: Ringway Jacobs

Date: ……

11.0 THE ABOVE IS ACCEPTED SUBJECT TO THE AMENDMENTS AND CONDITIONS SHOWN BELOW:

Signed: ……

Name: ……

Position held: ……

TAA Essex County Council

Date: ……

APPENDIX D

GUIDANCE FOR THE PRODUCTION OF DESIGN & CHECK CERTIFICATES.

Design and Check Certificates shall take the following format. Text in italics is intended as a guide to the response required.

1 The following format shall be retyped.

2 Each page shall be numbered.

3 The Project Name, Structure Name, ECC Structure number shall appear at the top of pages, as shown in the following examples.

4 A version number or letter and issue date shall be included on each page as a footer.

ESSEX COUNTY COUNCIL.
RINGWAY JACOBS|ESSEX COUNTY COUNCIL, DESIGN SERVICES,
HIGHWAYS (STRUCTURES).
TECHNICAL APPROVAL OF THIRD-PARTY STRUCTURES.

DESIGN AND CHECK CERTIFICATE
(Category 0 Structures that have not required an AIP)

Name of Project: _____

Name of Structure: _____

ECC Structure No: _____

Form of Certificate to be used by the Design Office for structures in Categories 0 where it has been agreed with Ringway Jacobs that a formal Approval in Principle submission is not required.

Section 1

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

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

   List relevant standards from the following:
   British Standards;
   Eurocodes and associated UK national annexes;
   BSi Published Documents;
   Execution Standards referenced in British Standards or Eurocodes;
   Product Standards referenced in British Standards or Eurocodes;
   The Manual of Contract Documents for Highway Works (MCHW);
   The Design Manual for Roads and Bridges (DMRB);
   Interim Advice Notes (IAN);
   Specific documents required by the Overseeing Organisation.

   ii. It has been checked for compliance with the relevant standards in i.

   iii. It has been accurately translated into Construction Drawings and Bar Bending Schedules (all of which have been checked). The unique numbers of these Drawings and Schedules are as given in the attached drawing register:

Signed: ……

Name: ……
Team Leader - Design Office

Engineering Qualifications: ……

Date: ……

Signed: ……
Partner/Director (Consulting Engineer)

Name: ……

Name of Organisation: ……

……

Date: ……

Section 2

2. THE CERTIFICATE IS AGREED AND SUBMITTED FOR ACCEPTANCE

Signed: ……

Name: ……
Ringway Jacobs | Essex County Council

Engineering Qualifications: ……

Date: ……

Section 3

3 THE CERTIFICATE IS AGREED BY THE TECHNICAL APPROVAL AUTHORITY

Signed: ……

Name: ……

Position held: ……

TAA Essex County Council

Date: ……

Drawing List		
Drawing Number	**Drawing Title**	**Revision**

ESSEX COUNTY COUNCIL.
RINGWAY JACOBS|ESSEX COUNTY COUNCIL, DESIGN SERVICES,
HIGHWAYS (STRUCTURES).
TECHNICAL APPROVAL OF THIRD-PARTY STRUCTURES.

DESIGN AND CHECK CERTIFICATE
(Category 0 and 1 Structures)

Name of Project: _____

Name of Structure: _____

ECC Structure No: _____

Form of Certificate to be used by the Design Office for structures in Categories 0 and 1 which have been given Approval in Principle by Essex County Council.

Section 1

1. We certify that reasonable professional skill and care has been used in the preparation of the design / assessment and / or check of.....*(Name of Structure*) with a view to securing that: -

   i. It has been designed / assessed and / or checked in accordance with: -
   - The Approval in Principle dated.....* including the following: -

     ** Insert the date of agreement of the AIP by the TAA*
     List any departures and additional methods, criteria or specification clauses with dates

   ii It has been checked for compliance with: -
   - The relevant standards in i.; or
   - The assessed capacity of the structure, or elements of the structure, is as follows:

   iii. The design has been accurately translated into Construction Drawings and Bar Bending Schedules (all of which have been checked). The unique numbers of these Drawings and Schedules are as given in the attached drawing register

Signed: ……

Name: ……
Team Leader - Design Office

Engineering Qualifications: ……

Date: ……

Signed: ……
Partner/Director (Consulting Engineer)

Name: ……

Name of Organisation: ……

Date: ……

Section 2

2. THE CERTIFICATE IS AGREED AND SUBMITTED FOR ACCEPTANCE

Signed: ……

Name: ……
Ringway Jacobs | Essex County Council

Engineering Qualifications: ……

Date: ……

Section 3

3. THE CERTIFICATE IS ACCEPTED BY THE TECHNICAL APPROVAL AUTHORITY

Signed: ……

Name: ……

Position held: ……

TAA Essex County Council

Date: ……

Drawing List		
Drawing Number	**Drawing Title**	**Revision**

ESSEX COUNTY COUNCIL.
RINGWAY JACOBS|ESSEX COUNTY COUNCIL, DESIGN SERVICES,
HIGHWAYS (STRUCTURES).
TECHNICAL APPROVAL OF THIRD PARTY STRUCTURES.

DESIGN CERTIFICATE
(Category 2 & 3 Structures)

Name of Project: _____

Name of Structure: _____

ECC Structure No: _____

Form of Certificate to be used by the Design Office for structures in Category 3, which have been given Approval in Principle by Essex County Council.

Section 1

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

   i. It has been designed in accordance with the Approval in Principle dated.....* including the following:

      ** Insert the date of agreement of the AIP by the TAA*
      List any addenda to the AIP with dates
      List any Departures and additional methods or criteria.

   ii. The design has been accurately translated into Construction Drawings and Bar Bending Schedules (all of which have been checked). The unique numbers of these Drawings and Schedules are as given in the attached drawing register.

Signed: ……

Name: ……
Team Leader - Design Office

Engineering Qualifications: ……

Date: ……

Signed: ……
Partner/Director (Consulting Engineer)

Name: ……

Name of Organisation: ……

Date: ……

Section 2

2. THE CERTIFICATE IS AGREED AND SUBMITTED FOR ACCEPTANCE

Signed: ……

Name: ……
Ringway Jacobs | Essex County Council

Engineering Qualifications: ……

Date: ……

Section 3

3 THE CERTIFICATE IS ACCEPTED BY THE TECHNICAL APPROVAL AUTHORITY

Signed: ……

Name: ……

Position held: ……

TAA Essex County Council

Date: ……

Drawing List		
Drawing Number	**Drawing Title**	**Revision**

ESSEX COUNTY COUNCIL.
RINGWAY JACOBS|ESSEX COUNTY COUNCIL, DESIGN SERVICES,
HIGHWAYS (STRUCTURES).
TECHNICAL APPROVAL OF THIRD PARTY STRUCTURES.
CHECK CERTIFICATE
(Category 2 & 3 Structures)

Name of Project: _____

Name of Structure: _____

ECC Structure No: _____

Form of Certificate to be used by the independent Checking Office for structures in Category 3, which have been given Approval in Principle by Essex County Council.

Section 1

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

i. It complies with the Approval in Principle dated.....* including the following:

* *Insert the date of agreement of the AIP by the TAA*
List any addenda to the AIP with dates.
List any Departures and additional methods or criteria.

ii. The design has been accurately translated into Construction Drawings and Bar Bending Schedules (all of which have been checked). The unique numbers of these drawings and schedules are as given in the attached drawing register.

Signed: ……

Name: ……
Team Leader – Checking Office

Engineering Qualifications: ……

Date: ……

Signed: ……
Partner/Director (Consulting Engineer)

Name: ……

Name of Organisation: ……

Date: ……

Section 2

2. THE CERTIFICATE IS AGREED AND SUBMITTED FOR ACCEPTANCE

Signed: ……

Name: ……
Ringway Jacobs | Essex County Council

Engineering Qualifications: ……

Date: ……

Section 3

3 THE CERTIFICATE IS ACCEPTED BY THE TECHNICAL APPROVAL AUTHORITY

Signed: ……

Name: ……

Position held: ……

TAA Essex County Council

Date: ……

Drawing List		
Drawing Number	**Drawing Title**	**Revision**

APPENDIX E

GUIDANCE FOR THE PRODUCTION OF CONSTRUCTION COMPLIANCE CERTIFICATES.

Construction Compliance Certificates shall take the following format. Text in italics is intended as a guide to the response required.

1. The following format shall be retyped.

2 Each page shall be numbered.

3 The Project Name, Structure Name, ECC Structure number shall appear at the top of pages, as shown in the following examples.

4 A version number or letter and issue date shall be included on each page as a footer

ESSEX COUNTY COUNCIL.
RINGWAY JACOBS|ESSEX COUNTY COUNCIL, DESIGN SERVICES,
HIGHWAYS (STRUCTURES).
TECHNICAL APPROVAL OF THIRD PARTY STRUCTURES.

CONSTRUCTION COMPLIANCE CERTIFICATE
(Structures to be adopted by Essex County Council)

Name of Project: _____

Name of Structure: _____

ECC Structure No: _____

Form of Certificate to be used by the applicant to verify that structures to be adopted by Essex County Council, have been constructed in accordance with the approved drawings.

Approval in Principle dated (date) and addenda (date):

Construction drawings (permanent and temporary works) and bar bending schedules listed within the design and check certificate/certificates (date):

As constructed drawings and bar bending schedules, the unique numbers of these drawings and schedules are:

Schedule of drawings/bending schedules

Document Number	Title	Revision	Date

The Specification for Highway Works (date), including additional and substituted clauses recorded in certificates for specification variations (date):

Section 1

We certify that..... *(Name of Structure)* and its equipment:

1. Has been constructed, commissioned and tested in accordance with:
   a) the construction drawings and bar bending schedules listed within the above design and check certificate/certificates, with any modifications in accordance with the technical approval procedures given in CG300 (date), except (list exception(s) and give appropriate information and reason for non-compliance).
   b) the above Specification for Highway Works and specification variations, except (list exception(s) and give appropriate information and reason for non-compliance).

2. The execution of the works has been accurately translated into 'As Constructed' drawings and bar bending schedules as listed above.

Signed: ……

Name: ……

Contractor's Representative

Engineering qualifications: ……

Date: ……

Signed: ……

Name: ……

Position Held: ……

Name of Organisation: ……

Date: ……

Section 2

1. We certify reasonable professional skill and care has been used, relating to the execution of (name of structure), in the task described below (choose either 1), 2) or 3)):

1) Examining the execution and that it has been constructed, commissioned and tested in accordance with:

   a) The above Approval in Principle, Design and Check certificate/certificates, with any modifications in accordance with the technical approval procedures given in CG300 (date), except (list exception(s) and give appropriate information and reason for non-compliance)

   b) The construction drawings and bar bending schedules listed within the Design and Check certificate/certificates (date), as modified by authorized variations accepted by the Overseeing Organisation, except (list exception(s) and give appropriate information and reason for non-compliance).

2) Hands off audit role assessment to ensure that the correct quality control procedures have been followed.

3) (state task/role required under the contract's work specification or if different, the actual task/role performed and give appropriate information and reason for non-compliance).

2. We confirm that the following have been forwarded to Ringway Jacobs for record purposes:

   a) Two full sets of as-constructed drawings for each structure (pdf. and dwg.)

   b) One complete set of calculations, separately bound for each structure, with all sections of the design separately titles and indexed with page numbers.

   c) One copy of geotechnical report.

3. We understand that acceptance of this Certificate by the Technical Approval Authority is conditional upon the subsequent receipt of the following:

    a) A Maintenance Manual for each structure.

Signed: ……

Name: ……
Work Examiner's Representative

Engineering Qualifications: ……

Position Held: ……

Name of Organisation: ……

Date: ……

---

4. THE CERTIFICATE IS AGREED AND SUBMITTED FOR ACCEPTANCE

Signed: ……

Name: ……
Ringway Jacobs | Essex County Council

Engineering Qualifications: ……

Date: ……

---

5. THE CERTIFICATE IS ACCEPTED BY THE TECHNICAL APPROVAL AUTHORITY

Signed: ……

Name: ……

Position held: ……

TAA Essex County Council

Date: ……

ESSEX COUNTY COUNCIL.
RINGWAY JACOBS|ESSEX COUNTY COUNCIL, DESIGN SERVICES,
HIGHWAYS (STRUCTURES).
TECHNICAL APPROVAL OF THIRD-PARTY STRUCTURES.

CONSTRUCTION COMPLIANCE CERTIFICATE
(Structures Remaining in Private Ownership)

Name of Project: _____

Name of Structure: _____

ECC Structure No: _____

Form of Certificate to be used by the applicant to verify that structures that are to remain in private ownership, have been constructed in accordance with the approved drawings.

Approval in Principle dated (date) and addenda (date):

Construction drawings (permanent and temporary works) and bar bending schedules listed within the design and check certificate/certificates (date):

As constructed drawings and bar bending schedules, the unique numbers of these drawings and schedules are:

Schedule of drawings/bending schedules

Document Number	Title	Revision	Date

The Specification for Highway Works (date), including additional and substituted clauses recorded in certificates for specification variations (date):

Section 1

We certify that..... *(Name of Structure)* and its equipment:

1. Has been constructed, commissioned and tested in accordance with:

   a) the construction drawings and bar bending schedules listed within the above design and check certificate/certificates, with any modifications in accordance with the technical approval procedures given in CG300 (date), except (list exception(s) and give appropriate information and reason for non-compliance).

   b) the above Specification for Highway Works and specification variations, except (list exception(s) and give appropriate information and reason for non-compliance).

2. The execution of the works has been accurately translated into 'As Constructed' drawings and bar bending schedules as listed above.

Signed: ……

Name: ……

Contractor's Representative

Engineering qualifications: ……

Date: ……

Signed: ……

Name: ……

Position Held: ……

Name of Organisation: ……

Date: ……

Section 2

1. We certify reasonable professional skill and care has been used, relating to the execution of (name of structure), in the task described below (choose either 1), 2) or 3)):

1) Examining the execution and that it has been constructed, commissioned and tested in accordance with:

   a) The above Approval in Principle, Design and Check certificate/certificates, with any modifications in accordance with the technical approval procedures given in CG300 (date), except (list exception(s) and give appropriate information and reason for non-compliance)

   b) The construction drawings and bar bending schedules listed within the Design and Check certificate/certificates (date), as modified by authorized variations accepted by the Overseeing Organisation, except (list exception(s) and give appropriate information and reason for non-compliance).

2) Hands off audit role assessment to ensure that the correct quality control procedures have been followed.

3) (state task/role required under the contract's work specification or if different, the actual task/role performed and give appropriate information and reason for non-compliance).

2. We confirm that the following have been forwarded to Ringway Jacobs for record purposes:

   a) Two full sets of as-constructed drawings for each structure (pdf. and dwg.)

   b) One complete set of calculations, separately bound for each structure, with all sections of the design separately titles and indexed with page numbers.

   c) One copy of geotechnical report.

3. We understand that acceptance of this Certificate by the Technical Approval Authority is conditional upon the subsequent receipt of the following:

    b) A Maintenance Manual for each structure.

Signed: ……

Name: ……
Work Examiner's Representative

Engineering Qualifications: ……

Position Held: ……

Name of Organisation: ……

Date: ……

---

4. THE CERTIFICATE IS AGREED AND SUBMITTED FOR ACCEPTANCE

Signed: ……

Name: ……
Ringway Jacobs | Essex County Council

Engineering Qualifications: ……

Date: ……

---

5. THE CERTIFICATE IS ACCEPTED BY THE TECHNICAL APPROVAL AUTHORITY

Signed: ……

Name: ……

Position held: ……

TAA Essex County Council

Date: ……

APPENDIX F

GUIDANCE FOR THE PRODUCTION OF A DR

Third Party Design Rational submissions shall take the following format. Text in italics is intended as a guide to the response required.

1 The following format shall be retyped, with the applicant answering all relevant questions, or stating “not applicable”, under the headings and sub-headings shown below.

2 Each page shall be numbered.

3 The Project Name, Structure Name, ECC Structure number shall appear at the top of pages, as shown in the following example.

4 A version number or letter and issue date shall be included on each page as a footer.

5 Add as appendices to the DR, drawings, diagrams of the idealised structure, schedule of standards (TAS) and any supporting documents and correspondence as appropriate.

6 Drawings shall clearly show plans, elevations and sections of the proposed highway structure in accordance with paragraph 1.7 of the Notes for Guidance.The applicant shall note that this is particularly important in the case of buildings orparts of buildings that are to uphold the highway. In this case, the drawings shall clearly show that part of the building that will uphold the highway. Extraneous details of the remainder of the building are not required unless requested. **The applicant is advised to contact Ringway Jacobs prior to preparing the submission in these cases**. The proximity of the highway shall also be clearly shown.

ESSEX COUNTY COUNCIL.
RINGWAY JACOBS|ESSEX COUNTY COUNCIL, DESIGN SERVICES,
HIGHWAYS (STRUCTURES).
TECHNICAL APPROVAL OF THIRD PARTY STRUCTURES.

DESIGN RATIONALE STATEMENT

Name of Project: _____

Name of Structure: _____

ECC Structure No: _____

1. Design Element:	
2. Area of Project:	
3. Design Stage:	
4. Project Objectives:	
5. Employer's Requirements:	
6. Design Criteria/Standards Used:	

7. Key Constraints on Design:	

8. Description of Chosen Solution	

9. Programme Date for Approval:	

10. Designer's Risk Assessment:	

CONSIDERATION OF ALTERNATIVES:

11. Option Assessment:	**Option 1**	**Option 2**
Description:		
Design Effects:		
Environmental Effects:		
Buildability / Construction Effects:		
Programme Effects:		
Compliance with Standards:		
Statutory Procedures Effects:		
Consultation and Commitments:		
Cost Effects:		
Summary of Risks:		
H & S Assessment Summary:		

12. Chosen Option:	

13. Additional Notes
Durability **Maintenance** **Ecology**

14. Approvals:	**Name**	**Signed**	**Date**
Prepared:			
Checked:			
Reviewed:			

15. Revision	**Revision Date**	**Details**	**Authorised**	**Name**	**Position**

16 TAA Approval:	**Name**	**Signed**	**Date**
Recommended by			
Approved/Submitted for Acceptance			
Accepted by TAA			

APPENDIX G

GEOTECHNICAL INFORMATION SUMMARY TABLE

The Geotechnical Investigation Report should be summarised in the table below. This table needs to be inserted in Section 6 of the AIP.

<table>
<tr><td>Structure Name</td><td colspan="3">Chainage & OS Grid Reference</td><td>Reference/ Comments</td></tr>
<tr><td></td><td colspan="3"></td><td></td></tr>
<tr><td>Structure Type</td><td colspan="3">AIP Reference No.</td><td rowspan="11">See CD622 and BS EN1997-1 Cl 2.1 (10)-(21)</td></tr>
<tr><td></td><td colspan="3"></td></tr>
<tr><td>Designers Geotechnical Advisor</td><td colspan="3">Design Life</td></tr>
<tr><td></td><td colspan="3"></td></tr>
<tr><td>Geotechnical Category</td><td colspan="3">Quantitative Geotechnical Investigation</td></tr>
<tr><td>1 or 2 or 3</td><td colspan="3">(Ref No and Date of any GI Reports)</td></tr>
<tr><td>Relevant Trial Holes:</td><td colspan="3"></td></tr>
<tr><td colspan="4">Soils/Geology</td></tr>
<tr><td>Strata</td><td>Typical Depths</td><td colspan="2">Level</td></tr>
<tr><td></td><td></td><td colspan="2"></td></tr>
<tr><td colspan="4">Previous Ground History</td><td rowspan="2"></td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4">Contaminated Ground Risk Assessment Required</td><td rowspan="2"></td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4">Ground Water</td><td rowspan="2"></td></tr>
<tr><td colspan="4"></td></tr>
</table>

Protection of structure against chemical attack						
Earth Pressure Value **Range of Angle Shearing Resistance (Φ)**						
Spread Foundations:						
Structure Element	**Founding Stratum:**	**Founding Level (mAOD):**	**Footing Size:**	**Bearing Resistance (KN/m²):**		
				…. **….**		**…ULS** **…SLS**
Pile Design:						
Structure Element	**Founding Stratum:**	**Toe Level (mAOD):**	**Pile Dia (m)**	**Pile Length (m)**	**Bearing Resistance (KN/m²):**	
					… **…**	**…ULS** **…SLS**
Pile Type: **Criteria for selecting pile toe level:** **Allowance for negative skin friction within design:**						
Differential Settlement						
Geotechnical Supervision/Monitoring						
Buried Concrete Classification						
Corrugated Steel Culvert Groundwater Classification						
Other Design Features						

APPENDIX H

DEPARTURE FROM STANDARDS TEMPLATE

Departures from Standard are considered in circumstances where there is little practical alternative except at disproportionately high construction cost, whole life cost, delays, environmental impact, effect on programme, etc. The template below is to be used for all departures listed in Section 4 of the AIP.

1 The following format shall be retyped, with the applicant answering all relevant questions, or stating “not applicable”, under the headings and sub-headings shown below.

2 Each page shall be numbered.

3 The Project Name, Structure Name, ECC Structure number shall appear at the top of pages, as shown in the following example.

4 The designer should submit with the AIP a separate form for each Departures from Standards, to be reviewed by the TAA and signed off prior to AIP approval.

5 Departures are not permitted for categories 0 or 1 unless the TAA considers that the departure has little or no structural implication.

Departure from Standards Template for Conventional Structures

PROJECT NAME: insert bridge name (BRIDGE NO. xxxx) DEPARTURE FROM STANDARDS	
DEPARTURE NUMBER	
DEPARTURE TITLE	
SUBMITTING DESIGN ORGANISATION	
DEPARTURE SUMMARY	
STRUCTURE(S) AFFECTED BY DEPARTURE	
1 STANDARDS:	
1.0 Standard the Subject of the Departure	
1.1 Clause / Paragraph	
2 SUBMISSION:	
2.1Submission Details	
2.2 Technical Information / Justification	
2.3 Supporting Documentation	
2.4 Associated Departures	
2.5 Repeat / Similar Departures	
2.6 Bulk Departure	
3 BENEFITS:	
3.1 Safety (road users / general public)	
3.2 Safety (construction and maintenance)	

3.3 Technical	
3.4 Programme	
3.5 Budget	
3.6 Environmental	
3.7 Innovation	
3.8 Durability / Maintenance	
3.9 Network Availability	
4 IMPACTS:	
4.1 Safety (road users / general public)	
4.2 Safety (construction and maintenance)	
4.3 Technical	
4.4 Programme	
4.5 Budget	
4.6 Environmental	
4.7 Innovation	
4.8 Durability / Maintenance	
4.9 Network Availability	
5 RISKS:	
5.1 Safety (road users / general public)	
5.2 Safety (construction and maintenance)	
5.3 Technical	
5.4 Programme	
5.5 Budget	
5.6 Environmental	
5.7 Innovation	
5.8 Durability / Maintenance	
5.9 Network Availability	

6 MITIGATION:	
6.1 Mitigation	
7 OVERALL JUSTIFICATION:	
7.1 Reasons why Benefits in 3. outweigh the Impacts in 4.	
8 ATTACHMENTS:	
8.1 Attached Documents / Drawings.	
9 PROPOSER	
9.1 Name	
9.2 Organisation	
9.3 Address	
9.4 Contact Number	
9.5 Email Address	
10 TAA EXPERT COMMENTS:	
10.1 Structures	
10.1(a) Name	
10.2 Geotechnical	
10.2(a) Name	
10.3 Other	
10.3(a) Name	

11 SUBMISSION

The Above is Submitted for Acceptance

Signed:
Name:
Qualifications:
Position Held:
Organisation:
Date:

12 ACCEPTANCE / REJECTION

The above Departure from Standards is Accepted/ Accepted Subject to the following Conditions/Rejected *(delete as applicable)*

Signed:

Name: **Clive Woodruff**
Engineering
Qualifications:
Position Held: **Structures Manager**
TAA: **Essex County Council**
Date:

Conditions for Acceptance:	

Departure from Standards Template for iLine GRP

PROJECT NAME – insert bridge name (BRIDGE NO. xxxx) DEPARTURE FROM STANDARDS	
DEPARTURE NUMBER	
DEPARTURE TITLE	Departure from Standards for the use of the WRc Type 1 Structural Design Calculations (In full accordance with WRc Sewerage Rehabilitation Design Manual)
SUBMITTING DESIGN ORGANISATION	Essex Highways (Ringway Jacobs/ Essex County council)
DEPARTURE SUMMARY	Currently the existing Eurocodes do not cover the design of CIPP liners. Therefore, in the absence of appropriate European Standards, the liner will be designed in accordance with the WRc Sewerage Rehabilitation Design Manual. The design actions on the structure will be in accordance with Eurocode 1 (BSEN1991-1-1:2002-Rev2010) as detailed in the Design Rationale/AIP.
STRUCTURE(S) AFFECTED BY DEPARTURE	
1 STANDARDS:	
1.0 Standard the Subject of the Departure	Currently the existing Eurocodes do not cover the design of pre-formed GRP Liners.
1.1 Clause / Paragraph	N/A
2 SUBMISSION:	
2.1Submission Details	See below.
2.2 Technical Information / Justification	WRc Type 1 Structural Design (In full accordance with WRc Sewerage Rehabilitation Design Manual) is the only suitable design standard for the pre-formed GRP Liners. Therefore, in the absence of a Eurocode equivalent, this standard has been utilised for the design.
2.3 Supporting Documentation	Design Rationale, design calculations and drawings for the scheme.
2.4 Associated Departures	None

2.5 Repeat / Similar Departures	None
2.6 Bulk Departure	No
3 BENEFITS:	
3.1 Safety (road users / general public)	None
3.2 Safety (construction and maintenance)	The preformed liners require minimal maintenance.
3.3 Technical	The design will be in accordance with a recognised standard.
3.4 Programme	The preformed liners are quicker and easier to install than the alternative structural options which could be designed to Eurocodes. The programme duration for this scheme is 5 days.
3.5 Budget	The preformed liners are considerably more economic than the alternative structural options which could be designed to Eurocodes.
3.6 Environmental	The preformed liners are less invasive compared to the alternative structural options which could be designed to Eurocodes.
3.7 Innovation	None
3.8 Durability / Maintenance	None
3.9 Network Availability	None
4 IMPACTS:	
4.1 Safety (road users / general public)	No significant impact
4.2 Safety (construction and maintenance)	No significant impact
4.3 Technical	The design will be in accordance with WRc Sewerage Rehabilitation Design Manual, which is not a recognised European Standard.
4.4 Programme	Potential programme delays due to the engineers' unfamiliarity with the design standards.
4.5 Budget	No significant impact
4.6 Environmental	No significant impact
4.7 Innovation	No significant impact
4.8 Durability / Maintenance	The preformed liners have a 100 year design life, rather than 120 years which could be provided by alternate structural options.
4.9 Network Availability	No significant impact

5 RISKS:	
5.1 Safety (road users / general public)	There is no recognised risk to road users.
5.2 Safety (construction and maintenance)	None
5.3 Technical	None
5.4 Programme	None
5.5 Budget	None
5.6 Environmental	None
5.7 Innovation	None
5.8 Durability / Maintenance	The preformed liners have a 100-year design life (<120 years). Therefore, there is a risk of needing to replace the structure more frequently compared to alternative structural options.
5.9 Network Availability	None
6 MITIGATION:	
6.1 Mitigation	No mitigation measures are required
7 OVERALL JUSTIFICATION:	
7.1 Reasons why Benefits in 3. outweigh the Impacts in 4.	Currently the existing Eurocodes do not cover the design of preformed liners. However, by adopting the design approach within WRc Sewerage Rehabilitation Design Manual, we are able to utilise the preformed Liners, which offer advantages in term of programme and budget compared to the alternative structural options.
8 ATTACHMENTS:	
8.1 Attached Documents / Drawings.	

9 PROPOSER	
9.1 Name	
9.2 Organisation	
9.3 Address	
9.4 Contact Number	
9.5 Email Address	
10 TAA EXPERT COMMENTS:	
10.1 Structures	
10.1(a) Name	
10.2 Geotechnical	
10.2(a) Name	
10.3 Other	
10.3(a) Name	

11 SUBMISSION

The Above is Submitted for Acceptance

Signed:
Name:
Qualifications:
Position Held:
Organisation:
Date:

12 ACCEPTANCE / REJECTION

The above Departure from Standards is Accepted/ Accepted Subject to the following Conditions/Rejected *(delete as applicable)*

Signed:

Name: **Clive Woodruff**
Engineering
Qualifications:
Position Held: **Structures Manager**
TAA: **Essex County Council**
Date:

Conditions for Acceptance:	

Departure from Standards Template for iLine CIPP

PROJECT NAME – bridge name (BRIDGE NO. xxxx) DEPARTURE FROM STANDARDS	
DEPARTURE NUMBER	
DEPARTURE TITLE	Departure from Standards for the use of the American design code ASTM F1216.
SUBMITTING DESIGN ORGANISATION	Essex Highways (Ringway Jacobs/ Essex County council)
DEPARTURE SUMMARY	Currently the existing Eurocodes do not cover the design of CIPP liners. Therefore, in the absence of appropriate European Standards, the liner will be designed in accordance with the American design code ASTM F1216. The design actions on the structure will be in accordance with Eurocode 1 (BSEN1991-1-1:2002-Rev2010) as detailed in the Design Rationale/AIP.
STRUCTURE(S) AFFECTED BY DEPARTURE	
1 STANDARDS:	
1.0 Standard the Subject of the Departure	Currently the existing Eurocodes do not cover the design of CIPP liners.
1.1 Clause / Paragraph	N/A
2 SUBMISSION:	
2.1Submission Details	See below.
2.2 Technical Information / Justification	ASTM F1216 "Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube" is the only suitable design standard for the CIPP Liners. Therefore, in the absence of a Eurocode equivalent, this standard has been utilised for the design.
2.3 Supporting Documentation	Design Rationale, design calculations and drawings for the scheme.
2.4 Associated Departures	None

2.5 Repeat / Similar Departures	None
2.6 Bulk Departure	No
3 BENEFITS:	
3.1 Safety (road users / general public)	None
3.2 Safety (construction and maintenance)	The CIPP liners require minimal maintenance. Minimal excavations are required during its construction.
3.3 Technical	The design will be in accordance with a recognised standard.
3.4 Programme	The CIPP liners are quicker and easier to install than the alternative structural options which could be designed to Eurocodes. The programme duration for this scheme is 5 days.
3.5 Budget	The CIPP liners are considerably more economic than the alternative structural options which could be designed to Eurocodes.
3.6 Environmental	The CIPP liners are less invasive compared to the alternative structural options which could be designed to Eurocodes.
3.7 Innovation	None
3.8 Durability / Maintenance	None
3.9 Network Availability	None
4 IMPACTS:	
4.1 Safety (road users / general public)	No significant impact
4.2 Safety (construction and maintenance)	No significant impact
4.3 Technical	The design will be in accordance with ASTM F1216, which is not a recognised European Standard.
4.4 Programme	Potential programme delays due to the engineers' unfamiliarity with the design standards.
4.5 Budget	No significant impact
4.6 Environmental	No significant impact
4.7 Innovation	No significant impact
4.8 Durability / Maintenance	The CIPP liners have a 100 year design life, rather than 120 years which could be provided by alternate structural options.
4.9 Network Availability	No significant impact

5 RISKS:	
5.1 Safety (road users / general public)	There are no recognised risks to road users.
5.2 Safety (construction and maintenance)	None
5.3 Technical	None
5.4 Programme	None
5.5 Budget	None
5.6 Environmental	None
5.7 Innovation	None
5.8 Durability / Maintenance	The CIPP liners have a 100-year design life (<120 years). Therefore, there is a risk of needing to replace the structure more frequently compared to alternative structural options.
5.9 Network Availability	None
6 MITIGATION:	
6.1 Mitigation	No mitigation measures are required
7 OVERALL JUSTIFICATION:	
7.1 Reasons why Benefits in 3. outweigh the Impacts in 4.	Currently the existing Eurocodes do not cover the design of CIPP liners. However, by adopting the American design code ASTM F1216, we are able to utilise the CIPP Liners, which offer advantages in term of programme and budget compared to the alternative structural options.
8 ATTACHMENTS:	
8.1 Attached Documents / Drawings.	

9 PROPOSER	
9.1 Name	
9.2 Organisation	
9.3 Address	
9.4 Contact Number	
9.5 Email Address	
10 TAA EXPERT COMMENTS:	
10.1 Structures	
10.1(a) Name	
10.2 Geotechnical	
10.2(a) Name	
10.3 Other	
10.3(a) Name	

11 SUBMISSION

The Above is Submitted for Acceptance

Signed:
Name:
Qualifications:
Position Held:
Organisation:
Date:

12 ACCEPTANCE / REJECTION

The above Departure from Standards is Accepted/ Accepted Subject to the following Conditions/Rejected *(delete as applicable)*

Signed:

Name: **Clive Woodruff**
Engineering
Qualifications:
Position Held: **Structures Manager**
TAA: **Essex County Council**
Date:

Conditions for Acceptance:	

APPENDIX I

CARBON OPTIMISATION REPORT TEMPLATE

CARBON OPTIMISATION REPORT			
Structure Name			
Structure Ref No.			
Document No.			
COR Version		Date	

Purpose:

The purpose of the COR is to document:

(i) The key carbon drivers for the scheme
(ii) The steps taken to reduce through the design process; including an assessment of the reduction in whole life carbon based on comparison between the latest carbon emissions assessment and the baseline scenario assessment;
(iii) The carbon actions / opportunities which will be considering progression prior to construction completion.
(iv) Record decisions and barriers to progressing with low carbon options

Guidance:

A Carbon Optimisation Report (COR) accompanies the Carbon Management Plan for each scheme or programme of work.

The COR should be updated on a quarterly basis or at key stages in the project development.

The COR ultimately develops into the Final Carbon Report (FCR) containing an audit trail of carbon reduction decisions made throughout the project.

Carbon Optimisation Summary

Desired Outcome:

Baseline Solution

What solution would most likely have been taken forward to achieve the desired outcome without carbon reduction considerations.

Provide details of what baseline carbon emissions estimate is based on. Provide breakdown of emissions estimates. Include construction duration and estimates made. Use IStructE carbon calculator tool or NH carbon accounting tool depending on project.

State where carbon emissions are mostly concentrated in the baseline solution.

Carbon Reduction Hierarchy

Include details in every revision of the carbon optimisation report how each of the carbon reduction principles have been considered and what measures have been taken as a result. Use

Avoid

Align the outcomes of the project and/or programme of work with the net zero transition at the system level and evaluate the basic need at the asset and/or network level.

This can include exploring alternative means for satisfying the need for whole life performance while not constructing a new asset/network or reusing/retrofitting/repurposing existing ones.

Switch

Assess alternative solutions and then adopt one that reduces whole life emissions through alternative scope, design approach, materials, technologies for operational carbon reduction, among others, while satisfying the whole life performance requirements.

Improve

Identify and adopt solutions and techniques that improve the use of the resources and design life of an asset/network, including applying circular economy principles to assess materials/products in terms of their potential for reuse or recycling after end of life.

This includes efficiency measures for the use stage of the asset/network and is not limited to material resources and other design and construction efficiencies.

In identifying appropriate low-carbon solutions, priority should be given to solutions that promote network and system decarbonization as far as possible.

Solution: *State the solution that has been agreed following the completion of this report and evaluation process.* *Revise the initial models to obtain final carbon and cost estimates. Ensure models are like for like comparison and inclusions and exclusions are consistent and stated here.*
Opportunities to minimise emissions during construction
Key barriers to further reduction *Include details of key challenges faced during carbon optimisation process that have prevented further reduction opportunities on this project.*

Final Carbon Report	
Baseline estimated project carbon emissions:	tCO2e
Outcome estimated associated project carbon emissions:	tCO2e
Savings through Carbon Optimisation Process	tCO2e
Estimated financial cost of baseline:	£
Estimated financial cost of outcome:	£
Project financial cost Increase / Savings associated with carbon optimisation	£