

Dunsbury Hill Farm Stage 2

Highway Bridge Planning Approval In Principle

ATKINS

Plan Design Enable

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Document History

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1. Highway Details

1.1. Type of highway

The scheme is to construct a new 7.3 m wide single carriageway road with 2 m wide verges either side crossing green belt land, primarily on a raised embankment.

1.2. Permitted traffic speed

The permitted traffic speed for the new road will be 48 kph (30 mph).

1.3. Existing restrictions

There is currently no highway at the location of the scheme, and therefore no vehicular access. Pedestrian access is also restricted as there are no footpaths or cycle paths in the area, or public right of ways.

2. Site Details

The proposed highway scheme is to provide access from the approach of Junction 3 of the A3(M) to a new mixed use business park under development. The highway crosses Neville's Park, a green belt area made up primarily of overgrown woodland which is a diverse natural habitat, particularly for dormice.

2.1. Obstacles crossed

The highway crosses Hermitage Stream. At the point of the bridge crossing the stream is currently a rectangular cross section with built up vertical banks crossing the proposed highway at an acute angle. The scheme is proposing to naturalise the banks of the stream and divert its path to cross the highway at a greater angle to reduce the length of bridge required.

There are no public rights of way in the area of the highway therefore no pedestrian access is required underneath the highway. The bridge is, however, to provide continuity between the existing natural habitats either side of the proposed highway to minimise the impact of the scheme to the local environment.

3. Proposed Structure

3.1. Description of structure and working life

The structure will span over the naturalised river and adjacent banks and the bridge abutments will be extended by wingwalls either side of the bridge to retain the road embankment. The 12.25 m wide deck shall be made up of precast prestressed concrete beams with a reinforced concrete slab.

The bridge structure is to have a working life of 120 years.

3.2. Structural type

The structure consists of a single span constructed from precast prestressed concrete beams made composite with a reinforced concrete deck. The beams shall be made fully integral with reinforced concrete abutments.

3.3. Foundation type

The bridge abutments are to be supported by reinforced concrete spread footings.

3.4. Span arrangements

The structure is to consist of a single span measuring 15 m between abutments with a skew angle of 7°.

3.5. Articulation arrangements

The structure will be fully integral with no bearings, articulation or movement joints between the abutments and the deck beams.

3.6. Types of road restraint systems

Class N2W2 containment parapets will be installed either side of the bridge. The design of the parapet may have architectural input to incorporate signage to form a gateway into the business park.

3.7. Proposed arrangements for maintenance and inspection

3.7.1. Traffic management

For maintenance and inspection access to the bridge deck a single lane closer will be put in place over the bridge. No traffic management will be required for maintenance and inspection access under the bridge.

3.7.2. Access

Access to the bridge deck is from the development access road. The underneath of the bridge is only accessible by foot from nearby local roads. A minimum headroom of 1.8 m is maintained under the bridge soffit to allow for access for maintenance and inspection access.

3.8. Sustainability issues considered. Materials and finishes

Materials:

All reinforced concrete: C40/50 to BS EN 206-1 with exposure classes XC3 and XD3

In accordance with the National Annex to EN 1992-1-1 $\Delta_{dev}=10$ mm, i.e. $c_{nom}=c_{min}+10$ mm

Untensioned reinforcement: Grade B500B or B500C to BS 8666 and BS 4449

Tensioned prestressing strands: BS 5896-3 standard strand-1770-12.5-relax 2

Finishes – formed surfaces:

Buried Surface Plain concrete Class F1

Soffit, exposed elevation wingwalls and abutments: Plain concrete Class F2

Finishes – unformed surfaces:

Surface to receive waterproofing: Plain concrete Class U1

Exposed surfaces: Plain concrete Class U3

All other surfaces: Plain concrete Class U2

Reinforced concrete surface impregnation

No surface impregnation is proposed in accordance with Highway Agency Memorandum 227/08.

3.9. Risks and hazards considered

The main hazard encountered during the construction of the bridge will be working over a waterway and working at height. The deck construction from precast prestressed beams has been selected as these will be lifted into place rather than constructed over the waterway. The deck will be constructed insitu, however permanent formwork will be in place between the beams and a temporary edge restraint system will be fitted to the edge beams to prevent falls from height when working on the bridge deck.

Disruption to the local natural habitat is a risk identified for the construction of the bridge and mitigation of the impact of construction shall be considered throughout the bridge design and construction.

A Design Hazard Log will be maintained during the course of the design.

3.10. 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 dates of estimates

The initial construction cost and ongoing maintenance cost are not applicable to this AIP.

A fully integral design was chosen for the structure to minimise the ongoing maintenance requirements for the structure. A simply supported solution would have

The structural form has been chosen for ease of construction to minimise the ongoing maintenance liability. The required span of the bridge is too short for a composite steel plate girder design to be economical. With construction required over the waterway the temporary works that would be required for the construction of a solid insitu concrete slab deck

3.11. Proposed arrangements for construction

3.11.1. Traffic management

No traffic management will be required for the construction of the bridge as there is no existing highway in the area.

3.11.2. Service diversions

No services are located within the vicinity of the bridge.

3.11.3. Interface with existing structures

There are no existing structures within the vicinity of the bridge.

4. Design Criteria

4.1. Live loading, Headroom

4.1.1. Loading relating to normal traffic under AW regulations and C&U regulations

The bridge shall be design for carriageway loading of Load Model 1 and 2 in accordance with BS EN 1991-2.

4.1.2. Loading relating to General Order traffic under STGO regulations

The bridge shall be design for carriageway loading of Load Model 3 (SV80 and SV100) in accordance with BS EN 1991-2.

4.1.3. Footway or footbridge live loading

Load Model 4 (footbridge live loading) in accordance with BS EN 1991-2 cl 4.3.5.1 shall be designed for on the verges.

4.1.4. Loading relating to Special Order Traffic, provision for exceptional abnormal loads indivisible loads including location of vehicle track on deck cross-section

No Special Order Traffic is expected to access the bridge.

4.1.5. Any special loading not covered above

None.

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

The bridge is not located on a heavy or high load route.

4.1.7. Minimum headroom

The minimum headroom to be provided under the bridge on the river banks is 1.8 m to provide access for maintenance and inspection only.

The 1 in 100 year flood level of Hermitage Stream is 17.3 mOD with a freeboard of 600 mm required to the bridge soffit.

4.1.8. Authorities consulted and any special conditions required

The following authorities are to be consulted during the design:

- Hampshire County Council
- Portsmouth City Council
- Environment Agency

No services are to be accommodated by the bridge; these are to access the development site elsewhere.

4.2. List of relevant documents from the TAS

See Appendix A for TAS. Non-relevant standards listed in the TAS are struck through.

4.2.1. Additional relevant standards

None required.

4.3. Proposed departures from Standards given in 4.2 and 4.2.1

None required

4.4. Proposed methods for dealing with aspects not covered by Standards in 4.2 and 4.2.1

None required.

5. Structural Analysis

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

All analyses will be carried out using industry recognised computer software.

The superstructure will be analysed using a 3-dimensional space grillage model incorporating the abutments and considering the construction sequence and construction loading. The concrete parapet edge beams will be included as superimposed dead loads assuming suitable discontinuities.

Local wheel load effects will be determined using Pucher charts. Elastic distribution will be undertaken for the design of the deck slab under parapet loading and accidental wheel loading. Thermal actions on the deck will be considered as per BS EN 1991-1-5. Wood-Armer equations will be used to get the final design moment.

The abutments will be modelled and analysed together with the deck grillage. Upper and lower bound values for soil parameters will be used to model the founding soil and backfill material such that a realistic range of conditions is allowed for.

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

For global analysis, the prestressed beams will be idealised as longitudinal members and the deck slab will be idealised as transverse members in the grillage model.

The abutments walls will be modelled as vertical and transverse members rigidly connected to the deck grillage.

5.3. Assumptions intended for calculation of structural element stiffness

Gross section properties will be used for the bridge beam longitudinal members and for the bridge deck transverse members for analysis and design. Gross section properties will also be used for the bridge abutments.

The long term effects of creep on the structural stiffness will be accounted for by using short term and long term models for appropriate loading as recommended in BS EN 1994-2.

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

The backfill to the abutments will be selected granular fill specific for backfill in this zone. The following earth parameters will be adopted for these elements of the design:

- $\phi' = 35^\circ$ (average value for reinforced concrete abutments with granular fill)
- $k_a = 0.27$
- $k_0 = 0.42$
- $k_p = 3.69$

6. Geotechnical Conditions

6.1. **Acceptance of recommendations of Geotechnical Interpretative Report to be used in the design and reasons for any proposed changes**

The recommendations of the Geotechnical Interpretative Report are accepted. Further ground investigation will be required for detailed design.

6.2. **Highway Structure Summary Information (Form C)**

The outline Highway Structure Summary Information Form C is enclosed in appendix C.

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

Differential settlement to be allowed for in the design of the structure should not exceed 50mm.

6.4. **If the Geotechnical Interpretative 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**

The report for the preliminary ground investigation is available. Further ground investigation will be required for detailed design.

7. Checking

7.1. Proposed Category

Category 1.

7.2. If Category 3, name of proposed Independent Checker

N/A

7.3. Erection proposals or temporary works for which an independent check will be required, listing parts of the structure affected with reasons for recommending an independent check

Not applicable to this structure.

8. Drawings and Documents

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

Drawings are attached in Appendix B.

Drawing Number	Drawing Title
5099849/TP/GA/102	Plan Location
5099849/TP/BR/101	Proposed Bridge General Arrangement

A. Technical Approval Schedule (TAS)

Schedule of Design Documents Relating to Highway Bridges and Structures Using National Standards (Eurocode)

British Standards (non-confliction with Eurocodes)

BS 8006: (1995)	Strengthened/Reinforced soils and other fills
BS 8500-1: (2006)	Concrete – Complementary British Standard to BS EN 206-1 Part1: Method of specifying and guidance for the specifier
BS EN 1317-1-2010	Road Restraints Systems - Part 1 Terminology and general criteria for test methods
BS EN 1317-2-2010	Road Restraint Systems - Part 2 Performance classes, impact test acceptance criteria and test methods for safety barriers
BS EN 1317-3-2010	Road Restraint Systems - Part 3 Performance classes, impact test acceptance criteria and test methods for crash cushions
ENV 1317-4-2002	Road Restraint Systems - Part 4 Terminals and Transitions
Draft pr EN 1317-6; (August 2008)	Road Restraint Systems - Part 6 Road restraint systems - Pedestrian restraint systems - Part 6: Pedestrian Parapet.
BS EN 1337-1 (2000)	Structural bearings. General design rules
BS EN 14388 (2005)	Road traffic noise reducing devices – Specifications
BS EN 15050 (2007)	Precast concrete products. Bridge elements

Eurocodes

(To be used in conjunction with the corresponding UK National Annexes)

Eurocode 0 Basis of Structural Design

BS EN 1990 (2002 amended 2009 + NA 2004 amended 2009) Eurocode – Basis of structural design

Eurocode 1 Actions on Structures

BS EN 1991-1-1 (2002 amended 2004 + NA published 2005) Eurocode 1 – Actions on structures Part 1-1: General actions – Densities, self-weight, imposed loads for buildings

~~BS EN 1991-1-2 (2002 amended 2004 + NA published 2005) Eurocode 1: Actions on structures Part 1-2: General actions – Actions on structures exposed to fire~~

~~BS EN 1991-1-3 (2003 amended 2009 + NA published 2005) Eurocode 1 – Actions on structures Part 1-3: General actions – Snow loads~~

BS EN 1991-1-4 (2005 + NA published 2008) Eurocode 1 – Actions on structures – Part 1-4: General actions – Wind actions

BS EN 1991-1-5 (2004 amended 2004 + NA published 2007)	Eurocode 1 – Actions on structures – Part 1-5: General actions – Thermal actions
BS EN 1991-1-6 (2005 + NA published 2008)	Eurocode 1 – Actions on structures – Part 1-6: General actions – Actions during execution
BS EN 1991-1-7 (2006 + NA 2008)	Eurocode 1 – Actions on structures – Part 1-7: General actions – Accidental actions
BS EN 1991-2 (2003 amended 2004 + NA 2008)	Eurocode 1 – Actions on structures – Part 2: Traffic loads on bridges
<i>Eurocode 2 Design of Concrete Structures</i>	
BS EN 1992-1-1 (2004 + NA 2005)	Eurocode 2 – Design of concrete structures – Part 1-1: General rules and rules for buildings
BS EN 1992-2 (2005 + NA 2007)	Eurocode 2 – Design of concrete structures – Part 2: Concrete bridges – Design and detailing rules
BS EN 1992-3 (2006 + NA 2007)	Eurocode 2 – Design of concrete structures – Part 3: Liquid retaining and containment structures
<i>Eurocode 3 Design of Steel Structures</i>	
BS EN 1993-1-1 (2005 amended 2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-1: General rules and rules for buildings
BS EN 1993-1-4 (2006 + NA 2009)	Eurocode 3 – Design of steel structures – Part 1-4: Structures in stainless steel
BS EN 1993-1-5 (2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-5: General – Strength and stability of planar plated structures without transverse loading
BS EN 1993-1-6 (2007 + NA 2007)	Eurocode 3: Design of steel structures – Part 1-6: General – Strength and stability of shell structures
BS EN 1993-1-7 (2007 + NA 2007)	Eurocode 3: Design of steel structures – Part 1-7: General – Design values for plated structures subjected to out of plane loading
BS EN 1993-1-8 (2005 amended Sept 2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-8: Design of joints
BS EN 1993-1-9 (2005 amended Sept 2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-9: Fatigue strength
BS EN 1993-1-10 (2005, amended Sept 2006 + NA 2009)	Eurocode 3 – Design of steel structures – Part 1-10: Material toughness and through thickness properties
BS EN 1993-1-11 (2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-11: Design of structures with tension components
BS EN 1993-1-12 (2007 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-12: Additional rules for the extension of EN 1993 up to steel grades S 700

BS EN 1993-2 (2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 2: Steel bridges
BS EN 1993-5 (2007 + NA 2009)	Eurocode 3 – Design of steel structures – Part 5: Piling
<i>Eurocode 4 – Design of Composite and Concrete Structures</i>	
BS EN 1994-1-1 (2005 + NA 2008)	Eurocode 4: Design of composite steel and concrete structures – Part 1-1: General – Common rules and rules for buildings
BS EN 1994-2 (2005 + NA 2007)	Eurocode 4 – Design of composite steel and concrete structures – Part 2: General rules and rules for bridges
<i>Eurocode 5 – Design of Timber Structures</i>	
BS EN 1995-1-1 (2004 amended 2008 + NA 2006)	Eurocode 5 – Design of timber structures – Part 1-1: General – Common rules and rules for buildings
BS EN 1995-2 (2004 + NA 2006)	Eurocode 5 – Design of timber structures – Part 2: Bridges
<i>Eurocode 6 – Design of Masonry Structures</i>	
BS EN 1996-1-1 (2005 amended 2006 + NA 2007)	Eurocode 6 – Design of masonry structures – Part 1-1: General rules for reinforced and unreinforced masonry structures
BS EN 1996-2 (2006 + NA 2007)	Eurocode 6 – Design of masonry structures – Part 2: Design considerations, selection of materials and execution of masonry
BS EN 1996-3 (2006 + NA 2007)	Eurocode 6 – Design of masonry structures – Part 3: Simplified calculation methods for unreinforced masonry structures
<i>Eurocode 7 – Geotechnical design</i>	
BS EN 1997-1 (2004 + NA 2007)	Eurocode 7 – Geotechnical design – Part 1: General rules
BS EN 1997-2 (2007+NA 2009)	Eurocode 7 – Geotechnical design – Part 2: Ground investigation and testing
<i>Eurocode 8 – Design of Structures For Earthquake Resistance</i>	
BS EN 1998-1 (2005 + NA 2008)	Eurocode 8 – Design for structures for earthquake resistance – Part 1: General rules, seismic actions and rules for buildings
BS EN 1998-2 (2005 amended 2009 + NA 2009)	Eurocode 8 – Design for structures for earthquake resistance – Part 2: Bridges
BS EN 1998-5 (2005 + NA 2008)	Eurocode 8 – Design for structures for earthquake resistance – Part 5: Foundations, retaining structures and geotechnical aspects
<i>Eurocode 9 Design of Aluminium Structures</i>	
BS EN 1999-1-1 (2007 + NA 2008)	Eurocode 9 – Design of aluminium structures – Part 1-1: General – common rules

BS EN 1999-1-3 (2007 + NA 2008)	Eurocode 9 – Design of aluminium structures – Part 1-3: Additional rules for structures susceptible to fatigue
BS EN 1999-1-4 (2007 + NA 2009)	Design of aluminium structures – Part 1-4: Design of Aluminium Structures – Cold formed structural sheeting

BSI Published Documents

[To be used with Eurocodes, as instructed by BD100 (DMRB 1.3.19)]

PD xxxx (Date)*	Background paper to BS EN 1990 A2
PD 6688-1-1 (Not yet published)	Background paper to the UK National Annex to BS EN 1991-1-1
PD 6688-1-4 (2009)	Background paper to the UK National Annex to BS EN 1991-1-4
PD 6688-1-5 (Not yet published)	Background paper to the UK National Annex to BS EN 1991-1-5
PD 6688-1-7 (2008)	Recommendations for the design of structures to BS EN 1991-1-7
PD 6688-2 (Not yet published)	Recommendations for the design of structures to BS EN 1991-2
PD 6687-1 (2010)	Background paper to the UK National Annex to BS EN 1992-1
PD 6687-2 (2008)	Recommendations for the design of structures to BS EN 1992-2
PD 6695-1-9 (2008)	Background paper to the UK National Annex to BS EN 1993-1-9
PD 6695-1-10 (2009)	Background paper to the UK National Annex to BS EN 1993-1-10
PD 6695-2 (2009)	Recommendations for the design of structures to BS EN 1993-2
PD 6696-2 (2007)	Background paper to BS EN 1994-2 and the UK National Annex to BS EN 1994-2
Draft PD 6694-1 (Sept 2008)	Recommendations for the design of structures subject to traffic loading to BS EN 1997-1
PD 6697 (2010)	Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2
PD 6698 (2009)	Background paper to the UK National Annexes to BS EN 1998-1, 1998-2, 1998-4, 1998-5 and 1998-6
PD 6703 (2009)	Structural bearings – Guidance on the use of structural bearings
PD 6705-2 (2010)	Structural use of steel and aluminium. Recommendations for the execution of steel bridges to BS EN 1090-2

Execution Standards

BS EN 1090-1: 2009	Execution of steel structures and aluminium structures. Requirements for conformity assessment of structural components
BS EN 1090-2: 2008	Execution of steel structures and aluminium structures. Technical requirements for the execution of steel structures

BS EN 1090 3: 2008	Execution of steel structures and aluminium structures. Technical requirements for the execution of aluminium structures
BS EN 13670: 2010	Execution of concrete structures

Miscellaneous

~~Circular Roads No 61/72 Routes for heavy and high abnormal loads (refer to the website <http://www.esdal.com>)~~

Traffic Management Act 2004

Construction (Design and Management) Regulations 2007

The Manual of Contract Documents for Highway Works (MCDHW)

- Volume 1: Specification for Highway Works (May 2009)
- Volume 2: Notes for Guidance on the Specification for Highway Works (May 2009)
- Volume 3: Highway Construction Details (May 2009)

The Design Manual for Roads and Bridges (DMRB) General Requirements, Standards (GD Series)

- GD 01/08 Introduction to the Design Manual for Roads and Bridges (DMRB)
- GD 02/08 Quality Management Systems for Highway Design
- GD 03/08 Implementation and Use of the Standards Improvement System

Bridges and Structures, Advice Notes (BA Series)

- ~~BA 28/92 Evaluation of Maintenance Costs in Comparing Alternative Designs for Highway Structures~~
- BA 41/98 The Design and Appearance of Bridges
- ~~BA 43/94 Strengthening, Repair and Monitoring of Post-tensioned Concrete Bridge Decks~~
- BA 47/99 Waterproofing and Surfacing Concrete Bridge Decks
- BA 57/01 Design for Durability
- ~~BA 67/96 Enclosure of Bridges~~
- ~~BA 82/00 Formation of Continuity Joints in Bridge Decks~~
- ~~BA 83/02 Cathodic Protection for Use in Reinforced Concrete Highway Structures~~
- ~~BA 84/02 Use of Stainless Steel Reinforcement in Highway Structures~~
- BA 85/04 Coatings for Concrete Highway Structures & Ancillary Structures

~~BA 86/06 — Advice Notes on the Non-destructive Testing of Highway Structures~~

BA 92/07 The Use of Recycled Concrete Aggregates in Structural Concrete

Bridges and Structures, Standards (BD Series)

BD 2/05 Technical Approval of Highway Structures

~~BD 7/01 — Weathering Steel for Highway Structures~~

~~BD 10/97 — Design of Highway Structures in Areas of Mining Subsidence~~

~~BD 29/04 — Design Criteria for Footbridges~~

~~BD 35/06 — Quality Assurance Scheme for Paints and Similar Protective Coatings~~

BD 36/92 Evaluation of Maintenance Costs in Comparing Alternative Designs for Highway Structures

BD 43/03 The Impregnation of Reinforced and Prestressed Concrete Highway Structures using Hydrophobic Pore-Lining Impregnants

BD 47/99 Waterproofing and Surfacing of Concrete Bridge Decks

~~BD 51/98 — Portal and Cantilever Signs/Signal Gantries~~

BD 57/01 Design for Durability

~~BD 67/96 — Enclosure of Bridges~~

~~BD 78/99 — Design of Road Tunnels~~

~~BD 91/04 — Unreinforced Masonry Arch Bridges~~

~~BD 94/07 — Design of Minor Structures~~

BD 100/10 Use of Eurocodes for the Design and Construction of Highway Structures (Draft rev 02 dated July 2009, not yet published)

Bridges and Structures, Technical Memoranda (BE Series)

~~BE 7/04 Motorway Sign/Signal Gantries~~

Traffic Engineering and Control, Standards and Advice Notes (TD and TA Series)

~~TD 9/93 — Highway Link Design~~

~~TD 89/08 — Use of Passively Safe Signposts, Lighting Columns & Traffic Signal Posts to BS EN 12767~~

~~TD 27/05 — Cross Sections and Headroom~~

~~TD 36/93 — Subways for Pedestrians and Cyclists, Layout and Dimensions~~

TD 19/06 Requirements for Road Restraint Systems

Highways, Advice Notes (HA Series)

HA 66/95	Environmental Barriers Technical Requirements
HA 84/01	Nature Conservation and Biodiversity
HA 59/92	Mitigating against Effects on Badgers
HA 80/99	Nature Conservation Advice in Relation to Bats
HA 81/99	Nature Conservation Advice in Relation to Otters
HA 97/01	Nature Conservation Management Advice in Relation to Dormice
HA 98/01	Nature Conservation Management Advice in Relation to Amphibians

Highways, Standards (HD Series)

HD 22/08	Managing Geotechnical Risk
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Interim Advice Notes (IAN Series)

IAN 123/10	Use of Eurocodes for the design of highway structures
IAN 01/95	TD 37/93 Scheme Assessment Reporting
IAN 03/96	BA 50/93 Post Tensioned Concrete Bridges
IAN 04/96	BD 44/95 The Assessment of Concrete Highway Bridges and Structures
IAN 05/96	BD 24/92 The Design of Concrete Highway Bridges and Structures. Use of BS 5400: Part 4:1990
IAN 36/01	The Use and Application of Micro Simulation Traffic Models
IAN 39/01	Post Opening Project Appraisal (POPE)
IAN 41/02	European Cement Standards
IAN 42/02	Traffic Speed Condition Surveys: Revised Assessment Criteria
IAN 47/02	Post Tensioned Grouted Duct Concrete Bridges
IAN 48/03	Measures To Minimise The Risk of Sulphate Attack (Including Thaumasite) - New Construction and Structures Under Construction
IAN 49/03	Use of Warning Signs For New Asphalt Road Surfaces
IAN 53/04	Concrete Half Joint Deck Structures
IAN 56/04	Maintenance Of Traffic Signs With Dew Resistant Coatings
IAN 63/05 rev 1	Asbestos Management Applicable To The Strategic Road Network
IAN 64/05	Driver Information At Road Works

IAN 68/05	Infrastructure changes to improve emergency access to and egress from the trunk road network in England
IAN 69/05	Designing for Maintenance
IAN 70/06	Implementation Of New Reinforcement Standards (BS 4449:2005, BS 4482:2005, BS 4483:2005 and BS 8666:2005)
IAN 71/06	Marker Posts On Lay By Segregation Islands
IAN 73/06 rev 1	Design of Pavement Foundations
IAN 75/06	Code of Practice for Emergency Access to and Egress from the Trunk Road Network in England
IAN 83/06	Principal and General Inspection of Sign/Signal Gantries, and Gantries with low handrails or open mesh flooring
IAN 84/07	Environmental Information System (EnvIS)
IAN 85/07	Design of Passively Safe Portal Signal Gantries
IAN 86/07	Amendments To Design Requirements For Portal And Cantilever Sign/Signal Gantries
IAN 87/07	The Provision Of Signal Gantries For Motorways With Four Or More Running Lanes
IAN 90/07 rev 1	Guidance For The Use Of Rapid Setting Emergency Repair Materials
IAN 91/07	Interim Advice on the identification of 'Particularly at Risk' Supports
IAN 93/07	Driver location signs – Interim Performance Specification
IAN 95/07	Revised guidance regarding the use of BS8500(2006) for the design and construction of structures using concrete
IAN 96/07 rev 1	Guidance On Implementing Results Of Research On Bridge Deck Waterproofing
IAN 97/07	Assessment and upgrading of existing parapets
IAN 98/07	HD 28 / Guidance for HA Service Providers on Implementing the Skid Resistance Policy
IAN 99/07	Implementation of Local Grid Referencing System for England
IAN 100/07	Cultural Heritage Asset Management Plans
IAN 103/08	Ramp metering

B. General Arrangement Drawing

C. Highway Structure Summary Information (Form C)

Contact name
Address

Email:
Telephone:
Direct telephone:
Fax:

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