HIGHWAYS CONSTRUCTION WORKS

Specification

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Version: 1.0

Minor Roads & DfT Challenge Fund 1.0

Inlay Resurfacing Schemes

Swindon Borough Council

September 2020

Document history

Specification

Minor Roads & DfT Challenge Fund 1.0 - Inlay Resurfacing Schemes

This document has been issued and amended as follows:

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1 Location and Description of the Works

1.1 Location

The works are situated at the following locations within the Borough of Swindon and as shown on the included drawings:

Carriageway Resurfacing Schemes:

001-003 Callas Hill
003-001 Addison Crescent
003-002 Bessemer Road East
003-003 Carisbrook Terrace
003-004 Casson Road
003-005 Cowleaze Crescent
003-006 Elmswood Close
003-007 Faraday Road
003-008 Grove Orchard
003-009 Pinnocks Place
003-010 Pipitdene
003-013 Stapleton Close
003-014 Church Place
011-001 A346 Plough Hill
011-002 A346 New Road to C3 Junction
011-003 A361 Highworth Road, Redlands Area
011-005 A361 Vickers Roundabout
011-010 A4259 Queens Drive / Frobisher Drive
011-016 B4006 New Inn Roundabout (NON-COMMITTED SITE)
011-019 A346 South of C3 Junction

1.2 Works

The works consist of:

Surface Course resurfacing – including planing and inlaying selected lengths of deteriorated flexible surfacing and Micro Asphalt, in order to improve the running surface, skid resistance and to extend the structural life of the carriageway.

This contract includes the following resurfacing works:

Carriageway works:

- The removal by planing of existing flexible surfacing material and the laying of the following materials based on the type of carriageway (refer to construction drawings for individual site requirements):
    - AC 6 dense surf 100/150 to Cl 909.
    - SMA 6 surf 40/60.
    - HRA 55/10F surf 40/60 to Cl 911.
    - 6mm Stone Mastic Asphalt PMB to EN 13108-5 60 PSV
    - 10mm Stone Mastic Asphalt PMB to EN 13108-5 68 PSV
    - 10mm Thin surface course system - Cl 942 68 PSV

- In some cases, the removal by planing of further existing flexible material and the laying of AC 20 HDM bin 40/60 to Cl 929 or AC 20 dense bin 100/150 or 40/60 to Cl 906.

- In some cases, the removal by planing of further existing flexible material and the laying of 20mm Stone Mastic Asphalt PMB Binder Course to EN 13108-5.

- In some cases, the removal by planing of further existing flexible material and the laying of AC 32 dense bin 40/60 to Cl 906.

- In some cases, excavating existing concrete and reinstating with dry lean mix concrete ST2 compacted with a roller.

- In some cases, excavating existing sub-base and reinstating with Type 1 granular sub-base

- Reinstatement of road markings and high friction surfacing.

- Pre-works; including kerbing adjustment and/or replacement as required, adjustment of ironwork covers and frames.

- Post-works; including jetting gullies and their associated connections and reinstatement of lining.

- Composite carriageway joint treatment to the concrete roads.

- Cutting of traffic signal loops

Dealing with ponding

It is the responsibility of the Contractor to resolve potential ponding issues during the resurfacing works when the carriageway is restored to its original levels. It is not anticipated that any further carriageway level re-design will be required.

However, the Contractor should advise the Project Manager if they believes that an existing ponding problem could not be removed by this method and could only be resolved by either installing new drainage or re-contouring the road prior to the resurfacing works commencing.

Dealing with hazardous waste (tar)

It should be noted that it is anticipated that limited Tar will be encountered during the course of these works. Investigation works have been completed to confirm areas of hazardous material and the results will be passed onto the Contractor prior to the commencement of the Contract. The Contract includes provisional quantities for Tar should the need for deeper planing & surfacing at any sites be identified at any site constructed prior to the 1970's.

If the possible presence of hazardous materials is suspected, at any stage during the course of the works, then the works should be halted immediately and guidance sought from the Overseeing Organisation on how to proceed.

Any hazardous materials encountered should be dealt with in accordance with Appendix 2/5.

Any excavated material that cannot be left and/or utilised in situ that is known to contain Tar shall be segregated and securely stored in accordance with current Environmental Agency

(EA) guidance; the material shall then be tested to determine its level of contamination in order to determine the required method of disposal.

Should the material be contaminated it must be disposed of to a suitable designated contaminated material tip in accordance with current ADEPT & EA guidance.

Suitable items can be provided for pricing within a revision to the Bills of Quantities for implementing the above process and for dealing with the contaminated material.

Provisional Works

The Contractor should note in pricing the tender that the works included within the provisional elements of the Bills of Quantities may be altered or not be carried out dependent upon budgetary provision.

Site inspection

The Contractor will be deemed to have inspected all the sites prior to submission of a tender and to any works commencing.

2 Specification

2.1 Preamble to the Specification

1. The specification referred to in the Tender shall be the 'Specification for Highway Works', published by the Stationery Office (formerly HMSO) as Volume 1 of the Manual of Contract Documents for Highway Works, as modified and extended by the following:

   a) Appendix 0/1: Contract-specific Additional, Substitute and Cancelled Clauses, Tables and Figures;

   b) Appendix 0/2: Contract-specific minor alterations to existing Clauses, Tables and Figures;

   c) The Numbered Appendices listed in Appendix 0/3;

   d) Appendix 0/4 contains a list of the Drawings.

2. The relevant publication date of each page of the Specification for Highway Works is given in the Schedule of Pages and Relevant Publication Dates.

3. The Specification for Highway Works uses the terms "Overseeing Organisation" and "Contractor". The conditions of contract are the New Engineering Contract: Engineering and Construction Contract 3rd edition (April 2013) (NEC:ECC3). NEC:ECC3 defines (among others) the terms "*Employer*", "*Contractor*", "*Project Manager*", and "*Supervisor*".

4. References to the Overseeing Organisation are understood to mean the *Employer*. References to the Contractor are understood to mean the *Contractor*. References to the Project Manager are understood to mean "*Project Manager*". References to the Works or works are understood to mean the *works*.

5. Insofar as any of the Numbered Appendices may conflict or be inconsistent with any provision of the Specification for Highway Works the Numbered Appendices shall always prevail.

6. Any reference in the Contract to a Clause number or Appendix shall be deemed to refer to the corresponding Substitute Clause number or Appendix listed in Appendix 0/1 or 0/2.

7. Where a Clause is altered any original Table/Figure referred to in a Clause shall apply unless the Table/Figure is also altered. Where a Table/Figure is altered any reference in a Clause to the original Table/Figure shall apply to the altered Table/Figure.

8. Where a Clause in the Specification relates to work, goods or materials which are not required for the Works it shall be deemed not to apply.

9. Any Appendix referred to in the Specification which is not used shall be deemed not to apply.

10. Where a Clause in the Specification or Notes for Guidance on the Specification is prefixed by an # this indicates that this particular Clause has a substitute National Alteration for one or more of the Overseeing Organisation of Scotland, Wales or Northern Ireland. The use of substitute or additional National Clauses is permitted only within countries to which they specifically apply and they are deemed to replace corresponding Clauses in the main text of the Specification or to be included within the Specification as appropriate. The substitute clauses are located at the end of the relevant Series together with the additional National Clauses of the Overseeing Organisation.

11. Other than where reference to Overseeing Organisation are made in the context of granting statutory or type approvals, the roles and functions of the Overseeing Organisation shall be undertaken by the Project Manager.

12. Where the Specification requires the provision of documentation to the Overseeing Organisation for statutory or type approval such documentation shall be provided to the Project Manager.

2.3 Specification for Highways Works Schedule of Pages and Relevant Publication Dates

Series/Appendix	Page Number	Publication Date
000	1 to 3	May 2014
	6 to 7F	February 2016
	4 to 5	May 2018
100	1 to 2, 4 to 9, 12 to 29F, WF1, N2 to	May 2014
	3, 10 to 11, N1	December 2014
200	1 to 3F	February 2016
300	1	May 2001
	4	November 2002
	2 to 3, 5 to 6F	May 2008
400	1 to 24F	May 2017
500	23 to 24, 26	November 2004
	28F	May 2005
	3, 22, N1F	May 2006
	2, 5, 27	November 2006
	6, 25	November 2007
	1, 4, 7 to 21	November 2009
600	1 to 68, 70 to 77F, S1 to S4F, W1 to	February 2016
	69	February 2017
700	1 to 36F, N1 to N6F	February 2016
800	1 to 31F	February 2016
900	1 to 77F	May 2018
1000	1 to 45F	February 2016
1100	NIF	November 2006
	3	August 2008
	1 to 2, 4 to 6F	February 2017
1200	5	May 2001
	2 to 3, W1F	August 2003
	1, 14 to 16F	May 2004
	4, 9 to 11, 13	May 2005
	12	November 2006
	6 to 7, N1 to N4F	November 2007
	8	May 2008
1300	N2F	November 2003
	3 to 4	November 2004
	1, 5 to 10, 12F	November 2005
	2, 11 and N1	May 2006
1400	2, N1F	May 2001
	1, 3 to 9F	May 2006
1500	1 to 31F	February 2017

Series/Appendix	Page Number	Publication Date
1600	1, 4 to 5, 9, 15, 17 to 18, 24 to 26, 29 to 31, 35, 38, 49F	March 1998
	2, 6 to 8, 10 to 14, 16, 19, 27 to 28, 32 to 34, 36 to 37, 39 to 42, 44 to 48	November 2003
	3, 20 to 23, 43	November 2005
1700	1 to 27F	December 2014
1800	1 to 35F	August 2014
1900	1 to 35F, S1 to S2F	August 2014
2000	1, 3 to 4F	May 2001
	2	November 2004
2100	1, 2F	February 2016
2300	1	March 1998
	2 to 3F	May 2001
2400	1, 4, 7F	May 2005
	2	May 2006
	3, 5 to 6	May 2008
2500	1	May 2001
	2, 8, 11F	November 2003
	10	November 2004
	6 to 7, 9	May 2005
	5	May 2006
	3 to 4	November 2006
2600	1	March 1998
	2 to 4	November 2003
	5	November 2004
	6	May 2005
	7F	November 2006
3000	4 to 7, 10, 12 to 17, 19, 22 to 27F	May 2001
	20	November 2004
	2 to 3	May 2006
	8 to 9, 11, 18, 21	May 2008
5000	1, 4 to 19F, S1F	May 2005
	2 to 3	November 2008
Appendix A	1 to 4F	May 2014
Appendix B	1 to 3F	May 2014
Appendix C	1 to 2F	May 2014
Appendix D	1F	May 2014
Appendix D	N1F	May 2014
Appendix E	1F	May 2014
Appendix F	1to 54F	May 2018

Series/Appendix	Page Number	Publication Date
Appendix G	Not Used	May 2004
Appendix H	1	May 2004
	2	November 2005
	3	November 2006
	4 to 9F	November 2008

LIST OF ADDITIONAL CLAUSES

Clause No.	Title
170 AR	Care of Maintenance of Roads
171 AR	Advertisements and Name boards
172 AR	Prevention of Spoil Dumping
173 AR	Damage to Highways
174 AR	Damage to Permanent Road Surfaces
175 AR	Public Relations
176 AR	Facilities for Contractor
178 AR	Application for works within the Public Highway
570 AR	Existing Covers and Frames

170 AR Care and Maintenance of Roads

The Contractor shall afford facilities and make arrangements for the appropriate highway authority to continue to carry out the normal routine maintenance of existing street lighting, snow clearance, gritting and cleansing at such time and in such manner as the Project Manager may direct.

The Contractor shall consider the effect of where traffic management phases are to be changed or removed during periods of winter maintenance. The Contractor shall notify the Employer in advance of these changes to enable gritting to be carried out where necessary. The costs incurred by additional visits for winter maintenance by the Employer for not providing sufficient notice to the Project Manager (see Appendix 1/17) shall be borne by the Contractor except where agreed with the Project Manager.

171 AR Advertisements and Name boards

All advertisements, Contractor's and Sub-Contractor's name boards to be erected within the site shall be submitted for acceptance by the Project Manager. Advertisements and name boards will not be allowed in the vicinity of traffic lanes where in the opinion of the Project Manager such would distract drivers or conflict with statutory traffic signs. All advertisements and name boards within the Site shall be removed within 2 weeks of

the date of completion of the whole of the works. Name boards providing directional information erected beyond the Site and within the highway shall only be erected with the consent of the Overseeing Organisation.

172 AR Prevention of Spoil Dumping

The Contractor shall take all reasonable steps to prevent excavated spoil, rubbish, surplus materials, etc., arising from the Works being dumped on an area other than a recognised tipping area.

The Contractor shall: -

a) Sub-let carting away only to bona-fide carriers.

b) Obtain from such carriers the locations of the proposed tipping area or areas.

c) If and when required by the Project Manager, obtain and submit to him written evidence that all loads of excavated spoil, rubbish, surplus materials, etc. have been deposited at a recognised tipping area or areas.

All broken out, excavated and other material which is no longer required for use in the Works, shall be cleared from the Site as soon as practical after it accumulates.

Should it be shown to the satisfaction of the Project Manager that any excavated spoil, rubbish, surplus materials, etc., have been deposited elsewhere than at a recognised tipping area, the Contractor will be held responsible for clearing away such deposits at his own cost and ensuring that they are placed in a licensed tipping area.

The Contractor shall not deposit, nor allow to be deposited, any earth, spoil, rubbish, materials, equipment, plant or other objects or things on the carriageway or footways of any street or highway both within and outside the Site which, in the opinion of the Project Manager, unnecessarily hinders or obstructs any person using or wishing to use such carriageways and/or footways.

173 AR Damage to the Highways

Damage to the highways in the vicinity of the Works carried out by construction traffic, or Lorries delivering and removing materials from the Site, will be the responsibility of the Contractor and reinstatement to these highways must be to the satisfaction of the Project Manager. During the Contract period the Contractor shall be responsible for the sweeping and cleaning of the carriageways and footways, flushing out, and cleaning of gullies and making good and permanent reinstatement of any pot holes that form in the footways and carriageways with suitable asphalt or bitumen macadam and for full reinstatement of trenches within the Site to the Project Manager's satisfaction.

All trees, shrubs, verges, hedges or other surfaces are to be protected and kept in a clean state for the duration of the Contract.

All grass verges shall be reinstated by carrying out cultivation by means of tractor mounted rotary cultivator or similar approved, reducing the ground to an acceptable tilth. The area to be dressed and re-seeded in accordance with the specification shall be stone picked.

Following cultivation, minor grading is to take place to bring soil levels up to the adjacent constructed kerb, carriageway or cycle track. A tilth and topsoil level that is sufficient to receive grass seed shall be obtained. The area shall be sown with grass seed in accordance with the specification, lightly rolled to ensure a smooth and level surface. Following germination of the grass seed, all newly seeded areas are to receive a light re-roll to ensure a smooth and level surface. All areas shall be re-checked for stones exceeding 50mm nominal size and removed as necessary. Prior to the first grass cutting, all newly seeded areas to be checked for stones and re-

picked. The Contractor shall undertake the first grass cut to the newly seeded areas no greater than 6 weeks after the initial sowing of the grass seed.

174 AR Damage to Permanent Road Surfaces

Any permanent bituminous road surface, which is contaminated by diesel or damaged by plant or operations during preparation for, construction and maintenance of the Works, shall be fully reinstated to the satisfaction of the Project Manager. The minimum area to be rectified, regardless of the size of the spillage or damage, shall be the full width of the paving laid in one operation and at least 15 metres in length.

175 AR Public Relations

The Contractor shall take all necessary precautions to prevent danger, nuisance or inconvenience to owners, tenants, or to occupiers of adjacent properties, and to the public generally and shall at all times keep all roads, streets, private entrances, verges, paths, footways, drains and sewers in the vicinity of the Works in a safe, clear and passable state with the exception of formal closures approved and agreed with the Project Manager.

176 AR Facilities for Contractor

The Contractor shall comply with the requirements described in Appendix 1/70.

178 AR Application for works in the Public Highway

The Contractor shall comply with the requirements described in Appendix 1/71.

570 AR Existing Covers and Frames

Covers and frames to manholes, gullies and other items shall where required be taken up and re-fixed to the correct levels on 225 mm brickwork to Clause 2406 and/or slates bedded with Class 1 cement mortar to Clause 2404. Brickwork shall be bonded in a manner consistent with the existing bond or otherwise in English Bond.

None

Appendix 0/3 is comprised of two lists, A and B, of Numbered Appendices as follows:-

List 'A'

This is a complete list of the Numbered Appendices referred to in the Specification for Highway Works with those not adopted marked 'Not Used'.

Guide to types of Numbered Appendices - who compiles/completes

Symbol

(Co) Overseeing Organisation compiles

(C) Contractor compiles

List 'B'

This gives the list of Contract-Specific Numbered Appendices devised for the Contract.

LIST A: COMPLETE LIST OF ADDITIONAL CLAUSES AND TABLES

Completed by	Appendix No.	Title
(Co)	0/1	Contract Specific Additional, Substitute and Cancelled Clauses, Tables and Figures Included in the Contract
(Co)	0/2	Contract Specific Minor Alterations to Existing Clauses and Tables Included in the Contract
(Co)	0/3	List of Numbered Appendices Referred to in the Specification and Included in the Contract
(Co)	0/4	List of Drawings Included in the Contract
	0/5	Not Used
		PRELIMINARIES
(Co)	1/1	Temporary Accommodation and Equipment for the Overseeing Organization
(Co)	1/4	Working and Fabrication Drawings
(Co)	1/5	Testing to be Carried Out by the Contractor
(Co)	1/7	Site Extent and Limitations on Use
(Co)	1/9	Control of Noise and Vibration
(Co)	1/12	Setting Out and Existing Ground Levels
(Co)	1/13	Programme of Works
(Co)	1/15	Accommodation Works
(Co)	1/16	Privately and Publicly Owned Services and Supplies
(Co)	1/17	Traffic Safety & Management
(Co)	1/18	Temporary Diversions of Traffic
(Co)	1/19	Routing of Vehicles
(Co)	1/21	Information Board
(Co)	1/23	Risks to Health and Safety from Materials or Substances
(Co)	1/24	Quality Management System
		SITE CLEARANCE
(Co)	2/3	Retention of Material Arising from Site Clearance
(Co)	2/5	Hazardous Materials
		FENCING AND ENVIRONMENTAL BARRIERS
		Section Not Used
		SAFETY FENCES, SAFETY BARRIERS and PEDESTRIAN GUARDRAILS
		Section Not Used
		DRAINAGE AND SERVICE DUCTS
(Co)	5/1	Drainage Requirements

Completed by	Appendix No.	Title
		EARTHWORKS
		Section Not Used
		ROAD PAVEMENTS – GENERAL
(Co)	7/1	Permitted Pavement Options
(Co)	7/2	Excavation, Trimming and Reinstatement of Existing Surfaces
(C)	7/4	Bond Coats, Tack Coats and Bituminous Sprays
(Co)	7/9	Cold Milling (planing) of Bituminous bound Flexible Pavement
		ROAD PAVEMENTS - CONCRETE AND CEMENT BOUND MATERIALS
		Section Not Used
		KERBS, FOOTWAYS AND PAVED AREAS
(Co)	11/1	Kerbs, Footways and Paved Areas
		TRAFFIC SIGNS
(Co)	12/3	Traffic Signs: Road Markings and Studs
		ROAD LIGHTING COLUMNS AND BRACKETS
		Section Not Used
		ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS
		Section Not Used
		PILING AND EMBEDDED RETAINING WALLS
		Section Not Used
		STRUCTURAL CONCRETE
		Section Not Used
		STRUCTURAL STEELWORK
		Section Not Used
		PROTECTION OF STEELWORK AGAINST CORROSION
		Section Not Used
		WATERPROOFING FOR STRUCTURES
		Section Not Used
		BRIDGE BEARINGS
		Section Not Used
		PARAPETS
		Section Not Used
		BRIDGE EXPANSION JOINTS AND SEALING OF GAPS
		Section Not Used

Completed by	Appendix No.	Title
		BRICKWORK, BLOCKWORK AND STONEWORK
		Section Not Used
		SPECIAL STRUCTURES
		Section Not Used
		MISCELLANEOUS
(Co)	26/1	Ancillary Concrete
		LANDSCAPE AND ECOLOGY
		Section Not Used

LIST B: CONTRACT SPECIFIC NUMBER APPENDICES DEVISED FOR THIS CONTRACT

Completed by	Appendix No.	Title
(Co)	1/70	Facilities for the Contractor
(Co)	1/71	Application for Authorisation for Works within the Public Highway

1. Contract Specific Drawings Supplied

	Drawing No.	Title
001-003 Callas Hill	HCW/2021/001/003/DR/001	Site Extents
	HCW/2021/001/003/DR/002	Coring Location Plan
	HCW/2021/001/003/DR/003	Surfacing Details
	HCW/2021/001/003/DR/004	Ironwork Details
	HCW/2021/001/003/DR/005	Road Marking Details
	HCW/2021/001/003/DR/006	Phase 1 – Proposed Diversion Route
	HCW/2021/001/003/DR/007	Phase 2 – Proposed Diversion Route
003-001 Addison Crescent	HCW-2021-003-001-DR-001	Site Extents
	HCW-2021-003-001-DR-002	Surfacing Details
	HCW-2021-003-001-DR-003	Ironwork Details
	HCW-2021-003-001-DR-004	Road Marking Details
	HCW-2021-003-001-DR-005	Letter Drop Area
003-002 Bessemer Road East	HCW-2021-003-002-DR-001	Site Extents
	HCW-2021-003-002-DR-002	Surfacing Details
	HCW-2021-003-002-DR-003	Ironwork Details
	HCW-2021-003-002-DR-004	Road Marking Details
	HCW-2021-003-002-DR-005	Letter Drop Area
003-003 Carisbrook Terrace	HCW-2021-003-003-DR-001	Site Extents
	HCW-2021-003-003-DR-002	Surfacing Details
	HCW-2021-003-003-DR-003	Ironwork Details
	HCW-2021-003-003-DR-004	Road Marking Details
	HCW-2021-003-003-DR-005	Letter Drop Area
003-004 Casson Road	HCW-2021-003-004-DR-001	Site Extents
	HCW-2021-003-004-DR-002	Surfacing Details

	Drawing No.	Title
	HCW-2021-003-004-DR-003	Ironwork Details
	HCW-2021-003-004-DR-004	Road Marking Details
	HCW-2021-003-004-DR-005	Letter Drop Area
003-005 Cowleaze Crescent	HCW-2021-003-005-DR-001	Site Extents
	HCW-2021-003-005-DR-002	Pre-Works Details
	HCW-2021-003-005-DR-003	Surfacing Details
	HCW-2021-003-005-DR-004	Ironwork Details
	HCW-2021-003-005-DR-005	Letter Drop Area
003-006 Elmswood Close	HCW-2021-003-006-DR-001	Site Extents
	HCW-2021-003-006-DR-002	Pre-works Details
	HCW-2021-003-006-DR-003	Surfacing Details
	HCW-2021-003-006-DR-004	Ironwork Debeentails
	HCW-1920-006-006-DR-005	Road Marking Details
	HCW-1920-006-006-DR-006	Letter Drop Area
003-007 Faraday Road	HCW-2021-003-007-DR-001	Site Extents
	HCW-2021-003-007-DR-002	Surfacing Details
	HCW-2021-003-007-DR-003	Ironwork Details
	HCW-2021-003-007-DR-004	Road Marking Details
	HCW-1920-006-007-DR-005	Letter Drop Area
003-008 Grove Orchard	HCW-2021-003-008-DR-001	Site Extents
	HCW-2021-003-008-DR-002	Surfacing Details
	HCW-2021-003-008-DR-003	Ironwork Details
	HCW-2021-003-008-DR-004	Letter Drop Area
003-009 Pinnocks Place	HCW-2021-003-009-DR-001	Site Extents
	HCW-2021-003-009-DR-002	Surfacing Details
	HCW-2021-003-009-DR-003	Ironwork Details

	Drawing No.	Title
	HCW-2021-003-009-DR-004	Letter Drop Area
003-010 Pipitdene	HCW-2021-003-010-DR-001	Site Extents
	HCW-2021-003-010-DR-002	Surfacing Details
	HCW-2021-003-010-DR-003	Ironwork Details
	HCW-2021-003-010-DR-004	Letter Drop Area
003-011 Stapleton Close	HCW-2021-003-013-DR-001	Site Extents
	HCW-2021-003-013-DR-002	Surfacing Details
	HCW-2021-003-013-DR-003	Ironwork Details
	HCW-2021-003-013-DR-004	Road Marking Details
	HCW-1920-006-012-DR-005	Letter Drop Area
003-012 Church Place	HCW-2021-003-014-DR-001	Site Extents
	HCW-2021-003-014-DR-003	Surfacing Details
	HCW-2021-003-014-DR-004	Ironwork Details
	HCW-2021-003-014-DR-005	Road Marking Details
	HCW-2021-003-014-DR-006	Letter Drop Area
011-001 A346 Plough Hill	HCW-2021-011-001-DR-002	Re-Surfacing Details
	HCW-2021-011-001-DR-003	Road Markings & Ironworks
	HCW-2021-011-001-DR-004	Letter Drop Area
011-002 A346 New Road to C3 Junction	HCW-2021-011-002-DR-002	Re-Surfacing Details
	HCW-2021-011-002-DR-003	Road Markings & Ironworks
	HCW-2021-011-002-DR-004	Letter Drop Area
011-003 A361 Highworth Road, Redlands Area	HCW-2021-011-003-DR-002	Re-Surfacing Details
	HCW-2021-011-003-DR-003	Road Markings & Ironworks
	HCW-2021-011-003-DR-004	Proposed Diversion Route
	HCW-2021-011-003-DR-005	Letter Drop Area
	HCW-2021-011-005-DR-002	Re-Surfacing Details

	Drawing No.	Title
011-005 A361 Vickers Roundabout	HCW-2021-011-005-DR-003	Road Markings & Ironworks
	HCW-2021-011-005-DR-004	Proposed Diversion Route
	HCW-2021-011-005-DR-005	Letter Drop Area
011-010 A4259 Queens Drive / Frobisher Drive	HCW-2021-011-010-DR-002	Re-Surfacing Details
	HCW-2021-011-010-DR-003	Road Markings & Ironworks
	HCW-2021-011-010-DR-004	Proposed Diversion Route
	HCW-2021-011-010-DR-005	Letter Drop Area
011-016 B4006 New Inn Roundabout (NON-COMMITTED SITE)	HCW-2021-011-016-DR-002	Re-Surfacing Details
	HCW-2021-011-016-DR-003	Road Markings & Ironworks
	HCW-2021-011-016-DR-004	Proposed Diversion Route
	HCW-2021-011-016-DR-005	Letter Drop Area
011-019 A346 South of C3 Junction	HCW-2021-011-019-DR-002	Re-Surfacing Details
	HCW-2021-011-019-DR-003	Road Markings & Ironworks
	HCW-2021-011-019-DR-004	Letter Drop Area

Standard Drawings Supplied

Drawing No.	Title
SBC-HCW-SD-05	Advanced Notification Signage
SBC/STD/500/01B	Gully Notes
SBC/STD/500/02A	PCC Gully and Outlet Details
SBC/STD/500/03	PCC Gully Connection Details
SBC-STD-700-06B	Pavement Tie-In & Other Details
SBC-HCW-SD-07	Pavement Joint Details
SBC-STD-700-03	Asphalt Footways & Cycleways
SBC-STD-1100-01	Kerbs, Channels & Edgings
SBC-HCW-SD-08	Composite Carriageway Joint Treatment

2. Queries

Any queries with regard to these drawings should be addressed to:-

Martin Roberts
Project Manager
Swindon Borough Council
Wat Tyler West 4th Floor
Beckhampton Street
Swindon
SN1 2JG
Email: mroberts@swindon.gov.uk

1. Use of Facilities

a) No temporary accommodation or equipment is required for the Employer.

b) Access to the Contractor's facilities (provided in accordance with Appendix 1/70) shall be made available to the Employer.

- **Working Drawings**
- The Contractors **tender submission** must include the following elements, when compiling this information, the Contractor shall reference the Appendix 1/17 requirements:

  a. **Outline** Traffic Management proposals, containing sufficient detail to permit an appraisal of the proposals practicality and safety

  b. **Outline** Construction Sequence proposals, containing sufficient detail to permit an appraisal of the proposals practicality and safety

- **Prior to commencing on sit**e working drawings, shall be submitted to the Project Manager detailing the following elements of the Works:

  a. Full details of the site compound layouts or positioning of a welfare units including traffic safety and management at the site access points.

  b. Detailed Traffic Management proposals

  c. Detailed Construction Sequence proposals

  d. Temporary works proposals if different from, or are not included in, the contract drawings.

  e. Support and protection proposals to utility apparatus if encountered

Series	Description of Work	Minimum Period for Submission of Drawing
100	Construction Sequence Proposals	2 weeks (before start of works)
100	Traffic Management Proposals	2 weeks (before implementation of traffic management) unless otherwise stated. Please refer to Appendix 1/17 for timescales for submission of orders

- **Health and Safety File**

  The Principal Contractor shall upon completion of the works provide the following information to the Project Manager for inclusion in the Health and Safety File:

  a) As-built drawings comprising of:

  - Layout details, with salient dimensions.
  - Chained layout plans showing extent of construction types, changes in materials etc.
  - Plans showing location and nature of utilities and services (recorded existing and new positions and depths).
  - Construction details.

  Drawings shall be prepared by the Principal Contractor and have their title block clearly marked 'as-built'.

  b) Photographic records; Pre-commencement, during the works & post completion.

c) Details of all materials and products used. A list of suppliers by name, address and material/product supplied. Where products are covered by COSHH Regulations, full details of the product or material specification shall be given.

d) Detailed laying records for materials used on site including but not limited to:

- Delivery tickets.
- Detailed location information, per load.
- Weather conditions.
- Material temperatures; on arrival, during laying & during rolling.
- Joint patterns.
- Level control (dip records); Pre-commencement, during the works & post completion.
- Information regarding any issues encountered.

e) Waste transfer tickets, for all arising's not reused on site.

f) Method statements.

g) Details of maintenance facilities, where applicable.

h) Maintenance procedures and schedules, where applicable.

The above list is not comprehensive and other information may be required. One hard copy, together with one computer copy of this information shall be provided by the Principal Contractor in sufficient time to allow the Project Manager to compile this into the Health and Safety File, as required for hand over to the Employer upon completion of the project or any intermediate phases. The Principal Contractor shall provide the above **no later than 6 weeks after Completion of the whole of the Works** and is expected to present the information in a clear, comprehensible and well organised format.

General Testing During the Main Works

1. Tests comparable to those specified in this Appendix in Table A1/5/1 will be necessary for any equivalent work, goods or materials proposed by the Contractor (see sub-Clause 105.4).

2. (N) indicates that a NAMAS test report or certificate is required.

3. Cube strength tests are not required for concrete complying with Clause 2602.

4. Unless otherwise shown in this Appendix tests for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.

5. Unless otherwise shown in this Appendix test certificates for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.

6. The testing scheduled in Table A1/5/1 shall be carried out by the Contractor who shall include in his prices for the cost of all tests and making all necessary arrangements with a NAMAS accredited testing laboratory, independent of the Contractor and any of his Sub-Contractors or Suppliers, and approved by the Project Manager.

7. The tests scheduled in Table A1/5/1 in this Appendix shall only apply to those works, goods or materials required under the Contract.

8. The Contractor shall supply to the Project Manager a copy of the test results within 24 hours of the completion of each test.

9. Where reference is made in the schedule to material requiring source approval, then such evidence to enable the source to be approved must be supplied to the Project Manager at least seven days before it is intended to incorporate such material into the Works.

Table A1/5/1

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500					
508	Gully gratings			Required in accordance with BS EN 124	Quality management and products certification schemes apply
Series 700					
705	Sub-base and base material beneath surface of a road or paved central reserve	Frost heave (N)	1 per source	Required 12 months	
710	Constituent materials in recycled aggregate and recycled concrete aggregate	Quality control	As required by the 'Quality Protocol for the production of aggregates from inert waste'		See NG 710.1 and NG 710.2
Series 800					
801, 803, 804, 805, 806	General requirements for unbound mixtures for adjacent to cement bound materials, concrete pavements, structures or products	Water-soluble sulphate (WS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes	Required	
		Oxidisable sulphides (OS) content and total potential sulphate (TPS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes		
	Unbound mixtures beneath surface of a road or paved central reserve	Frost heave (N)	1 per source		
		Grading and fines content	1 per week		
		Plastic index (N)			
		Resistance to fragmentation (N)	6 monthly		
		Resistance to wear - micro-Deval test	-		
		Resistance to freezing and thawing (magnesium sulphate soundness) (N)	1 per source		
		Water absorption (N)	As required		
		Volume stability of blast furnace slags	6 monthly		
		Volume stability of steel (BOF and EAF) slags	6 monthly		
		CBR (N)	1 per source and then monthly		
		OMC/mc (N)	As required		
		Density (N)	As required		
		Water absorption (N)	As required		
821, 822, 823, 830, 831, 832, 834, 835, 840	Cement and other Hydraulically Bound Mixtures (HBM)	Tests for control and checking of HBM	Tests specified in Table 8/14 and Table 8/15	Required	
		Coefficient of linear expansion	[As required]		
		Tests for laboratory mixture design	Test specified in Clause 880		

Clause	Works, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 900						
901 925 926	Aggregates for bituminous materials					
		Hardness	10% fines value (N)	1 per source	Required (3 months)	
			Impact value (N)	1 per source		
		Durability	Soundness (N)	1 per source	Required (12 months and when production technique changed)	
			Water absorption (N)	1 per source		
		Cleanness	Sieve test (mass passing 75 µm sieve) (N)	1 per source		
		Crushed rock gravel	Flakiness index (N)	1 per source		Washing and sieving method to be used
		Blast furnace slag	Bulk density (N)	1 per source		
			Stability (N)			
			Sulphur content (N)			
		Steel slag	Bulk density	1 per source		
		Coarse aggregate for surface courses	PSV (N)	1 per source	Required (3 months)	
			AAV (N)	1 per source		
	Binders for bituminous materials		Penetration (N)	1 per source		
			Softening point (N)	1 per source		
903 to 914,916 ,925,926,930,932 to 934	Bituminous mixtures		Grading(N)	1 per source		
			Binder Content			
911	Rolled asphalt surface course (design mix)		Stability value(N)	1 per source	Required (12 months and when production technique changed)	
			Flow value(N)			
			Density (N)			
			AAV (N)	1 per source	Required (3months)	
			Hot sand test (N)	1 per source		Not Required for coated chippings for surface dressing
			10% Fines value (N)	1 per source		
921	Surface texture		BS598:Part 105 (sand patch)	BS598 :Part 105		
927	Compacted bituminous material		Percentage refusal density test (N)	Clause 901.19. and BS 4987:2		
929	Base and binder Course Asphalt Concrete (Design Mixtures)		Permanent Works – In situ air void content (N)	As directed by suppliers guidance	Required	
			Permanent Works – Refusal air void content (N)			
			Permanent Works – Deformation Resistance			

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
		Deformation Resistance (design)	As directed by suppliers guidance	Required	
		Stiffness (design)			
942	Thin surface course systems	General properties		Required	The test certificate is in the form of a BBA HAPAS Certificate
943	Hot Rolled Asphalt surface course and binder course (performance related design mixtures)	Permanent Works - In situ air void content (N)		Required	
		Permanent Works - Deformation resistance			
		Deformation resistance (design)		Required	The test certificate is the CE Mark for the mixture
920	Bond coats, tack coats and other bituminous sprays				
	Binder	Product identification	1 per product per source	Required	Tests are expected to be repeated every two years
		Vialit cohesion	1 per product per source	Required	Tests are expected to be repeated every two years
		Accuracy of spread	1 for each binder and sprayer per month	Required	Not more than 6 weeks prior to start of work and one per month
		Rate of spread	1 per week		
		Penetration at 25oC and 5oC (N)	Every manufactured batch		Manufacturer's QA test results may be submitted
Series 1100					
1101	Precast concrete kerbs, channels, edgings and quadrants	Bending strength	Minimum of 8 per 1000 units of each product (BS EN 1340)	Required	
Series 1200					
1212	Road Markings	Tests specified in BS EN 1824			National quality management sector scheme applies. Procedures are given in BS EN 1824
	Glass Beads	Arsenic trioxide content, Lead content and Antimony content (N)	One per contract and/or per specific source of supply	Required	
	Pavement marking paints			Required (BS 6044)	Quality management and products certification schemes apply
Series 2600					

Clause	Works, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
2601	Bedding mortar materials			Required for each batch	Certification is accordance with Clause 2601 is required
	Bedding Mortar	Flow cone test	Each batch		† Laboratory tests
		Flow between glass plates			
		Compressive strength			
		Expansion test			
		Water absorption			
		Elastic stability	1 per source		
		Flow cone test Compressive strength	Each load		Site control tests
2602 2603	Ancillary concrete	Nature and source of each constituent material	1 per source	12 months or when production technique changes	Site control tests
		Mix design			
		Total acid soluble sulphates as SO^3			

All tests mentioned in Appendix 1/5 are to be carried out by the Contractor.

† indicates that the frequency of testing is given for general guidance and is only indicative of the frequency that may be appropriate (i.e. no frequency is given in the Specification for Highway Works or other reference documents). Where materials are known to be marginal or if initial test results show them to be such, the frequency of testing should be increased. Conversely where material properties are consistently in excess of specified minimum requirements or well below specified maximum limits, then the frequency of testing should be reduced.

(N) indicates that a UKAS (NAMAS) sampling and test report or certificate is required

Extent of the Site

1. The extents of the Sites shall be those areas as shown on the attached drawings listed in appendix 0/4 together with any areas necessary for the installation, maintenance and removal of traffic management systems and shall be limited to the public highway. No equipment, plant, machinery or materials will be allowed outside of this area unless expressly permitted in writing by the Project Manager or identified as working areas within the Contract Data Part Two of the Invitation to Tender. Any damage to buildings, trees, hedges or topsoil etc. resulting from non-compliance with this clause must be made good at the Contractor's expense.

2. The Contractor shall liaise with the Project Manager regarding the location of his site cabins, mess and stores. Where the Contractor proposes to locate these on third party land, he shall be responsible for all agreements, permissions, wayleaves, fees and reinstatement. The location of cabins, mess and stores shall not affect the operation of accesses, footways or interfere with visibility splays.

3. The Contractor shall obtain any planning permission or other authority, which may be required for the siting and erection of cabins, mess and stores, and shall comply with any regulations that may apply to them.

4. All materials and loose equipment associated with the works shall be securely stored or be removed from site at the end of each day's work. Any damage caused by vandals using site materials of any kind shall be made good at the Contractor's expense.

5. A record of the condition of existing surfaces features, planting etc. not affected by the permanent works within the working area shall be agreed jointly between the Project Manager and the Contractor both before and after the construction of the works. Any damage caused during the contract period, through whatever cause, will be made good at the Contractor's own expense.

Limitations on the Use of the Site

1. The sites shall only be used to carry out the work required under the Contract.

2. Road closures and traffic diversions during working hours have been provisionally pre-planned in accordance with the information provided within 'Section 5.1 – Works Information' of the associated Invitation To Tender and Appendix 1/17 of this specification; it is anticipated that where practicable or stated as required sites will be open to the public at the end of each working day, the Project Manager must be informed at the earliest opportunity if it is not practicable for a particular site to be open to the public at the end of any working day.

3. The general hours of operation shall be:

   - 08:00 to 18:00 - Monday to Friday (Unrestricted Hours) – Surfacing and Civils Works
   - 20:00 to 06:00 – Monday to Friday (Unrestricted Night Time Hours) – Selected Surfacing and Civils Works at sites identified in Appendix 1/17

   However, Appendix 1/17 contains specific working day restrictions for each site that must be fully accommodated within the contract.

   Working outside of these hours requires prior approval of the Project Manager and is subject to agreement and a minimum of 2 weeks advance notice.

4. Requests to work outside of normal permitted hours should be made by the Contractor as early as possible and identified within the construction programme.

5. The Contractor shall maintain emergency vehicle access and egress within the scheme extents at all times.

6. The Contractor shall maintain vehicle access and egress as far as is reasonably practicable to residents and businesses located within scheme extents at all times unless stated.

7. The Contractor shall maintain pedestrian access and egress to residential and business properties at all times unless stated.

8. The Contractor shall propose suitable physical segregation to be utilised between the working area and all adjacent pedestrian areas/footways. The Contractor shall propose additional control measures within the working area and segregation from the working area for all significant footpath/ cycletrack crossing points – refer to Appendix 1/17.

9. The Contractor shall take such steps as the Project Manager considers reasonable to protect the public, the occupants and the users of the adjoining premises and/or properties, from coming to any harm because of the works and to prevent debris, stockpiles, temporary works and the like from causing unnecessary inconvenience and becoming a nuisance. Control of noise and vibration shall be in accordance with Appendix 1/9.

10. The Contractor shall at his own expense, maintain all access facilities and cabin/storage areas in a clean and tidy condition. At any time when directed by the Project Manager, the Contractor shall remove all waste materials from site.

11. The burning on site of waste materials, including materials arising from site clearance, is prohibited.

12. All existing trees, shrubs and other natural features shall be fully safeguarded during the course of the works in accordance with BS 5837:2005 unless expressly noted on the Contract drawings listed in Appendix 0/4. No work shall commence on site until all trees, shrubs and features are suitably protected to the satisfaction of the Project Manager. No unauthorised access or placement of goods, fuels, or chemicals, soil or other materials shall take place inside the fenced area.

13. All existing open watercourses or other aquatic features and associated vegetation adjacent to the sites shall be retained unless otherwise approved in writing by the Project Manager and appropriately protected from physical or chemical disturbance or pollution prior to commencement for the works, excepting any approved maintenance or improvement works. Environment Agency's guide for Contractor's working at or near a watercourse should be adhered to.

14. The Contractor shall at his own expense ensure that all temporary access routes and site compound areas are fully reinstated upon Completion of the whole of the Works.

Noise

1. The Contractor shall consult the Project Manager with a view to obtaining informal agreement or formal consent under the Control of Pollution Action 1974 with particular reference to: the Control of Noise on Construction Sites (Part III, Sections 60 and 61); The Control of Noise Order 1975 (Statutory Instrument 1975 No2115); and BS 5228 Code of Practice for Noise Control on Construction and Open Sites. In regard to the proposed methods of working and to the steps proposed in order to minimise noise, the Contractor is reminded that, unless operating with the terms of a formal consent made under Section 61 of the above mentioned Act, the Local Authority have power vested in them under the Act to serve Notices specifying plant and machinery, hours of work and levels of noise.

2. The Contractor shall notify the Project Manager, at least one week prior to the *starting date*, of the name, address and telephone number of an employee who will be available to respond, outside of normal office hours, to complaints arising from alleged excessive noise emissions.

3. The normal working hours within the site shall be as detailed in Appendix 1/7. If the Contractor wishes to undertake work on Sundays or Bank Holidays or outside the normal daytime working hours he will require the agreement of the Project Manager and will undertake a liaison procedure detailed below.

   The Contractor shall deliver a letter to each resident or business affected by the works, giving details of the work to be carried out, the reason for working during these hours and the name and telephone number of a senior employee of the Contractor who can be contacted whilst the work is being carried out. A copy of the letter should be sent to the Project Manager, the Team Leader Environmental Enforcement (details below; including a list of all properties issued with it) and Project Manager at least 1 week prior to the works.

4. The Contractor shall achieve the lowest reasonably practicable noise levels by providing items of plant and equipment, which have been specifically designed and/or modified to reduce the noise of normal operations. All static plant shall be located and installed as to minimise nuisance to persons living or working in the vicinity of the works.

5. All compressors shall be 'noise reduced' models fitted with properly lined and sealed acoustic covers which shall be kept closed when the machines are in use, and all ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers.

6. All vehicles and mechanical plant used for the purpose of the Works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order so that extraneous noise shall be reduced to a minimum.

7. Machines in intermittent use shall be shut down in the intervening periods between works or throttled down to a minimum.

8. At the request of the Project Manager and before starting any operation, the Contractor shall submit the following information in accordance with a Section 61 Notice:

   a) A method statement and programme giving the type of plant and numbers of each type to be used for the operation.

   b) Details of any other plant engaged on operations affecting the noise level.

   c) Documentation from Manufacturers' literature establishing the sound power level of the plant.

9. The Contractor shall afford all reasonable facilities to enable the Project Manager to carry out such site investigations as they may deem to be necessary in order to determine noise emission levels.

10. Compliance with the requirements of the Appendix shall not relieve the Contractor of any obligations or liabilities under this Contract or under the Control of Pollution Act 1974, Environmental Protection Act 1990.

11. The Contractor shall expressly restrict all noisy operations until after 08:30am unless otherwise agreed with the Employer.

12. The local Authority contact for matters relating noise and vibration is

Damon Green
Team Leader
Environmental Enforcement
Swindon Borough Council,
Wat Tyler West,
Beckhampton Street,
Swindon,
SN1 2JH
Email: dgreen@swindon.gov.uk
Tel No: 01793 466102

General

1. The Contractor is ultimately responsible for the setting out of the works in accordance with the details provided, setting out will be undertaken jointly with a representative of Swindon Borough Council.
2. The existing site information is based on walkover surveys. Any dimensions provided on drawings are approximate and shall be checked on site by the Contractor.
3. The Contractor shall establish level control to maintain depths of surfacing, existing profiles and drainage paths prior to the commencement of the works.
4. The Contractor shall carry out a detailed location survey of the carriageway, footway, surface drainage, covers and road markings before commencement of the works. The method of level control must be agreed with the Project Manager and levels verified.
5. Levels shall be related to the local Ordnance Survey datum.
6. The results of this survey shall be forwarded to the Project Manager, and any differences from the layout drawings notified to the Project Manager in writing immediately.

PROGRAMME

1. The Contractor shall provide the programme in the form of an activity/time related bar chart produced as a result of a critical path analysis and abiding by the constraints detailed in the schedule below.

2. The programme shall show the level of detail required to sensibly to define the work required by the Contract taking account of constraints, special requirements and sections of the Works, each of which shall be given a short title.

3. All activities shall be numbered and annotated with earliest and latest event dates and those activities deemed to be on the critical path shall be highlighted.

4. To assist in notifying the public and businesses in advance of the works, the Employer will be uploading information onto the Employer's website and contacting residents/businesses. This information will be live and will be based on the Contractor's submitted programme and traffic management proposals.

   Information to be supplied to the Employer by the Contractor for uploading shall be in a tabulated format and shall include

   - Location of works
   - Start and end dates / working hours / duration
   - Traffic management layout and phases, access restrictions and diversion routes with diagrams where beneficial

   Where the Contractor anticipates that the programme and/or traffic management will change he shall notify the Project Manager at least 2 weeks in advance so that the publicity information can be updated.

SCHEDULE OF CONSTRAINTS

1. The specific constraints for which the Contractor must allow in his programme for this Contract are as follows:

   a) All works must be completed within **18 weeks** of the start date unless otherwise agreed in writing by the Project Manager, Refer to 'Table 1, Significant dates within the tender period' Of the Invitation To Tender
   b) Compliance with specific programme constraints as per table in Properties & Businesses Affected by the Works paragraph of this Appendix and Working Day/ Hour Restrictions for each site as detailed in Appendices 1/13 & 1/17.
   c) The tender evaluation and award process as defined in the Invitation To Tender
   d) Acceptance of the Construction Phase Plan. Refer to Appendices 1/7 and 1/17 for additional constraints.
   e) Acceptance of traffic management proposals and/or alterations related to the Construction Phase Plan.
   f) Acceptance of access proposals and the location of the Contractor's compound.
   g) Acceptance of the construction materials, method and sequence
   h) Acceptance of temporary works, including protection, support and dealing with Utilities
   i) Liaison with affected utility companies.
   j) Acceptance of the Site Waste Management Plan

2. Acceptance periods shall typically be the greater of four weeks or the *period for reply* for each of the above.

3. The Contractor shall be responsible for liaising with all the statutory undertakers and establishing the exact location of the existing apparatus affected by works prior to the commencement of the works. Refer to Appendix 1/16 for more details

METHOD STATEMENTS

The Contractor shall provide a Method Statement clearly outlining the proposed sequence of construction and shall include (but not be limited to) the following: -

i. Full detailed description of the work.
ii. Sequence of work and special considerations. Clear methodology, with appropriate sketches (in colour where beneficial), tables, charts, and narratives. Basic specifications to be included for materials and methods used. E.g. British Standards, Codes of Practice, etc.
iii. Complete list of activities and programme of works.
iv. Organisation chart with names, contact numbers, responsibilities and CVs where applicable. Competence certification of all personnel should be provided where applicable.
v. Hazard and risk assessments (and analysis where appropriate). It may be beneficial to show break points and a point of no return on the programme where the Project Manager may decide to stop works, extend possession or leave works unfinished.
vi. Risk assessments to apply to safety, programme, technical aspects and plant and equipment as well as work processes. Items identified as high risk may require further consideration or detail.
vii. Risk assessments to include activity, nature of risk, severity, likelihood of exposure, control measures and contingencies and the potential effectiveness of those measures.
viii. Potential effects of inclement weather or other variable conditions should be taken into account.
ix. Full details of any special plant operation. These should clearly indicate location, access, area covered by operation and safety measures, and documentation of any such plant must be checked carefully. Checking of any ancillary equipment must be detailed in the methodology.
x. Contingency arrangements and backup facilities for all stages.
xi. Full details and calculations for any temporary works.
xii. Effects of changing state of permanent works e.g. demolition.
xiii. Logistical issues e.g. access, hard standings, crane operation, spoil removal and effects of one operation on another.
xiv. Emergency and first aid arrangements where not included in the safety plan.
xv. Resourcing including ancillary issues such as temporary lighting and labour. Plant and tools should be detailed including spares, backup arrangements and test certificates.
xvi. Liaison with other Contractor's.
xvii. Testing and commissioning arrangements.
xviii. Handover arrangements where appropriate.
xix. Quality control procedures where these are not covered in the general documentation.
xx. Dealing with the public, third parties and stakeholders.
xxi. Additional site security arrangements.
xxii. Special personal protective equipment/measures.
xxiii. Details of advance preliminary works.
xxiv. List of key documents and drawings pertaining to the work.
xxv. Special information e.g. fabrication drawings.
xxvi. Special safety measures e.g. gas storage, site power supply.

Full details of briefing process for method statement at all stages.

PROPERTIES & BUSINESSES AFFECTED BY THE WORKS

1. Residential properties, local schools and businesses will be affected by the works. The following specific programme constraints must be incorporated within the contract/ programme.
2. The Contractor is required to provide advanced notification in the form of advanced signage and localised letter drops in the locations defined in the drawings listed in Appendix 0/4, in accordance with Appendix 1/21 and in accordance with SBC-HCW-SD-05 Advanced Notification Signage.

Street/ Location	Establishment Name	Programme Requirements
Addison Crescent	Stratton St. Margaret Parish Council Large play park	No specific programme requirements.
Bessemer Road East	Pat's Animal Walking & Pet Care Store St Mary's Catholic Primary School	No specific programme requirements.
Pipitdene	KL Driver Training AC K9 Dog Grooming	No specific programme requirements.
Church Place	Major Bus Route Faringdon Park Recreational Space St Mark's Church UTC Swindon Playsteps Nursery The Royal Wessex Yoemanry B Company, 7 Rifles	Bus diversion required for these works.
Faraday Road	Various – Industrial Estate	Night time road closure
A346 Marlborough Road – Plough Hill	- "Plough on the Hill" Public House	No specific programme requirements.
A346 Marlborough Road, New Road / C3 Junction	- Esso Petrol Filling Station - Three Trees Farm Shop - Absolute Motor Care	No specific programme requirements.
A361 Highworth Road – Redlands Area	- Shell Petrol Filling Station - Farm Shop - Highworth Golf Centre	No specific programme requirements.
A361 Vickers Roundabout	-South Marston Park (Industrial Estate)	No specific programme requirements.

A4259 Queens Drive – Frobisher Drive	-Texaco Petrol Filling Station - New College - Somerville Road shopping area	No specific programme requirements
B4006 Swindon Road / New Inn Roundabout (NON-COMMITTED SITE)	-"New Inn" Public House - "The Dockle Farmhouse" Public House - Greenbridge Retail Park	No specific programme requirements
A346 Marlborough Road, South of C3 Junction	- Esso Petrol Filling Station - Three Trees Farm Shop - Absolute Motor Care	No specific programme requirements

3. Working hours, restrictions on access to the sites and the highway are identified in Appendices 1/7, 1/9 and 1/17.

Works Affecting Properties & Businesses

4. Subject to paragraphs 1, 2 & 3 above, the following constraints shall apply as a minimum:

   a) Access to business properties shall be maintained during standard working hours or any extended opening hours that may apply to individual business. Out of hours deliveries and shift changes shall be accommodated.

   b) Access for emergency vehicles, refuse vehicles, postal deliveries, pedestrians and vehicles shall be maintained at all times. Agreement may be made with individual businesses to temporarily close accesses out of hours but this shall be the responsibility of the Contractor and subject to approval by the Employer.

   c) The Project Manager shall provide access to each site for Contractor in agreement with land owner/ owner / lessee etc., with a minimum of 4 weeks' notice unless agreed with the Employer.

   d) Security to site must be maintained to the same standard as the existing situation.

   e) The Contractor shall liaise with the Project Manager who will consult with each landowner / owner / lessee and the like directly regarding noticing and informing of works once the access has been granted by the Project Manager. This shall include as a minimum timescales (start and end dates), disruption, access arrangements, diversions, noise, working hours etc. This shall be a minimum of 4 weeks prior to start of the works / traffic management unless agreed with the Employer.

Other Properties & Businesses Affected by the Works

5. It is assumed that similar restrictions to those in paragraph 4 shall be applied to other areas affected by the works. The Employer will confirm their requirements.

Statutory Undertakers

It is the Contractor's responsibility to liaise with the Statutory Undertakers and for dealing with the marking on site, location, uncovering, protection and support, as necessary, of any services encountered during the works.

A copy of the statutory undertakers NRSWA C2 returns will be provided upon appointment. The Contractor shall make their own arrangements to locate all services on site in accordance with clause 116 of the Specification.

The Contractor shall fully comply with Guidance Note GS6 "avoidance of danger from overhead electric power lines" including provision of a Risk Assessment and Safe Working Method Statement prior to any construction works in the vicinity of any overhead cables and prior to the commencement of any works.

The Contractor is to scan for any unknown services and particular care is to be taken during excavation.

NB All service diversions / new supplies must be completed in phases to suit road works and traffic management

1. Prior to any excavation works the Contractor is to satisfy himself that there are no 'live' services within the area. The Contractor is to adopt a permit to dig system for all excavation operations as a minimum.
2. If during the execution of the work damage is, or is likely to be, caused to mains, services or adjacent structures, the Contractor shall inform the Project Manager of their proposals for avoidance or repair of such damage.
3. In any event all costs and programme implications of retaining or repairing existing public services shall be deemed to be borne by the Contractor under their insurance.
4. Details of existing services within the scheme extents are detailed within Section 7 – Site Information of the attached Invitation to Tender
5. Drawings supplied indicating utilities are for information purposes only and shall not be used for construction. A copy of the statutory undertakers NRSWA C2 returns will be provided upon appointment. The Contractor shall make their own arrangements to locate all services on site in accordance with clause 116 of the Specification.

Traffic Management Layout Requirements

1. The Contractor shall be ultimately responsible for the final design and implementation of all traffic management measures in accordance with Appendices 1/4, 1/17 and Clause 117 of the Specification.

2. As part of their tender submission, the Contractor must provide **Outline** Traffic Management proposals, containing sufficient detail to permit an appraisal of the proposals practicality and safety

3. The Employer/Project Manager has arranged in advance of this contract for the closure of the public highway in specific locations, as deemed required. Preliminary drawings and diversion plans utilised in order to provide advanced notification to the Swindon Borough Council Street Works Team for the application of a Temporary Traffic Regulation Order (TTRO) made under the Road Traffic Regulation Act 1984 can be found within Section 6 – Works Information of the Invitation To Tender.

4. The Contractor shall sign the works including all temporary diversions in accordance with Chapter 8 of the Traffic Signs Manual (2009) and the following Codes of Practice

   - SA 6/92: Introduction of 'Planning for Safety'.
   - Traffic Advisory Leaflet 1/95
   - Road Transport Industry training Board booklet – 'Reverse and Safety Signals for Guidance of Drivers'.

   The signs shall be maintained in a clean and visible condition at all times.

   Before any Traffic Management operations take place the Project manager shall liaise with the Emergency Services, Highway Authority, the Contractor and any affected parties to discuss and agree the Contractor's proposed Method Statement for the establishment of Traffic Management.

5. The Contractor shall submit their **detailed** traffic safety and management proposals to the Project Manager in accordance with the Invitation To Tender, and in accordance with Appendix 1/4. Minor traffic management changes should be submitted a minimum of 14 days before the date on which the traffic management system is to be changed. Where Drawings showing the traffic management layout are included in the Contract, the Contractor shall incorporate these requirements into their proposals for traffic safety and management together with any additional measures not covered by these drawings, unless the drawings have been provided for information purposes only.

   The traffic management drawings should include but not be limited to the following;

   - Position of any temporary traffic signals, including those used at pedestrian crossing.
   - Details of temporary pedestrian / cycle routes
   - Width of lanes
   - Working Areas
   - Safety zones
   - Location for emergency vehicles where required
   - Protection to open excavations
   - Site access and egress

6. The traffic management layouts should where required be designed to accommodate HGVs under single lane running.

7. The top of all covers, gratings and frames which lie within any temporary running surface shall:

   - Not lie below that running surface
   - Signs shall be erected stating 'Raised Ironwork'.

8. Ramps shall be provided at all changes in surface level to be used by traffic and pedestrians and shall be formed with a suitable bituminous material. The gradient at any point on any such ramp shall not be steeper than 1:12 in the direction of flow and not steeper than 1:20 at right angles to the direction of flow.

9. Suitable access to all private and commercial properties shall be maintained at all times for emergency vehicles, refuse collection, mail and parcel delivery, utility companies, visitors etc. Some sites may have a high percentage of elderly/young residents.

   Where there are open excavations outside properties, these shall be plated over (or similar method approved by the Project Manager) suitable to provide vehicular and pedestrian access unless being worked in. The plates shall be clean of mud, detritus and the like. They should be available to put down immediately if the need arises.

   At the end of each shift the trenches shall be covered to provide access points and areas outside of this secured to prevent unauthorised access.

10. The contractor shall notify residents and businesses of their intention to temporarily close their accesses at least 2 weeks in advance of the work and a reminder 48 hours before work starts. This shall be in the form of letter drop containing as a minimum

    - Start date and expected duration
    - details of the reason for the closure
    - access arrangements
    - contractors 24 hour contact details
    - bear company heading

    Letters shall be submitted to the Project Manager for approval at least 48 hours in advance of issue. An approved letter template can be provided.

11. Access through the site for emergency vehicles shall be maintained at all times

12. Details of the Contractors access proposals shall be included in the construction phase plan.

Temporary Traffic Regulation Orders & Traffic Management Applications

1. The Contractor shall request all temporary traffic regulation orders (TTROs) which he deems necessary to undertake the works, above and beyond the temporary traffic regulation orders that have already been applied for as described in this Appendix.

2. The Employer's notice requirements are outlined in the table below.

Arranging road closures	12 weeks
Amending or making traffic orders	8 – 12 weeks
Authorising non-prescribed signs	10 weeks
Authorising Traffic Management proposals	2 weeks
Authorising temporary traffic signals	2 weeks

3. The Employer requires the following information to be submitted (as a minimum) when applying for a TTRO:

   - Traffic Management Service provider accreditation
   - Clear and precise diversion plans showing diversion route and diversion signage
   - Public Liability documents (to be in date at time of closure)

- Fee payment or purchase order (cost approximately £1,330.00 + VAT for each order)
- Contact details with email address.

Where only partial information has been provided, the Council will advise that the application cannot proceed until all information required has been provided.

The full documentation shall be sent electronically to streetworks@swindon.gov.uk and copied to the Project Manager.

4. The Contractor is responsible for updating the Statutory Applications already completed by Swindon Borough Council – these are Section 54 Application Forms, Section 58 Application Forms, for each and every Carriageway Resurfacing site within the contract.

Responsibility for Traffic Safety and Management

1. The Contractor shall be responsible for overall Traffic Safety and management for any other Contractor's on site. The duties may be passed to the Traffic Management Sub-Contractor who shall provide and be responsible for all Traffic Safety and Management and associated work as described in clause 117 of Specification for Highway Works, and all aspects noted in this appendix, aside from individual scheme Information Signs.

2 The Traffic Management Provider/Contractor shall produce/reproduce preliminary layout drawings for all Traffic Management System proposals.

All drawings should be produced/reproduced and submitted by the Contractor to the Project Manager for discussion with the Emergency Services and Highways Authority. The preliminary layouts shall be produced/reproduced for each phase of the Traffic Management and shall detail the following:

All signing and coning with Chapter 8 (of the Traffic Signs Manual published by The Stationary Office) referencing

- Minimum lane widths
- Working areas
- Safety zones
- Site access and egress positions and referencing numbers
- Additional signing, over and above that included in the standard Chapter 8
- layouts, as appropriate for the works location
- Marker Post referencing where applicable
- Emergency Vehicles access

3. The final layout drawings for each phase of the works and necessary Method Statements and Risk Assessments in accordance with CDM Regulations and current Health and Safety legislation, shall be submitted to the Project Manager for acceptance. A period of 14 days shall be allowed for acceptance and approval of the drawings, Method Statements, Task Briefing Forms and Risk Assessments. Work on site shall not start until the final Traffic Management layout drawings and Method Statements have been accepted by the Project Manager.

4. The Contractor shall appoint a traffic safety officer and a suitable number of competent traffic safety marshals, who shall be permanently employed members of staff, to act independently of the surfacing operatives and to monitor and control the safety vehicle and pedestrian movements in the vicinity of the works.

5. The Traffic Safety and Control Officer (TSCO) and their deputy shall be experienced in the control of temporary traffic management operations and shall possess a National Highway Sector Scheme (NHSS) 12 Traffic Safety and Control Officer (2009) Registration Card.

6. The TSCO shall be appointed at least 2 weeks prior to commencement of the works. The sole duties of the appointed person shall be dedicated to the role of Traffic Safety and Control Officer. The Contractor will also appoint a Deputy TSCO and will undertake the responsibilities of the Traffic Safety and Control Officer when the latter is absent.

7. The TSCO or his deputy shall be on site at all times when Traffic Management is being installed, removed or modified. The name and telephone number (both on and off site) of the TSCO and his deputy shall be given to the Wiltshire Police Control Room, Overseeing Organisation and the Project Manager. Contact with the TSCO or his deputy shall be possible at all times.

8. The responsibilities of the TSCO shall include but not be limited to:

   a. Co-ordination, co-operation and agreement with the Traffic Management Provider, the Highways Authority, the Emergency Services and any other interested party in all matters relating to the Traffic Management.

   b. Ensuring Traffic Management operations are carried out in accordance with the approved layout drawings, method statements and risk assessments.

   c. Authorising the placement and removal of all Traffic Management equipment and supplying all records of all such alterations to the Contractor.

   d. Ensuring that contemporary written records are maintained of the placement, inspection and removal of all Traffic Management equipment placed in the highway at all times.

   e. Ensuring that the correct levels of resources are provided for the installation and maintenance of the Traffic Management measures prior to granting authorisation for the placement and removal of any Traffic Management.

   f. Immediately notifying the Emergency Services and Project Manager of any accidents or emergencies.

   g. Notification of any deterioration of safety precautions, safety zones and works access provisions to the Traffic Management provider and the Contractor, and supervising their rectification.

   h. Ensuring that the restrictions on the use of any emergency lane are followed and that the route is correctly laid out and signed.

   i. Submitting daily and by 08:00 am to the Project Manager details of Traffic Management issues or occurrence for the previous day/night.

   j. Ensuring all personnel directly or indirectly engaged on Traffic Management works on or near any highway wear approved high visibility reflective garments complying with BS EN 471.

Highways, Private Roads and Other Ways Affected by the Works

1. All public and private rights of way within the area of the Works and approaches to the Works shall remain open, unless otherwise described in Appendix 1/17, at all times unless prior agreement has been made with the Overseeing Organisation or in the case of a private right of way with the owner and occupier.

Location	Speed Limit (mph)	Carriageway Description	Av. Road Width	Proposed Traffic Control	Permitted Working Hours
001-003Callas Hill	30mph	Rural road	6.5m	Phased lane closures and multi-way traffic signals with road closures and traffic diversions	08:00 to 18:00 weekdays
003-001 Addison Crescent	30mph	Residential Jct. with Attlee Cres. & Spur Way	4.9m	Road closure with resident etc. access control	08:00 to 18:00 weekdays
003-002 Bessemer Road East	30mph	Residential cul-de-sac	6.5m	Road closure with resident etc. access control	08:00 to 18:00 weekdays
003-003 Carisbrook Terrace	30mph	Residential cul-de-sac	4.6m	Road closure with resident etc. access control	08:00 to 18:00 weekdays
003-004 Casson Road	30mph	Residential jct. with Chamberlain Rd & Bunce Rd.	5.8m	Road closure with resident etc. access control	08:00 to 18:00 weekdays
003-005 Cowleaze Crescent	30mph	Residential estate Jct. with Markham Pl.	5.1m	Road closure with resident etc. access control	08:00 to 18:00 weekdays
003-006 Elmswood Close	30mph	Residential estate road/ cul-de-sac	5.1m	Road closure with resident etc. access control	08:00 to 18:00 weekdays
003-007 Faraday Road	30mph	Industrial Estate	7.5m	Road closure with access only	20:00 to 06:00 weekdays
003-008 Grove Orchard	30mph	Residential estate road/ cul-de-sac	4.4m	Road closure with resident etc. access control	08:00 to 18:00 weekdays
003-009 Pinnocks Place	30mph	Residential estate road/ cul-de-sac	4.2m	Road closure with resident etc. access control	08:00 to 18:00 weekdays
003-010 Pipitdene	30mph	Residential estate road/ cul-de-sac	4.3m	Road closure with resident etc. access control	08:00 to 18:00 weekdays
003-013 Stapleton Close	30mph	Residential estate road/ cul-de-sac	5.6m	Road closure with resident etc. access control	08:00 to 18:00 weekdays
003-014 Church Place	30mph	Business commuters and Bus route	7.3m	Road closure with resident etc. access control. Bus Diversions will apply	08:00 to 18:00 weekdays
011-001 A346 Plough Hill	40mph	Primary Route	10.5m	Traffic Lights and Lane Closures	08:00 to 18:00 weekdays
011-002 A346 New Road to C3 Junction	40mph	Primary Route	9.0m	Traffic Lights and Lane Closures NB: Central Reservation Pedestrian Crossing present within works	08:00 to 18:00 weekdays
011-003 A361 Highworth Road, Redlands Area	40mph	Primary Route	Varies	Road closure with access only	20:00 to 06:00 weekdays

011-005 A361 Vickers Roundabout	40mph	Roundabout Circulatory Carriageway and Approaches	12.5m	Road closure with access only	20:00 to 06:00 weekdays
011-010 A4259 Queens Drive / Frobisher Drive	40mph	Primary Route	7.3m	Road closure with access only	20:00 to 06:00 weekdays
011-016 B4006 New Inn Roundabout (NON-COMMITTED SITE)	30mph	Primary Route	Varies	Road closure with access only	20:00 to 06:00 weekdays
011-019 A346 South of C3 Junction	60mph	Primary Route	8.0m	Traffic Lights and Lane Closures	08:00 to 18:00 weekdays

2. In addition to the proposed traffic control indicated in the table above the Contractor shall:

   a) Maintain pedestrian access and egress to residential and business properties at all times unless stated.
   b) Propose suitable physical segregation to be utilised between the working area and all adjacent pedestrian areas/footways during the works.

General Requirements

1. Before any Traffic Management operations take place, the Project Manager shall liaise with the Emergency Services, Stakeholders, the Contractor and any affected parties to discuss and agree the Contractor's proposed Method Statement for the establishment of the Traffic Management Systems and emergency procedures. Preliminary Traffic Management Drawings, Method Statements and emergency procedures shall be submitted 7 days in advance of the meeting to allow meaningful discussions to take place.

2. When the Traffic Management System is commissioned the Traffic Management Provider will remain wholly responsible for all maintenance of the Traffic Management System.

3. No works shall commence within the closed traffic lanes until the TSCO in liaison with the Contractor has approved the Traffic Management System.

4. When the Traffic Management System is installed in the carriageway, the Traffic Management Provider shall ensure that the cones, signs, barriers, lamps, temporary studs and markings (including any diversionary signs off site), are inspected at 2 hourly intervals during working hours. A 24 hour contact number shall be provided by the traffic management Contractor for call-outs as required to rectify traffic management issues.

5. The Traffic Management System shall be maintained in accordance with the requirements of Chapter 8 of the Traffic Signs Manual published by The Stationary Office. At least two personnel at any one time shall be responsible for carrying out Traffic Management inspections and maintenance, and shall be able to contact / be contactable by the TSCO at all times.

6. All standing plant, equipment and materials within closed off areas on the highway are protected and in positions so as to minimise restrictions on the passage of vehicles using the highway and so as not to inhibit sight lines for traffic.

7. Vehicles travelling within the works area shall observe a maximum speed limit of 15mph at all times and the Traffic Management Provider shall display prominent signs (which shall be removed when the road is reopened to traffic) to inform drivers of site vehicles and delivery vehicles of this restriction.

8. All Traffic Management operatives deployed on the network are to be qualified to the relevant standard and the requirements of the current Sector Scheme for Traffic Management.

9. No area of carriageway shall be opened to traffic until it has been cleared of all personnel, plant, items of equipment and materials, has been suction swept, and has been approved by the TSCO.

10. Only vehicles complying with the requirements of Chapter 8 shall be permitted within any works area.

Traffic Control and Signing

1. Additional Requirements to Chapter 8 of the Traffic Signs Manual 2009.

   The control of traffic and signing of the works shall, in addition to the requirements of Chapter 8 of the Traffic Signs Manual comply with the following:

   - When planning the traffic safety and management measures the Contractor shall include for either covering, blanking-out or attaching alternative messages to existing permanent traffic signs, within or on the approaches to the Works (up to the first advance roadworks sign) which conflict with the traffic safety and management proposals. These temporary alterations to permanent traffic signs shall, where the Overseeing Organisation gives its consent, be carried out by the Contractor in compliance with Clause 1209 at the appropriate time in accordance with his traffic safety and management. The method of covering the sign is subject to the consent of the Overseeing Organisation.
   - The Contractor shall be responsible for providing all necessary temporary road signs and maintaining them in a fit and adequate condition for the duration of the traffic management schemes. All temporary signs shall be covered up or removed immediately after the relevant temporary diversion and/or traffic management scheme is no longer being used.
   - No Sign or Sign frames shall be erected in the verge or splitter islands of any carriageway until the time they are required. No empty sign frames shall be erected at any time. All sign frames shall be found on level ground, and adequately secured and where possible, tied in position. When not in use all signs and sign frames shall be laid flat, and adequately secured and where possible placed behind safety fencing. Frame legs shall be pointed away from the direction of traffic.
   - When any part of the carriageway is opened to traffic on anything other than the final surface course or the existing surface course, signs to diagram 557 with a distance plate to diagram 570 (indicating the length of the temporary surface) of the Traffic Signs Regulations and General Directions 2002 shall be erected at the start of the material one on each side of the carriageway.
   - All signs used in connection with the traffic management shall be High Intensity Prismatic to BS EN 12899-1 Class Ref 2.
   - All traffic cones / cylinders and other forms of traffic control are to comply with BS EN 13422:2004.

Temporary Lighting

1. If night time working is in progress, or the working area is to be floodlit, the Contractor shall take all reasonable steps to avoid dazzle of the highway and to surrounding property.

2. Generators used to power lights shall comply with the noise and vibration requirements of Appendices 1/9 and 14/3.

Safety

1. Except when under the protection of cones and barriers, all site traffic must comply with the normal highway regulations. Site traffic may only enter or leave the working area using the designated entry or exit points.

2. Only essential vehicles shall be allowed to enter the Works. Any vehicle deemed by the Project Manager to be non-essential (especially private cars), and any vehicle not complying with the requirements shall not be permitted to remain within the Works. If necessary, the Contractor shall provide and maintain an area off site for the long term parking of his employees' and his Sub-Contractor's employees' private vehicles. The location of any parking area shall be subject to the Project Manager's prior approval. The Contractor shall arrange transport, if necessary, for his employees and his Sub-Contractor's employees between his parking area (wherever situated) and the Site.

3. The Contractor shall be responsible for the traffic safety and management and associated work as described in Clause 117.

4. Traffic Safety and Management shall be in accordance with the principles of the current editions of the following documents:

   - Chapter 8 of the Traffic Signs Manual
   - Safety at Street Works and Road Works – A Code of Practice
   - Any other relevant document concerning the management of traffic at road works.

5. Prior to the commencement of any works the Contractor shall inform the Project Manager of the proposed method of traffic management.

6. The Contractor shall demonstrate to the authorised officer that a designated member of staff working on the Contract has had relevant training in the implementation and maintenance of Traffic Safety and Management measures.

7. For the whole of the works a traffic safety and control officer shall be nominated by the Contractor whose responsibilities shall include:

   - monitoring the flow of traffic within the area of the works and making any necessary adjustments to improve flows including signal monitoring as defined in paragraph 2
   - monitor the signing of works during all operations.
   - recording and logging all incidents that effect the works including traffic accidents
   - reporting to the Project Manager any significant incidents.

8. The Contractor shall control the movement of works traffic in such a way as to avoid any traffic disruption and/or congestion. No works vehicles will be allowed to park and/or wait outside of the works area unless they do so in such a manner as to avoid traffic disruption and congestion. If works vehicles are to be parked outside of the working area, the Contractor should identify holding areas from which vehicles can be moved into the works in a safe and controlled manner.

9. The Contractor's attention is drawn to his responsibilities under the Highways Act 1980 with special regard to the deposition of mud and debris on the Highways. The Contractor shall take all necessary steps to ensure compliance with the Act and remove any mud and debris left on the Highway as a result of his works. The Contractor shall have available at all times during the works, on site road cleaning facilities to ensure compliance with this clause.

10. The Contractor shall ensure that his employees, his Sub-Contractors and suppliers and their employees are individually informed of and comply with the above requirements at all times.

11. During the hours of darkness no vehicle shall be driven on any closed section of carriageway against the flow of adjacent live traffic.

12. Vehicles shall not use hazard warning lights as an alternative to roof mounted flashing or rotating lamps, which shall be fitted to all site vehicles, when on or adjacent to a live carriageway.

Emergency Procedures

1. In the event of an accident occurring within any Traffic Management, the Police may direct operations including giving directions to drivers of any works vehicles. The Police may direct the Traffic Management provider to use Equipment to remove broken down or damaged vehicles and debris. Specialist Sub-Contractor's may be called in to deal with the removal of large vehicles or chemical spillages etc. In either event the Contractor shall be responsible for restoring the road surface to its original condition and reinstating any safety fencing or anchorages. The Contractor shall submit within 48 hours of any incident occurring, fully detailed and separate records of Equipment, materials and personnel used for the restoration and reinstatement and removal of vehicles and debris.

2. In an emergency, the Traffic Management provider may be required to remove all Traffic Management as directed by the Contractor.

Outstanding Works and Defects

1. Within 28 days of being informed by the Overseeing Organisation in writing of any repair amendment reconstruction rectification and making good of defects imperfections shrinkages or other faults the Contractor shall submit further traffic safety and management proposals for completion of these works for the Overseeing Organisation's consent. The proposals shall include a programme of intended dates for carrying out these works.

2. This programme shall take into account the Employer's normal maintenance activities and any major works within 10km of the Site. Any such activities and major works shall take precedence over any works in the maintenance period.

Highway reconstruction work being carried out in the vicinity

1. The Contractor's should monitor the Swindon Borough Council's website for other work/emergency work undertaken in the vicinity of their works to be considered when preparing phasing, traffic management, routes to site etc.

http://swindon.roadworks.org/

2. Events that should be taken into consideration when planning the works are:

None

3. Highway works in the vicinity – see Table below. Checks for completion of these works are to be made with www.swindon.gov.uk

None

Advance Signing of Road Closures

1. Advance Notification signing shall be in accordance with Appendix 1/21 - Information Boards

Temporary Diversions for Traffic

1. The scheme should be constructed so that diversions are kept to a minimum during the main works. The road closures and diversions which have been agreed by the Overseeing Organisation should be limited to those identified in Appendix 1/17.

2. The Contractor shall be responsible for each temporary diversion and must ensure that advanced warning signs are erected at least 14 days prior to the required diversion.

3. The Employer has submitted a Temporary Traffic Regulation Order for the temporary closure as in accordance with 1/17.

Temporary Diversions for Pedestrians and Cyclists

1. It is anticipated that no footpath closures will be required during the works. The Contractor is to fully comply with the requirements of Appendix 1/17 regarding pedestrian management and segregation, and diversion of pedestrians during the works.

Permitted Access Routes

1. Access to each of the Sites for construction traffic shall be via main routes wherever possible.

2. Access to the Sites for construction traffic shall be detailed in the Method Statements and be agreed by the Project Manager.

Advanced Information Signs

1. The Contractor shall prepare and erect the yellow advanced works notification boards on-site a minimum of 2 weeks before the works are due to start. For details of the notification boards refer to Drawing No SBC-HCW-SD-05 Advanced Notification Signage. The x-height used shall be suitable for use with the existing speed limit (Variable). Signs to erected on side road approaches to the works area.

2. The Contractor shall be responsible for preparation /amendment of sign schedules (including submission to the employer for approval), arrangement, manufacture, erection, maintenance and removal of the yellow advanced notification signs.

Emergency Contact Number

1. The Contractor shall display a 24 hour emergency contact number on site for use by the public in case of emergencies.

Communication

1. The Contractor shall contact local residents and businesses notifying them of roadworks in their vicinity at least 2 weeks in advance of the work and a minimum of 48 hours before work starts. This shall be in the form of letter drops containing as a minimum

    - Start date and expected duration
    - details of the reason for the closure
    - access arrangements
    - planned phasing with indicative drawing
    - Contractor's 24 hour contact details
    - bear company heading

    Letters shall be submitted to the Project Manager for approval at least 48 hours in advance of issue. An approved template can be issued at request.

General Requirements

1. The Contractor shall comply with the requirements set out for safe working in the Health and Safety at Work Act (1974) and the Control of Substances Hazardous to Health Regulations (1988).

2. The treatment of substances hazardous to health shall be in accordance with Clause 124 and the particular requirements of this Appendix.

4. The Additional requirements to prevent control and monitor exposure of members of the public to any substance hazardous to health used or generated in or about the Works are scheduled on the following pages.

4. The Additional requirements included for a particular substance shall only apply when that substance is required under the Contract.

5. The Contractor shall provide the Supervisor with a copy of his risk assessment created in relation to the use of the following substances, where applicable, and the detail of the measures to be taken to prevent or control the exposure of those working with the substances to acceptable levels.

6. Additionally, the Contractor shall specify his requirements to prevent, control of monitor exposure of operatives, staff and members of the public to these substances hazardous to health used or generated in or about the Works:

<u>Low Risk Substances</u>

(a) Bituminous Tapes.
(b) Sand.
(c) Natural Aggregates.
(d) Pulverised Fuel Ash.
(e) Blast Furnace Slag.
(f) Treated Timber.
(g) Dust from Cutting of Soft Woods.
(h) Dust from Cutting of Macadams/Asphalts.
(i) Water Based Admixtures.

<u>Moderate Risk Substances</u>

(a) Coated Roadstone (Macadams /HRS).
(b) Line Marking Paints.
(c) Phenolic Undercoats/Finishes.
(d) Alkyd Undercoats/Finishes.
(e) Acrylated rubber Primers/Undercoats/Finishes.
(f) Chlorinated rubber Primers/Undercoats/Finishes.
(g) Vinyl Primers/Undercoats/Finishes.
(h) Timber Primers/Finishes.
(i) Varnishes for Wood.
(j) Thermoplastic.
(k) Bitumen Joint Sealing Compounds, etc.
(l) Cement.
(m) Cementitious Mortars and Grouts.
(n) Concrete.
(o) Bituminous Waterproof Adhesive Membrane.

(p) Bitumen Cutback.
(q) Coal Tar Creosote.
(r) Dust from Cutting of Cement, Concrete, etc.
(s) Phenoxyalkanoic Acid Herbicides.
(t) Glyphosate Herbicides.
(u) Metallic Abrasive for Blasting.
(v) Solvent Based Concrete Curing Agents.

High Risk Substances

(a) Polyurethane Bridge Deck Waterproofing System.
(b) Polyurethane Primers/Undercoats/Finishes.
(c) Polyurethane Sealants.
(d) Epoxy Adhesives with Flammable Solvents.
(e) Epoxy Adhesives with Non Flammable Solvents.
(f) Epoxy Adhesives in Water Base.
(g) Epoxy Mortars.
(h) Epoxy Based Primers/Undercoats/Finishes.
(i) Polyuride Bridge Deck Waterproofing Membranes.
(j) Bituminous Primers and Coatings.
(k) Dust from Cutting of Hard Woods.
(l) Silicone Waterproofing Agent.
(m) U2 Hazardous Materials.

7. Diesel shall be stored in accordance with current Environment Agency regulations and to the satisfaction of the Supervisor.

1. The Contractor shall establish and operate a quality management system complying with BS EN ISO 9001 and Clause 104. The quality management system shall be described in a Quality Plan that shall be submitted to the Overseeing Organisation for acceptance prior to commencement onsite.

   The Quality Plan shall cover the following items:-

   a) Contractor's organisation and management;

   b) Contractor's method statements and construction procedures;

   c) Contractor's construction quality control;

   d) Supplier's Quality Plans.

2. The Contractor is required to submit his complete general quality plan to the Project Manager for acceptance within four weeks of the *starting date*, or at least two weeks before any permanent work commences, whichever is the sooner. This general quality plan must contain all details common to all types of work and be at least to the same standard or more stringent standard than that submitted with his Tender.

   Detailed quality plans for specific items of work must be submitted to the Project Manager for acceptance at least two weeks before that work is due to commence. The detailed quality plans must be of similar or more stringent standards than the typical quality plans submitted with the Contractor's Tender.

3. Method statements are required for the works and shall be submitted for assessment at least two weeks before any permanent work commences, once accepted they shall form part of the Quality Plan.

   Method statements are required for the following work items:

   a) Temporary works, including protection, support and dealing with Utilities if encountered;

   b) All Traffic Management and Phasing Plans;

   c) All Material deliveries;

   d) Planing and recycling of surfacing.

   The Contractor shall provide additional method statements for works items not listed in the Construction Phase Plan or Pre Construction Information as required, at the request of the Project Manager or their representative.

Quality plan and Method Statement for laying surfacing materials in adverse weather conditions

All Contractor's appointed by Swindon Borough Council to carry out surfacing works shall agree to conform to the conditions set out within this Quality Plan and Method Statement and the requirements of the relevant British Standards, The Specification for Highway Works and The Design Manual for Roads & Bridges

Laying surfacing during heavy rain or very low temperatures (which are particularly likely to be encountered during the winter months), at depths between 0 and 50mm, may result in poor compaction of the lower levels of the surfacing, weakening the material and shortening the life of the surface course.

In view of this it is intended for Swindon Borough Council to conform to the mandatory requirements laid down within the national specifications for highway works.

Notwithstanding the specified laying constraints for ceasing and proceeding with the surfacing works it is Swindon Borough Council policy to forward plan surfacing works to take into consideration, where possible, the conditions predicted by the weather forecast.

Advance warning of adverse weather conditions

1. 5 days in advance of the proposed surfacing works the surfacing Contractor will be alerted to any predicted inclement weather conditions likely to affect the works

2. 48 hours in advance of the proposed surfacing works the surfacing Contractor will be alerted to any predicted inclement weather conditions likely to affect the works

Dealing with adverse weather conditions

3. During the day preceding the surfacing works the predicted weather conditions will be regularly monitored by the Swindon Borough Council Supervisory Representative using information from the Finley Irvine Icelert and Meteorological Office web sites.

4. If the air temperature for the following day is predicted to be at, or below, 0°C for the whole of the day then the works will be cancelled

5. If the air temperature for the following day is predicted to rise to a temperature of 0°C by 10.00 am (and continue rising) then allow for the works to continue and for the temperature to be regularly monitored on site

6. If the air temperature for the following day is predicted to fall to a temperature of 0°C by 10.00 am (and continue falling) then the works will be cancelled

   (Note: The surfacing Contractor shall appoint a suitably competent representative to implement the conditions of this Method Statement on behalf of Swindon Borough Council, if requested).

Temporary Buildings & Facilities

1. Sanitary conveniences, rest rooms, canteen facilities etc. as required by the Health and Safety at Work Act (1974) and subsequent Regulations and Approved Codes of Practice shall be provided by the Contractor. The siting of all temporary buildings and sheds shall be within the area to be specifically agreed. Any further areas required will be the responsibility of the Contractor and is to be agreed with the Supervisor.

2. Sanitary and facilities shall be sited at a distance from the workforce no more than the maximum permitted under CDM Regulations – nominally 500m.

General

1. Advanced Notice of Substantial Road works under Section 54 and Part N (3 month minimum advanced notice) of the New Roads and Street Works Act 1991 has been issued to the Street Works Manager by the Project Manager.

2. The Project Manger shall submit formal Section 54 notices for each element of the scheme once the programme is agreed. These shall be submitted using the same reference numbers as those used for the Advanced Notices, which are to be provided by the Employer. The Contractor shall notify the Project Manager upon starting each section of the works and at the end of each section of works. Any extensions to Notices will need to be approved by the Project Manager and Swindon Borough Council Streetworks

2. The Contractor shall confirm start dates with Swindon Borough Council Streetworks for each section using references provided by the Project Manager under Section 55 and Part N of the New Roads and Street Works Act 1991.

3. Prior to carrying out any connections or works to existing sewers, the Contractor shall obtain Authorisation from Thames Water Utilities. A minimum of 10 working days' notice (or as otherwise agreed with Thames Water) is required before commencement of work.

Reinstatement of Openings in Highways

1. Reinstatement shall be carried out in accordance with the Specification for the Excavation and Reinstatement of Openings in Highways. The Contractor shall inform the Project Manager of his intentions to carry out any temporary or permanent reinstatement in order that the Project Manager may issue a Registration of Completion (Form R1) in accordance with the New Roads and Street Works Act 1991.

General Clearing

1. Elements within the individual schemes to be cleared are detailed on the attached drawings specified in Appendix 0/4

2. All materials arising from structural dismantling which are surplus to, or unacceptable for use in the Works and not included in Appendix 2/3 to be set aside for re-use shall become the property of the Contractor and shall be disposed of by him either off site, or if agreed by the Project Manager, on site in an approved manner. Materials and structural elements included in Appendix 2/3 to be set aside for re-use shall be carefully dismantled, and taken up or down, cleaned and retained for re-use, stacked, labelled and protected and any items damaged in this operation shall be replaced.

3. The Contractor shall ensure individual features and areas stated on the Drawings to be preserved / retained are suitably identified and protected. Should any items identified as being preserved / retained be damaged by the Contractor during the course of the Works, they shall be replaced in agreement with the Project Manager.

4. Materials included in Appendix 2/3 shall be carefully dismantled, taken up or taken down, cleaned and retained for re-use, stacked, labelled and protected or loaded, and transported to store as described in Appendix 2/3 and items damaged in this operation shall be replaced. All replacements shall be of equivalent quality to the original materials.

5. When required in Appendix 2/3, voids left by items that have been removed shall be backfilled immediately in accordance with appropriate clauses in Series 600.

6. All existing road markings and road studs on carriageways open to traffic shall be removed as soon as they become superfluous or a hazard to traffic and the carriageway reinstated in accordance with the requirements of Appendix 2/3. Road markings shall be removed in accordance with sub-Clause 1212.18.

7. The Contractor shall be responsible for all additional unacceptable material that has arisen from his method of working and for disposal off site.

8. The Contractor shall prepare a Site Waste Management Plan before commencing construction. The SWMP must include:

    - what kind of waste the site produces (with reference to the relevant European Waste Codes)
    - how the waste will be disposed of e.g. reuse, recycle, landfill
    - who the waste carrier is and their registration number
    - the address and environmental permit or exemption number of the site where waste is going

    The Site Waste Management Plan is a live document and shall be updated as construction progresses.

Drainage and Services

1. The Contractor, subject to any instructions or contrary directions in accordance with the Contract, shall take all measures required by any Statutory Undertaker, the management of other publicly owned services, or owners of privately owned services or supplies, for disconnection and proper sealing off of all redundant drains, services and supplies.

Requirements for Dealing with Hazardous Waste

Location	Item Description	Specific Requirements
Carriageway	Bituminous materials	Remove to licensed tip / recycle
Carriageway	TAR bound materials	Remove to licensed tip
Trial pits & general excavation	Bituminous surfacing materials	Remove to licensed tip / recycle
	Sand	Recycle
	Natural Aggregates	Recycle
Drainage	Silt	Remove to licensed tip

Dealing with Tar

1. Tar containing chemical contents above the acceptable threshold levels stated within the Chemicals Hazardous Information and Package for Supply (CHIP) classification have been detected within the flexible surfacing materials at the following locations:

    - Addison Crescent
    - Carisbrook Terrace
    - Carson Road
    - Cowleaze Crescent
    - Pinnocks Place
    - Pipitdene
    - A361 Redlands, Highworth
    - A361 Vickers Roundabout
    - A4259 Queens Drive / Frobisher Drive
    - A346 South of C3

2. Testing of pavement cores does not indicate tar bound material being present, however this does not rule out the presence of tar bound material within the site. The Contractor shall have a procedure in place for testing arising's and dealing with the presence of tar.

3. In the event of any such arisings, they shall be treated as hazardous waste (unless determined otherwise following further testing) and dealt with in accordance with the ADEPT Guidance Note – Managing Reclaimed Asphalt – Highways and Pavements and the Contractor shall supply a suitable Methodology Statement which shall include:

    - Safe removal of the material to a suitable temporary storage site
    - Further sample preparation, PAH analysis and assessment in accordance with the ADEPT Guidance Note and Appendix D of the WM2
    - Disposal of the material to a suitable licensed tip

4. The deliberate mixing of hazardous material containing tar with other material for the sole purpose of "dilution" in order to render the resultant mixture non-hazardous is not acceptable to the EA and contravenes Regulation 19 of the Hazardous Waste Regulation. However, some mixing and resultant contamination by tar bound planings with other materials is an inevitable part of the removal process and this is permissible.

5. Current threshold levels below which road materials can be used as unbound materials are as follows:

    All criteria must be met

    - The concentration of Benzo(a)pyrene is below 50ppm

- The concentration of all components of PAH17 is below 1000 ppm
- The concentration of phenol in the leachate of a liquid to solid ratio of 10 litres per kg is below 1mg.kg
- The eco-toxic limit for Benzo-anthracene does not exceed 25mg/kg

1. Details of chamber covers, gratings and frames [507.9] and details for special duty covers for use in carriageways [507.13]; requirements for minimum waterway area to gratings for catch pits [507.14]

   Gully grating and frames shall be as shown on and in accordance with standard detail TRD/7/100.

2. The classes and sizes of cast iron and steel gully gratings [508.4]

   Gratings shall be heavy duty Class D400 to BS EN 124. Gratings shall be Type R gratings in accordance with DMRB HA 102/00.

3. Requirements for gully gratings if different from the requirements of sub-Clause 508.5

   Not applicable.

4. Requirements for setting existing covers and gratings to level if different from the requirements of sub-Clauses 507.18 and 508.8

   Not applicable.

5. Requirements for the cleaning of chambers, gullies and drains [509.5]

   a) During progress of works all chambers and gullies shall be kept clean and free from obstruction. On completion of works all chambers, gullies and drains including surface water drains and filter drains shall be flushed from end to end with water and left free of obstructions, catch pit chambers shall be left clean and free from silt.

   b) All reasonable precautions to avoid contamination of water courses shall be taken when cleaning drains. Contamination shall include mud, soil and silt in addition to more obvious contaminants such as diesel fuel, oil or other chemicals.

   c) The location of any obstruction within the system which that cannot be cleared or removed shall be marked on the ground and reported to the Employer.

   d) Solids and liquids shall be removed from existing chambers and gullies so that no more than a 50mm depth of residual material remains in the base after cleaning.

   e) Where jetting is utilised, the following procedure should be followed:

      i. Jetting shall take from downstream, in an upstream direction, the pipe shall be plugged below the jetting point to prevent contaminants flowing into water courses, and the build-up of water shall be removed by suction.

      ii. If for any reason it is not possible to jet in an upstream direction, a chamber immediately below the jetting point shall be plugged to prevent contaminates flowing into water courses, and the build-up of water removed by suction.

   f) Where the invert of any piped drain is below the invert of an outfall ditch the bottom of the ditch shall be excavated to expose the invert of the pipe.

   g) All arisings from the cleaning operations shall be classified as Class U1 material.

   h) Any covers which are removed for cleaning operations shall be replaced and evenly bedded against existing adjacent surfaces.

1. Existing Pavement Construction

All roads are anticipated to be of flexible construction. There are a number of sites within traffic calmed areas or with specific safety features such as coloured surface coatings or speed cushions.

Coring works are currently being undertaken by Swindon Borough Council to confirm this and any required modifications to proposed planing and resurfacing depths. Core reports confirming the outcomes of investigation will be issued to the Contractor, either as an amendment during the Tender process, or to the preferred bidder in order to confirm any necessary changes to the works.

2. Proposed Pavement Construction

The locations and details of the pavement works are as shown on the associated drawings listed within Appendix 0/4.

Pavement Type P1 -	Remove existing material 35mm thick and replace with 10mm Thin surface course system - Cl 942, 35mm thick with a minimum PSV of 68.
Pavement Type P2 -	Remove existing material 35mm thick and replace with 10mm Thin surface course system - Cl 942, 35mm thick with a minimum PSV of 68. Type 1 high friction surfacing, hot applied to Cl 924, Buff in colour.
Pavement Type P3 –	Remove existing surface course and replace with AC 6 dense surf 100/150, 35mm thick to Cl 909 with a minimum PSV of 60.
Pavement Type P4 –	Remove existing surface course and replace with SMA 6 surf 40/60, 35mm – 60mm thick to Cl 909 with a minimum PSV of 60.
Pavement Type P5 -	Remove existing material 40mm thick and replace with 10mm Stone Mastic Asphalt PMB to EN 13108-5, 40mm thick with a minimum PSV of 68.
Pavement Type P6 -	Remove existing material 40mm thick and replace with 10mm Stone Mastic Asphalt PMB to EN 13108-5, 40mm thick with a minimum PSV of 68. Type 1 high friction surfacing, hot applied to Cl 924, Buff in colour.
Pavement Type P7 -	Remove existing material 50mm thick and replace with 10mm Stone Mastic Asphalt PMB to EN 13108-5, 50mm thick with a minimum PSV of 68.
Pavement Type P8 -	Remove existing material 50mm thick and replace with 10mm Stone Mastic Asphalt PMB to EN 13108-5, 50mm thick with a minimum PSV of 68. Type 1 high friction surfacing, hot applied to Cl 924, Buff in colour.
Pavement Type P9 -	Remove existing material 35mm thick and replace with 6mm Stone Mastic Asphalt PMB to EN 13108-5, 50mm thick with a minimum PSV of 60.
Pavement Type P10 -	Remove existing material 50mm thick and replace with HRA 55/10F surf 40/60, 50mm thick to Cl 911 with a minimum PSV of 65.
Pavement Type P11 –	A further 60mm to be removed after surface course and replaced with 20mm Stone Mastic Asphalt PMB Binder Course to EN 13108-5, 60mm thick (see following note).
Pavement Type P12 –	A further 70mm to be removed after surface course and replaced with 20mm Stone Mastic Asphalt PMB Binder Course to EN 13108-5, 70mm thick (see following note).
Pavement Type P13 –	A further 80mm to be removed after surface course and replaced with 20mm Stone Mastic Asphalt PMB Binder Course to EN 13108-5, 80mm thick (see following note).
Pavement Type P14 –	A further 90mm to be removed after surface course and replaced with 20mm Stone Mastic Asphalt PMB Binder Course to EN 13108-5, 90mm thick (see following note).

Pavement Type P15 – A further 60mm to be removed after surface course and replaced with AC 20 dense bin 100/150, 60mm thick to Cl 906 (see following note).

Pavement Type P16 – A further 60mm to be removed after surface course and replaced with AC 20 dense bin 40/60, 60mm thick to Cl 906 (see following note).

Pavement Type P17 – A further 60mm to be removed after surface course and replaced with AC 20 HDM bin 40/60 des, 60mm thick to Cl 929 (see following note).

Pavement Type P18 – A further 90mm to be removed after surface course and replaced with AC 32 dense base 40/60, 90mm thick to Cl 906 (see following note).

Pavement Type P19 – A further 100mm to be removed after surface course and replaced with AC 32 dense base 40/60, 100mm thick to Cl 906 (see following note).

Pavement Type P20 – A further 120mm to be removed after surface course and replaced with AC 32 dense base 40/60, 120mm thick to Cl 906 (see following note).

Pavement Type P21 – A further 180mm to be removed after surface course and replaced with AC 32 dense base 40/60, 180mm thick to Cl 906 (see following note).

Pavement Type P22 – Excavate carriageway 350mm and reinstate with Type 1 granular sub-base 350mm thick, CBR of 30% to be achieved on surface of Sub-Base (see following note).

Pavement Type P23 – Excavate carriageway and reinstate with dry lean mix concrete ST2, compacted with a roller (see following note).

Schedule 1: Permitted Pavement Options								
Drawing Ref.	**Location**	**General Requirements**	**Permitted Pavement Options**					
HCW-2021-001-003-DR-003	Callas Hill	Schedule 2, 3, 4 & 5	P1	P2	P17			
HCW-2021-003-001-DR-002	Addison Crescent	Schedule 2, 3, 4 & 5	P3	P15				
HCW-2021-003-002-DR-002	Bessemer Road East	Schedule 2, 3, 4 & 5	P4	P15				
HCW-2021-003-003-DR-002	Carisbrook Terrace	Schedule 2, 3, 4 & 5	P3	P15				
HCW-2021-003-004-DR-002	Casson Road	Schedule 2, 3, 4 & 5	P3	P15				
HCW-2021-003-005-DR-002	Cowleaze Crescent	Schedule 2, 3, 4 & 5	P9	P15				
HCW-2021-003-006-DR-002	Elmswood Close	Schedule 2, 3, 4 & 5	P3	P15				
HCW-2021-003-007-DR-002	Faraday Road	Schedule 2, 3, 4 & 5	P10	P17				

HCW-2021-003-008-DR-002	Grove Orchard	Schedule 2, 3, 4 & 5	P3	P15				
HCW-2021-003-009-DR-002	Pinnocks Place	Schedule 2, 3, 4 & 5	P3	P15				
HCW-2021-003-010-DR-002	Pipitdene	Schedule 2, 3, 4 & 5	P3	P15				
HCW-2021-003-013-DR-002	Stapleton Close	Schedule 2, 3, 4 & 5	P3	P15				
HCW-2021-003-014-DR-003	Church Place	Schedule 2, 3, 4 & 5	P7	P13				
HCW/2021/011/001/DR/002	A346 Plough Hill	Schedule 2, 3, 4 & 5	P7	P12	P19			
HCW/2021/011/002/DR/002	A346 New Road to C3	Schedule 2, 3, 4 & 5	P7	P14	P16	P18		
HCW/2021/011/003/DR/002	A361 Highworth Rd., Redlands	Schedule 2, 3, 4 & 5	P7	P16	P21	P22		
HCW/2021/011/005/DR/002	A361 Vickers Roundabout	Schedule 2, 3, 4 & 5	P5	P6	P16	P19		
HCW/2021/011/010/DR/002	A4259 Queens Drive / Frobisher Drive	Schedule 2, 3, 4 & 5	P5	P7	P8	P11	P12	P23
HCW/2021/011/016/DR/002 (NON-COMMITED SITE)	B4006 Swindon Road / New Inn Roundabout	Schedule 2, 3, 4 & 5	P7	P11	P19			
HCW/2021/011/019/DR/002	A346 South of C3 Junction	Schedule 2, 3, 4 & 5	P7	P16	P20			

Once the surface area is planed, the need for additional binder (described in Pavement Type P11 to P17 above) are to be assessed and agreed with a Swindon BC Supervisor. The Contractor will have arranged for the Provisional quantities of binder in the BoQ's for each site to be available for supply without delay, or subsequent cancellation without cost, depending on inspection outcome, and shall have adequately programmed for laying of such quantities.

The Contractor is required to record the location, layout, type and dimensions of all traffic calming features (speed cushions), surface coatings (high friction surfacing etc.) prior to breaking in to the existing carriageway surface in any form of excavation or cold milling.

Permitted Pavement Options – Schedule 1

- Pavement Type P1, P3, P4, P5, P7, P9 & P10– General Carriageway resurfacing area - surface course only.
- Pavement Type P2, P6 & P8 – General carriageway resurfacing area - surface course & high friction surfacing.
- Pavement Type P11, P12, P13, P14, P15, P16 & P17 – Carriageway resurfacing area – additional binder beneath pavement type P1 to P10 (see note in section 2 of this Appendix).
- Pavement Type P18, P19, P20 & P21 – Carriageway resurfacing area – additional base beneath pavement type P11 to P17 (see note in section 2 of this Appendix).
- Pavement Type P22– Carriageway reconstruction area – additional Type 1 beneath pavement type P18 to P20 (see note in section 2 of this Appendix).
- Pavement Type P23 – Carriageway reconstruction area – additional concrete beneath pavement type P18 to P20 (see note in section 2 of this Appendix).

3. General Requirements – Schedule 2

Schedule 2: General Requirements		
Grid for checking surface levels of pavement course	Longitudinal dimension	10.0m
	Transverse dimension	• Crown • Middle of lane • 300mm from channel
Surface regularity	Category of Road	A
	Interval for measurement of longitudinal regularity	Each wheel track
	Interval for measurement of transverse regularity	20m
Measurement of surface texture is not required in accordance with Clause 921.2		
Limestone is not permitted for use as a coarse aggregate in surface courses		

4. Permitted Construction Materials and thicknesses – Schedule 3

Pavement Layer	Material Ref.	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Surface Course (TSCS)	SC1	35	35								
Surface Course (AC 6)	SC2			35							
Surface Course (SMA 6)	SC3				35 - 60						
Surface Course (SMA 10 PMB)	SC4					40	40	50	50		
Surface Course (SMA 6 PMB)	SC5									35	
Surface Course (HRA)	SC6										50
High Friction Surfacing (Buff)	HFSB		10				10		10		

Pavement Layer	Material Ref.	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23
Binder Course (SMA PMB)	BC1	60	70	80	90									
Binder Course (DENSE)	BC2					60	60							
Binder Course (HDM)	BC3							60						
Base Course (DENSE)	BC4								90	100	120	180		
Type 1 (Type 1)	T1												350	
Concrete (ST2)	CON													Varies

5. General Requirements for Construction Materials – Schedule 4

Clause	Requirement
900 Series	All supplies of Asphalt materials shall be approved under Sector Scheme 14, "Quality Assurance of the Production of Asphalt Mixes". All asphalt materials shall be laid by a Contractor accredited to the "National Highways Sector Scheme 16 Laying of Asphalt Mixes". All Materials shall be in Accordance with MCHW. Material will be transported and laid in accordance with BS594987. All paving Grade Bitumen to be in accordance with BS EN 12591
901.3 and 942.5	In addition to the requirements of clauses 901.3 and 942.5 the coarse aggregate in all base and binder course materials shall be crushed rock. Blast furnace slag and steel slag are not permitted as course aggregate.
901.9	In addition to the requirements of Cl 901.9, temporary running surfaces shall have a minimum PSV of 55.
903.24	Sealant shall be applied to the top surface of all base and binder course joints.
903.25	Sealant shall be applied to any freestanding edge of the finished pavement
903.27	Minimum PSV of base or binder course material used as a temporary running surface shall be 50. Maximum duration of trafficking of temporary running surface shall be 48hrs.

6. Requirements for Construction Materials – Schedule 5

Material Ref.	Clause	Description	Grade of Binder	Requirement
SC1	942	10mm Thin Surface Course System	N/A	As Cl 942 Minimum PSV: 68 Max AAV: 16 Warranty: 5 years# **This material to be Warm Mix Asphalt**

Material Ref.	Clause	Description	Grade of Binder	Requirement
SC2	909	AC 6 dense surf 100/150	100/150 pen	AC 6 dense surf 100/150 to Cl 909, EN 13108-1 & BSI PD 6691 Annex B Min PSV = **60** Max AAV = **16** **This material to be Warm Mix Asphalt**
SC3		SMA 6 surf 40/60	40/60 pen	SMA 6 surf 40/60 to EN 13108-5 Min PSV = **60** Max AAV = **16** **This material to be Warm Mix Asphalt**
SC4	-	10mm Stone Mastic Asphalt (PMB) (Designed material to possess high levels of crack resistance (especially related to underlying movement and reflective cracking), high levels of durability, low air voids and waterproofing characteristics e.g. Ultilayer S10 PMB or similar approved)	PMB	Stone Mastic Asphalt to EN 13108-5 Nominal Size: **10mm** Elastomerically modified bitumen: **PMB 75/130-75.** Minimum binder content: **B_{min} 6,5** Air Void content of laboratory compacted samples (EN 12697-30 50 blows per side): **V_{min} 1,5; V_{max} 5,0** Resistance to permanent deformation (BS EN 12697 22:2003, small device procedure B, Test Temperature 60°C): **WTS AIR_{max} 1,00** Min PSV/AAV = **68+** **This material to be Warm Mix Asphalt**

Material Ref.	Clause	Description	Grade of Binder	Requirement
SC5	-	6mm Stone Mastic Asphalt (PMB) (Designed material to possess high levels of crack resistance (especially related to underlying movement and reflective cracking), high levels of durability, low air voids and waterproofing characteristics e.g. Ultilayer S6 PMB or similar approved)	PMB	Stone Mastic Asphalt to EN 13108-5 Nominal Size: **6mm** Elastomerically modified bitumen: **PMB 75/130-75.** Minimum binder content: **B_{min} 6,5** Air Void content of laboratory compacted samples (EN 12697-30 50 blows per side): **V_{min} 1,5; V_{max} 5,0** Resistance to permanent deformation (BS EN 12697 22:2003, small device procedure B, Test Temperature 60°C): **WTS AIR_{max} 1,00** Min PSV/AAV = **60** **This material to be Warm Mix Asphalt**
SC6	911	HRA 55/10 F surf des	40/60 pen	Mixture designation [911.1]: **HRA 55/10 surf** Coated chippings size, when required [911.3]: **N/A** Required declared PSV category for chippings [915.2]: **N/A** Required maximum AAV category for chippings [915.2]: **N/A** Whether surface macrotexture measurement is required [921.1]: **No** Interval and frequency of macrotexture measurements, if not 10 per 250m [921.2]: **N/A** **Initial texture depth, if not in accordance with Table 9/3** [921.2]: For unchipped mixtures, required declared PSV category for coarse aggregate [911.2]: **See Bills of quantities for individual site requirements** For unchipped mixtures, required maximum AAV category for coarse aggregate [911.2]: **See Bills of quantities for individual site requirements** Warranty: **5 years**
HFSB	924	High Friction Surfacing; Buff in Colour	N/A	Classification: Type1 Hot applied - thermoplastic rosin ester binder Declared PSV: 70+ Declared AAV: 12

Material Ref.	Clause	Description	Grade of Binder	Requirement
BC1	-	20mm Stone Mastic Asphalt PMB Binder Course (Designed material to possess high levels of crack resistance (especially related to underlying movement and reflective cracking), high levels of durability, low air voids and waterproofing characteristics e.g. Ultilayer 20 Binder Course or similar approved)	PMB	Stone Mastic Asphalt to EN 13108-5 Nominal Size: **20mm** Elastomerically modified bitumen: **PMB 75/130-75.** Minimum binder content: **B_{min} 5,5** Air Void content of laboratory compacted samples (EN 12697-30 50 blows per side): **V_{min} 1,5; V_{max} 5,0** Resistance to permanent deformation (BS EN 12697 22:2003, small device procedure B, Test Temperature 60°C): **WTS AIR_{max} 1,00** **This material to be Warm Mix Asphalt**
BC2	906	AC 20 dense bin 100/150 or 40/60	100/150 or 40/60 pen	AC20 dense bin 100/150 or 40/60 rec Sub Clauses 945.1 and 945.2 shall apply.
BC3	929	AC 20 HDM bin 40/60	40/60 pen	AC20 HDM bin 40/60 des Sub Clauses 945.1 and 945.2 shall apply.
BC4	906	AC 32 dense base 40/60	40/60 pen	AC20 dense base 40/60 rec Sub Clauses 945.1 and 945.2 shall apply.
Type 1	803	Type 1 Granular Sub-Base		
CON		ST2 dry lean mix concrete	N/A	ST2 dry lean mix concrete to be compacted with a roller.

Notes:

1. The Contractor shall take into consideration the requirements of IAN 157/11, time of year and working hours when selecting surfacing materials to be used.
2. The Contractor shall ensure that regulating materials are not laid in layers thinner than that specified in the British Standard.
3. Notwithstanding the tolerances permitted in surface levels of pavement courses, the cumulative tolerance shall not result in a reduction in thickness of the pavement, excluding the sub-base, by more than 15 mm from the specified thickness or a reduction in the thickness of the bituminous surface course by more than 5 mm from that specified. Where the pavement thickness, excluding sub-base, is less than 300mm the cumulative tolerance shall not result in a reduction in thickness, i.e. the pavement thickness specified will be the minimum laid.

4. The design shall incorporate between each asphaltic pavement layer a polymer modified bond coat to Clause 920 of the Specification, applied to the manufacturers' recommendations. Where the overlying layer is a thin surface course system the bond coat shall be appropriate to the requirements of the manufacturer of the system in question.
5. All bound surfaces shall be treated with a polymer modified bond coat prior to overlay. In accordance with SHW Clause 920.12, the Contractor shall submit evidence of the suitability of the proposed polymer modified bond coat to the Overseeing Organisation prior to the commencement of the work.
6. Pavement joint patterns shall be as per the appropriate DMRB and SHW standards. In any location where non-standard joints are required they shall be detailed on the appropriate SHW 700 pavement series drawing, after agreement between the Supervisor and the Contractor.
7. The Contractor shall ensure all documentations relevant to the work, including material certification, testing results and mixing data be made available for inspection.
8. The exact extents of the areas of repair, patching or regulating may be modified on site after joint inspection following the removal by planing of the surface course.
9. Immediately subsequent to any planing operation the Supervisor will inspect the exposed surface to determine any areas of additional planning required. Areas of additional planing shall be reinstated with surfacing material in accordance with Appendix 7/1 and as shown on the drawings.
10. It is recommended that any areas of debonded surfacing material (where the aggregate is no longer bound by the binder due to deterioration), not envisaged prior to works commencing, and encountered during the planing works, should be removed by further planing and resurfaced using either an extra thickness of surfacing course if appropriate, or with a suitable 6mm size regulating course material.

7. Modified Binder and Mixture Data Requirements - Schedule 7

The following data shall be provided for modified binders as required in sub-Clause 937.4, and for materials the subject of a Design in accordance with 911, 929, 930, and 943 in respect of the proposed binder [note: all these Clauses cover materials that shall be designed by the supplier].

The data shall not be more than 26 weeks old. A table in which the binder data may be recorded is given at the end of this section.

Binder Samples
Bituminous binders shall be sampled from the delivery according to BS EN 58. For modifiers blended with the other component materials of the mixture at the mixer a simulated binder shall be prepared. Such modifiers are generally less intimately mixed with the bitumen and less well dispersed throughout the mixture than when pre-blended. Evidence that the simulated binder offers the same performance as the binder produced when the modifier is added at the mixer shall be provided to the Supervisor.

Penetration
Binder penetration at 25°C (BS EN 1426), 100g 5secs and at 5°C 200g 60secs, before and after hardening in the Rolling Thin Film Oven Test in accordance with BS EN 12607-1, or alternatively after RTFOT and Ageing in accordance with Clause 955.

Product Identification Test and Rheological Properties
Results for the binder(s) proposed shall comprise rheological data for each binder in the form of complex shear (stiffness) modulus (G*) and phase angle (δ) determined in accordance with Clause 928 for binder as supplied, after RTFOT and Ageing in accordance with Clause 923.

Storage Stability Test

All binders shall be stored strictly in accordance with the manufacturer's instructions. Polymer modified binders claimed to remain homogeneous in storage without agitation shall be tested for storage stability in the manner described in Clause 958.The mean of the differences in softening point between the top and bottom samples, of not less than five pairs of such samples shall not exceed 5°C. Manufacturers of pre-blended modified binders shall state in writing what precautions shall be necessary to ensure that adequate homogeneity shall be maintained during storage.

Photomicrograph
A typical photomicrograph of the modified binder and binder suing ultra-violet or other technique to provide maximum contrast of the polymer structure to the binder before modification shall be supplied together with details of sample preparation techniques.

Cohesion
Vialit Pendulum cohesion test curve of the binder, in accordance with Clause 957 for the binder as supplied, after RTFOT and after RTFOT and Ageing in accordance with Clause 955.

FRAASS Brittle Point (IP 80)
FRAASS brittle point measured using BS EN 12593 shall be provided on the binder as supplied, after RTFOT and Ageing in accordance with Clause 955.

8. Mixture Data Requirements – Schedule 8

The following data should be provided to the Overseeing Organisation for materials designed in accordance with Clause 901.17 and Clause 929 in respect of the proposed mixture. For work carried out for the Highways Agency, a copy of the results should be handed to the Overseeing Organisation, to be forwarded to: Pavement Engineering Team at Highways Agency, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW.

I. Saturation Ageing Tensile Stiffness (SATS) ratio – as described in Clause 953

Manufacturer of Binder	**Product Name**		
Binder Type		Batch Reference	
Binder source			
Softening point difference in storage stability test			
Test	Supplied Binder	After RTFOT	After Ageing
Penetration at 25°C 0,1 mm (100g and 5secs)			
Penetration at 5°C 0,1 mm (200g and 60secs)			
Vialit pendulum cohesion See Clause 939 maximum peak value J/cm2	#	#	#
Fraass brittle point			
Other properties the Operating Company considers useful and/or necessary			

Where indicated with # there shall be a graphical output to this schedule.

APPENDIX 7/2: EXCAVATION, TRIMMING AND REINSTATEMENT OF EXISTING SURFACES

1. TREATMENT OF TRANSVERSE JOINTS AND CRACKS

a) The surface of the exposed concrete should be inspected to ensure surface of the concrete is in good structural condition. All surface multiple cracking, delamination and deterioration should be removed. Areas of additional pavement repair shall be agreed with the Overseeing Organisation.

b) Refer to drawing number SBC-HCW-SD-08 for Composite Carriageway Joint Treatments.

2. TREATMENT OF BITUMINOUS JOINTS

a) All joints must be prepared in accordance with BS 594987:2015 6.8 Sections 6.8.1, 6.8.2 & 6.8.3.

b) Placing and compaction of the asphalt concrete shall be in accordance with SHW Clause 903.

c) Joints in the carriageway surfacing layers shall be overlapped by 300mm.

Sheet 1: Information to be provided by the Overseeing Organisation.

1. All surfaces shall be treated with a polymer modified bond coat prior to overlay in accordance with Clauses 903, and Clause 920.
2. Bond coats for Clause 942 shall comply with approved certification.
3. Prior to application of the bond coat all surfaces shall be swept to remove loose material and standing water. Surface to be clean and dry
4. No masking of street furniture is required
5. The rate of spread for bond coats shall normally be 0.35kg/m2 of residual bitumen.

Sheet 2: Information to be provided by the Contractor

The Contractor shall provide the following information no less than two weeks prior to the commencement of the work:

1. The product or products he proposes to use together with their data sheets, product identification data, cohesivity data as specified and complete the following binder data sheet.
2. For each product, a copy of the BS EN ISO 9001 certificate showing the name of the manufacturer, the name of the certification body and the reference number and date of the certificate.
3. The spraying equipment proposed, and a test certificate.
4. The source or sources of blinding material proposed.
5. Contingency plans in the event of any breakdown.
6. The results of any other tests or other data the Contractor considers would assist the Project Manager in assessing the technical merit of the treatment such as:
   a) Tackiness test and/or trafficability time and methods of test.
   b) Breaking time test results for different weather conditions and substrates.
   c) Test results for bond to newly laid concrete [e.g. from a BBA/HAPAS certificate if available]. The data supplied should not be more than 6 months old.

BINDER DATA SHEET

Binder Data Sheet – Appendix 7/4	**Bond Coats, Tack Coats and Other Bituminous Sprays**	
Manufacturer of Binder :		Product name:
Binder type:		Batch no (if known):
Binder Grade (highlight as required) Conventional Intermediate Premium Non-tack Other		
Binder **Source** ➔ **Test** ↓	**Recovered Binder** Recovered in accordance with Clause 955	**Recovered Binder after Ageing Test** Ageing BBA/HAPAS HiPAT or extended Recovery Test (Clause 955)
Penetration at 25°C dmm (100g and 5 secs)		
Penetration at 5°C dmm (200g and 60 secs)		
Vialit pendulum cohesion see Clause 957 maximum peak value J/cm^2	The Contractor shall attach a Report and graphical output to this schedule as specified in Clause 957	The Contractor shall attach a Report and graphical output to this schedule as specified in Clause 957
Product identification test. The provision of data for identification and ageing is optional for unmodified bituminous emulsions to BS 434 and for bitumen and cut back bitumen to BS 3690. Complex shear (stiffness) modulus (G*) and phase angle (δ) data. See Clause 956.	The Contractor shall attach a Report and graphical output to this schedule as specified in Clause 956	The Contractor shall attach a Report and graphical output to this schedule as specified in Clause 956
Other properties the Contractor considers useful: Minimum Binder Content Binder temperature range for spray application Emulsion Properties and Viscosity Break time Breaking Agent type Weather limits – information from binder manufacturer: road or air temperatures; humidity; wind chill adjustment; tolerance of surface dampness; etc., Temperature max: Temperature min: Other:		

COLD MILLING (PLANING) OF BITUMINOUS BOUND FLEXIBLE PAVEMENT

1. Areas where cold milling is required are shown on drawing numbers specified in appendix 0/4.
2. Cold milling of bituminous bound flexible pavements shall be in accordance with Clause 709.
3. The transport and disposal of materials resulting from the milling operations from the site shall comply with the following:
   - Control of Pollution Act 1974
   - Control of Pollution Act (amendment) 1989
   - Environmental Protection Act 1990
   - Landfill Regulations 2003
4. Coring works are currently being undertaken by Swindon Borough Council to confirm any required modifications to proposed planing depths. Core reports confirming the outcomes of investigation will be issued to the Contractor, either as an amendment during the Tender process, or to the preferred bidder in order to confirm any necessary changes to the works.
5. The maximum time for any section of the work to remain in a planed or excavated state is:
   - to the depth of the proposed surfacing course – **48hrs**
   - to a depth greater than the underside of the surfacing course – **at the end of the working day**

General

1. A minimal amount of new kerbing has been allowed for as provisional items in the Bills of Quantities on a small number of sites. Any kerbs subsequently identified for renewal or realignment as part of the works will be jointly marked out on site during a joint pre-commencement site visit. Construction details to be in accordance with drawing no. SBC-HCW-SD-02 Kerb Details.

Kerbs

1. Precast concrete kerbs shall conform to BS 7263: Part 3: 2001 and BS EN 1340:2003.
2. Kerbs less than 12m radius are to be specifically made to the required radius. The use of short lengths of straight kerb to form radii **will not be permitted**.
3. There are no precast concrete kerbs, channels, edgings and quadrants to be bonded to the pavement surface. All precast concrete kerbs, channels, edgings and quadrants shall be freestanding and be laid and bedded in accordance with clause 1101.1. The thickness of the concrete bed and surround shall be not less than 150mm.
4. High containment kerbing systems shall have passed testing to BS EN 1317 (N1) Road Restraint Systems.
5. The surface level of units of kerb, channel, edging and quadrant shall not deviate from the design level +/- 5mm, nor shall the longitudinal surface regularity deviate more than 3mm in 3m when checked with a 3m straight edge. Horizontal alignment shall comply with Clause 702.

Footway Patching

Layer	Clause	Colour	Material	Thickness (mm)	Requirements
Surface Course	909	Black	6mm Dense Asphalt Concrete Surface Course	30	AC 6 dense surf 100/150 PSV 55. Surface Macrotexture is not required
Binder Course	906	-	Dense Binder Course Asphalt Concrete with Paving grade bitumen	80	AC 20 dense bin 100/150. BS EN 13108 part 1, PD 6691; Annex B
			Total Construction Thickness	110	

General

1. The Contractor is required to record the location, layout, type and dimensions of all road markings prior to breaking in to the existing carriageway surface in any form of excavation or cold milling.
2. Unless otherwise stated, permanent road markings shall be thermoplastic road marking material to sub-clause 1212.2(i) material in accordance with BS EN 1871:2000.
3. Road markings are to have the road performance as detailed in Clause 1212 and BS EN1436.

White Road Markings

Property	BSEN 1436:2007 Reference	Requirement	Value
Colour	Table 6	White	x,y coordinates given
Luminance	Table 2	Class B3	≥ 0,40
Skid Resistance	Table 7	Class S3	≥ 55
Retro-reflectivity	Table 3, Classes of RL for dry markings	Class R2	≥ 100

Retro-reflectivity	Table 4, Classes of R_L for road markings during wetness	Class RW3	≥ 50
Retro-reflectivity	Table 5, Classes of RL for road markings during rain	Class RR3	≥ 50

Yellow Road Markings

Property	BSEN 1436:2007 Reference	Requirement	Value
Colour	Table 6	Yellow	x,y coordinates given
Luminance	Table 2	Class B2	≥ 0,30
Skid Resistance	Table 7	Class S3	≥ 55
Retro-reflectivity	Table 3, Classes of RL for dry markings	Class R1	≥ 80

4. The width tolerances and thickness of white and yellow lines shall be in accordance with the Traffic Signs Regulations and General Directions 2002.
5. Unless otherwise stated, road markings shall not be laid more than 6mm thick.
6. Any temporary road markings proposed by the Contractor shall comply with BS EN 1790 and must be approved by the Overseeing Organisation before they can be applied.

7. Temporary covering of road markings shall be by means of temporary pre-fabricated road markings in accordance with Cl 1212. Black paint is not acceptable.
8. The Contractor shall take measures to prevent pollution of the drainage system by heavy metals such as arsenic from road marking beads.
9. It will not be permitted to install permanent road markings on the new surfacing to the original layout and remove them to install the new layout. Temporary road markings shall be approved as above

TRAFFIC LOOPS GENERAL

1. Inductive loop cable shall comply with TR 2029D "Inductive Loop Detector Cable". The minimum overall cable diameter defined in clause 5 of TOPAS 2029 shall be 1.5mm and shall not exceed 1.8 mm.
2. Any newly installed feeder cables shall comply with TR 2031E "Feeder Cable for Inductive Loop Detectors". The cable shall be sheathed in orange polyethylene, not grey as required by clause 5.10.1 of TR 2031E. Only 1 pair feeder cable will be permitted.
3. Detector pack settings are to be detailed on the installation report.
4. Working hours for slot cutting are to be agreed with the Site Manager prior to works commencing. No additional costs incurred for slot cutting operations outside of these times shall be sought by the Traffic Signal Contractor.
5. Slot cutting shall not be conducted if the air temperature falls below 2°C, as required by MCH 1540 issue F.
6. The location and layout of loops shall be in accordance with design drawings, any variation must be agreed with the SBC design engineer.
7. All adjacent loops are to be installed on the same detector pack.
8. The "Slot Cutting Measurement Certificate" shall be completed prior to site acceptance when it will be signed and handed to the Swindon Borough Council Traffic Signal Engineer.
9. Tests shall be carried out to record the insulation and series resistance of the components of each loop detector installation in accordance with paragraph 4.6.1 which shall be completed prior to site acceptance when it will be signed and handed to the Swindon Borough Council Traffic Signal Engineer.
10. All loops are to be jointed onto existing feeder cables, new loops to be commissioned with SBC traffic signal engineer to ensure correct loops has been jointed onto correct feeder cable and allow handover to the SBC maintenance contract.
11. All loops to be cut back to existing under kerb ducts, there are no carriageway loop boxes on Thamesdown Drive.

CABLING REQUIREMENTS

1. Feeder cables shall generally not exceed 200 metres in a single direction. Exceptionally this maximum length may be increased to 300 metres in accordance with MCH 1540 Issue F, provided specific authorisation from the Swindon Borough Council Traffic Signal Engineer is obtained. Where these limits would otherwise be exceeded, a detector Lucy pillar shall be installed at an intermediate location, to be agreed by the Swindon Borough Council Traffic Signal Engineer.
2. No feeder cable shall be jointed, except where it is connected to a detector loop.
3. No individual feeder cable shall be connected to more than one physical detector loop. Each loop shall be individually connected to a separate termination point. Where multiple loops are to share the same detector input, soft wire shall be used to connect each termination point to its associated detector channel.
4. Feeder cables shall be terminated in one or more heavy duty termination blocks. The termination block(s)

shall be securely and directly bolted to a fixed metal support. Light gauge stranded wire, twisted in pairs, and shall be used to connect from the heavy duty block to the detector back-plane.

5. Each feeder cable shall have a green "pull tight" label securely fixed to each end and in all associated chambers, with the identity of the loop(s) attached to the cable, as shown on the signal design drawing. This shall be clearly written on each label in indelible ink.

6. All loop detector joints shall be of a re-usable type. Chemical joints shall not be used.

WATER SUPPLY DURING SLOT CUTTING

1. A mains water supply will be used for cooling saw blades during slot cutting. The Traffic Signal Contractor shall be responsible for the gaining of permission from the appropriate water supply company for the extraction of water required for slot cutting purposes.

2. In order to minimise the possibility of damage to the mains or contamination of the water supply, the Traffic Signal Contractor shall supply and use a double non-return valve assembly on standpipe(s) when connected to a hydrant(s). The water company may stipulate that hoses must not be laid across a carriageway unless it is closed to traffic.

3. Where a hydrant is not available, or when a carriageway crossing is necessary, the Traffic Signal Contractor shall provide a water bowser. A water pump may be connected to the bowser's outlet to supply high pressure water to the slot cutting machine. With respect to permission for the extraction of water from a hydrant to the bowser and the type of standpipe required.

4. During slot cutting operations only highway drainage shall be used to dispose of contaminated water. Under no circumstances shall open drainage be used to dispose of contaminated water. Advice shall be sought from the Civil Contractor prior to any slot cutting operations.

SLOT CUTTING

1. The minimum dimensions for slot cutting in asphalt road surfaces shall be 10.0 mm wide by 3 times the cable diameter + 75mm in depth for the actual loop perimeter. On concrete road surfaces, the depths specified may be reduced to 30 mm.

2. Where the loop cable turns in the slot at an angle of less than 110°, the apex of the cSRNer shall be removed in accordance with Highway Construction Drawing G5.

3. All slots shall be made dry and free of debris before the loop cable is laid, and all efforts shall be made to keep the slots clean and dry before the back fill is complete.

BACK FILL

1. The back fill for the loop cable shall be a one part process, comprising of hot pour bitumen.

2. In the carriageway any excess back fill will be removed.

DETECTOR PERFORMANCE TEST

1. Each loop detector installation shall be checked by means of tests as detailed in section 5 of MCH 1540 F. All insulation measurements to be carried out at a test voltage of 1000 volts DC, for a duration of one minute. The results shall be recorded on a suitable Detector Performance Test Certificate supplied by the Traffic Signal Contractor.

JOINTING

1. All loops shall be cut into loop carriageway connection boxes as per Highway Construction Details Drawing G25. Approximately 500 mm of surplus loop cable and 500 mm of surplus feeder cable shall be left at the joint position in the roadside inspection chambers.
2. All joint connections shall be housed in I.P. 68 rated, re-enterable type joints and subjected to a 'Pull Test' of approximately 3 Kg.

1. The mixes below shall be supplied as standard mixes in accordance with the relevant clauses of BS 8500-1.

Element	Standardised Prescribed Mix	Equivalent Designated Concrete Reference
Blinding concrete	ST2	GEN1
Backing for kerbs	ST2	GEN1
Ducting backfill	ST2	GEN1
Bed, haunch and surround to drains	ST4	GEN3
Surround to chambers and gullies	ST4	GEN3

2. Identity testing of ancillary concrete is not required.