



Specification for Highway Works: Contract Specific Appendices

Prescot to Cronton Cycleway

Knowsley Metropolitan Borough Council

Project number: 60629784

Document number: 60629784-REP-30-PC-CT-0001

14 October 2020

Quality information

Prepared by	Checked by	Verified by	Approved by
Alex Leonard Engineer	Alexander Stewart Principal Engineer	N/A	Mark Windrow Associate Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position

Distribution List

# Hard Copies	PDF Required	Association / Company Name
0	1	R. Thorpe, M. Kaciubskyj / Knowsley Metropolitan Borough Council

Prepared for:

Richard Thorpe

Knowsley Council
Yorkon Buildings
Archway Road
Huyton
L36 9YU

Prepared by:

Alex Leonard
Engineer
T: 0151 331 8900
E: alex.leonard@aecom.com

AECOM Limited
Merchants Court (4th Floor),
2-12 Lord Street,
Liverpool, L2 1TS
T: +44 151 331 8900
aecom.com

© 2020 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

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 contract specific items:
 - (i) Appendix 0/1: Contract specific Additional, Substitute and Cancelled Clauses, Tables and Figures;
 - (ii) Appendix 0/2: Contract specific minor alterations to existing Clauses, Tables and Figures;
 - (iii) The contract specific Numbered Appendices listed in Appendix 0/3;
 - (iv) Appendix 0/5: Special National Alterations of the Overseeing Organisation of Scotland, Wales or Northern Ireland.
 - (v) 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 An Additional Clause as indicated by a suffix 'A' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. An Additional Clause as indicated by a suffix 'AR' in Appendix 0/1 is a contract specific alteration.
- 4 A Substitute Clause, as indicated by the suffix 'S' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. A Substitute Clause as indicated by a suffix 'SR' in Appendix 0/1 is a contract specific alteration.
- 5 A Cancelled Clause as indicated by a suffix 'C' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. A Cancelled Clause indicated by a suffix 'CR' in Appendix 0/1 is a contract specific alteration.
- 6 Insofar as any of the contract specific Numbered Appendices may conflict or be inconsistent with any provision of the Specification for Highway Works the Numbered Appendices shall always prevail. Additionally, Numbered Appendices 0/1 and 0/2 shall take precedence over Numbered Appendix 0/5.
- 7 Any reference in the Contract to a Clause number or contract specific Appendix shall be deemed to refer to the corresponding Substitute Clause number or contract specific Appendix listed in Appendix 0/1, 0/2 or 0/5.
- 8 Where a Clause is altered any original Table/Figure referred to in the 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.
- 9 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.
- 10 Any Appendix referred to in the Specification which is not used shall be deemed not to apply.
- 11 Where a Clause in the Specification is prefixed by an # this indicates that this particular Clause has a substitute National Alteration for one or more of the Overseeing Organisations of Scotland, Wales or Northern Ireland. Substitute or additional National Clauses shall be used within countries to which they specifically apply and they are deemed to replace corresponding Clauses in the main text of the Specification as appropriate. The substitute National Clauses are located at the end of the relevant Series together with the additional National Clauses of the Overseeing Organisations.
- 12 Other than where references to the Overseeing Organisation are made in the context of the Overseeing Organisation granting statutory or type approvals, the roles and functions of the Overseeing Organisation shall be undertaken by the Project Manager.

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.

- 13 If the Specification is used in conjunction with a Contract under which the Contractor is responsible for the design of any part of the Permanent Works, the delegation of the roles and functions of the Overseeing Organisation as stated in paragraph 12 above shall be further amended as follows:
- (i) If any agreement, consent or approval required to be obtained from the Overseeing Organisation impacts on the health and safety of the general public, the environment or any property or equipment not owned or operated by the Contractor, such agreement, consent, approval shall be obtained from the Employers Representative.
 - (ii) Where the Specification provides for the Overseeing Organisation to require a test, waive the requirement for a test or alter testing frequency, the party to whom the Overseeing Organisation's roles and functions have been ascribed by paragraph 12 above shall exercise such decisions in accordance with the Secretary of State's requirements stated in the Employers Requirements.
- 14 Where Standards and other documents are incorporated into the Contract by reference the respective edition used shall be that which is current on the Contract Reference Document Date unless otherwise stated in the Specification.

APPENDIX 0/1: CONTRACT SPECIFIC ADDITIONAL, SUBSTITUTE AND CANCELLED CLAUSES, TABLES AND FIGURES INCLUDED IN THE CONTRACT

PART A: VOLUME 1 SPECIFICATION

List of Additional Clauses, Tables and Figures

Clause No. (etc.)	Title	Written on Page No.
170 AR	Care of Public Highway	6
171 AR	Use of Site	6
172 AR	Abatement of Nuisance	7
570 AR	Raising and Lowering of Existing Covers and Gratings	7

List of Substitute Clauses, Tables and Figures

Clause No. (etc.)	Title	Written on Page No.
NONE		

List of Cancelled Clauses, Tables and Figures

Clause No. (etc.)	Title	Written on Page No.
NONE		

Additional Clauses, Tables and Figures

Clause 170 AR – Care of Public Highway

- 1 Subject and without prejudice to the conditions of contract, the Contractor shall:
 - (i) Take all reasonable measures necessary to avoid damage to the public highway;
 - (ii) Be responsible for all repairs necessary because of his failure to comply with Sub-clause (i) of this Clause and shall submit to the Employer for approval his proposed method of repair.
- 2 Sections of carriageway closed during the works shall be thoroughly cleaned before they are re-opened to traffic.

Clause 171 AR – Use of Site

- 1 The Contractor will be held responsible for maintaining the site and drains in a satisfactory condition until such time as he may complete the works. Should any of the drains become blocked by debris resulting from the works, they are to be cleaned at the Contractor's expense.
- 2 All roads which are being used by the Contractor's, Sub-Contractors' and suppliers' vehicles and plant shall be kept clean and free from debris, dirt or mud arising from or due to the carrying out of the works and the Contractor shall take all necessary precautions to prevent grit, diesel oil and other contaminants being spilt onto verges and embankments. Should there be an occurrence of such spillage, the Contractor shall take all necessary measures to make good the contaminated area immediately.
- 3 The Employer shall have the right to stop the works if, after consultation with the Police, it is considered that mud or other materials deposited by the Contractors' or suppliers' vehicles onto the carriageway is creating a hazard to passing traffic.
- 4 The Contractor shall take due care to avoid damage to traffic signs, lighting columns, street furniture, carriageway surfacing, footways and verges not affected by the works and shall not allow vehicles to run or stand on the footways and verges. Any damage caused by the Contractor shall be reinstated at his own expense to the satisfaction of the Employer.

- 5 No unnecessary parking of vehicles will be permitted within restricted areas of trafficked highways.
- 6 A safety zone of minimum width of 0.5m shall be maintained between the work area and that part of the carriageway open to traffic, and employees and plant should not enter these safety zones except for the maintenance of the traffic management system. Material stockpiles shall not encroach into the zone.
- 7 When in possession of any part of the highway as a Working Area, the Contractor shall allow for the use of the Working Area by vehicles in an emergency and shall render assistance when required to do so by the Employer or the Emergency Service of question.
- 8 The Contractor shall obtain the approval of the Employer for the siting of all huts, stockpiles, etc.
- 9 The Contractor shall be responsible for the watching and lighting of his plant, equipment, materials and works, and in particular, plant and stockpiles parked/deposited within the Working Areas.
- 10 The burning of waste and the tipping of debris or surplus materials on the site will not be permitted.

Clause 172 AR – Abatement of Nuisance

- 1 Subject and without prejudice to the conditions of contract the Contractor shall:
 - (i) Advise the Employer of the measures he proposes to take to minimise disturbance to the general public and to the owners and occupiers of property adjacent to the works;
 - (ii) Take measures to minimise airborne nuisance from fine material particles during construction of the works. Such measures may include:
 - (a) Dampening of surfaces at the source of each nuisance to prevent its formation;
 - (b) Protection of the surface by the placing of a protective layer of surface dressing to Clause 919 or bituminous spray to Clause 920;
 - (c) Provision of a protective layer of acceptable material which meets the requirements of Class 2A or 2B;
 - (iii) Ensure that existing highways used by him or any of his sub-Contractors or suppliers of materials or plant, and any new diversion ways which are part of the Works or in the vicinity of the Works are kept clear of soil, mud, dirt and other debris which emanate from the works.
 - (iv) Comply with or exceed the requirements of SHW Appendix 9/1.

Clause 173 AR – CE Marking and UKCA

- 1 Any reference to CE marking within the Specification for Highway Works or Appendices will apply to UKCA markings following the implementation of the UKCA marking by the UK government.
- 2 After the implementation of UKCA marking references the CE markings will only apply to CE markings so far as UK Government legislation allows it.
- 3 At the point where CE markings are no longer applicable to the UK market, products required to be CE marked will only be incorporated into the works if they are also UKCA marked.

Clause 570 AR – Raising and Lowering of Existing Covers and Gratings

- 1 Where finished levels are to be raised or lowered the Contractor shall include in his price and be responsible for raising or lowering of gully gratings and frames, and chamber and manhole covers and frames as required.
- 2 Adjustments to covers and gratings on existing chambers and gullies to suit the proposed levels shall be made by modifying the frame supporting structure using HD type Class B clay bricks conforming to BS EN 771-1 or pre-cast concrete seating rings, or by using a frame of a suitable depth.
- 3 Chamber tops and gully tops shall be bedded upon bedding material which is non-shrink, has a minimum workable life of 15 minutes, compressive strength exceeding 30N/mm² in 3 hours and tensile strength exceeding 5N/mm² in 3 hours. Bedding materials shall be laid strictly in accordance with manufacturers' recommendations. Materials manufactured for use in different temperature conditions shall be selected as appropriate to suit site conditions at the time of mixing and application. Thickness of materials shall be within the range stipulated by the manufacturer.

- 4 The use of packing materials within the bedding or to raise the finished levels of chamber tops and gully tops is not permitted.
- 5 No surround material, including pavement material, shall be placed in contact with a chamber top or a gully top until the bedding has achieved the minimum requirements for tensile and compressive strength after 3 hours.

PART B: VOLUME 2 NOTES FOR GUIDANCE ON THE SPECIFICATION FOR HIGHWAY WORKS

Additional Clauses, Tables and Figures

[NOT USED]

APPENDIX 0/3: LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION AND INCLUDED IN THE CONTRACT

Contract specific numbered appendices referred to in the Specification for Highway Works and Included in the Contract

Page No.	Completed by	Appx. No.	Title
Series 000			
6		0/1	Contract specific additional, substitute and cancelled clauses, tables and figures included in the contract.
10		0/3	List of Numbered Appendices referred to in the Specification and included in the Contract.
12		0/4	List of Drawings included in the Contract.
Series 100 – Preliminaries			
18		1/1	Temporary accommodation and equipment for the overseeing organisation
20		1/4	Working and fabrication drawings
21		1/5	Testing to be carried out by the contractor
26		1/7	Site Extent and limitation on use
27		1/9	Control of noise and vibration
29		1/12	Setting out existing ground levels
30		1/13	Programme of works
34		1/14	Payment Applications
35		1/16	Privately and publicly owned services and supplies
37		1/17	Traffic safety and management
40		1/19	Routing of vehicles
41		1/21	Information Boards
42		1/22	Progress photographs
42		1/23	Risk to health and safety
43		1/24	Quality management system
Series 200 – Site Clearance			
44		2/3	Retention of materials arising from site clearance
Series 400 – Road Restraint Systems (Vehicle and Pedestrian)			
45		4/1	Road Restraint Systems (Vehicle and Pedestrian)
Series 500 – Drainage and Service Ducts			
46		5/1	Drainage requirements
47		5/2	Service ducts requirements
48		5/6	Linear Drainage System
Series 600 – Earthworks			
49		6/1	Requirements for acceptability and testing of earthworks materials
49		6/2	Requirements for dealing with class U1B and U2 unacceptable materials

Page No.	Completed by	Appx. No.	Title
50		6/3	Requirements for excavation, deposition, compaction (other than dynamic compaction)
50		6/5	Geotextiles used to separate earthworks materials
50		6/8	Topsoiling
Series 700 – Carriageway Pavements (General)			
51		7/2	Excavation, trimming and reinstatement of existing surfaces
52		7/4	Bond coats, track coats and other bituminous sprays
Series 1100 – Kerbs, Footways and Paved Areas			
54		11/1	Kerbs, footways and paved areas
Series 1200 – Traffic Signs and Road Markings			
57		12/1	Traffic Signs: General
59		12/3	Road markings and studs

APPENDIX 0/4: LIST OF DRAWINGS INCLUDED IN THE CONTRACT

Contract Specific Drawings Supplied to Each Tenderer

Drawing No.	Title	Revision
60629784-SHT-00-PCP0-CT-0100	Scheme Location Plan (Sheet 1)	D1
60629784-SHT-00-PCP0-CT-0101	Scheme Location Plan (Sheet 2)	D1
60629784-SHT-30-PCP1-CT-0101	Phase 1 - General Arrangement (Sheet 1)	D2
60629784-SHT-30-PCP1-CT-0102	Phase 1 - General Arrangement (Sheet 2)	D2
60629784-SHT-30-PCP1-CT-0103	Phase 1 - General Arrangement (Sheet 3)	D2
60629784-SHT-30-PCP1-CT-0104	Phase 1 - General Arrangement (Sheet 4)	D2
60629784-SHT-30-PCP1-CT-0111	Phase 1 - Proposed Contours (Sheet 1)	D1
60629784-SHT-30-PCP1-CT-0112	Phase 1 - Proposed Contours (Sheet 2)	D1
60629784-SHT-30-PCP1-CT-0113	Phase 1 - Proposed Contours (Sheet 3)	D1
60629784-SHT-30-PCP1-CT-0114	Phase 1 - Proposed Contours (Sheet 4)	D2
60629784-SHT-30-PCP1-CT-0115	Phase 1 - Longsections and Cross Sections (Sheet 1)	D1
60629784-SHT-30-PCP1-CT-0116	Phase 1 - Longsections and Cross Sections (Sheet 2)	D2
60629784-SHT-30-PCP1-CT-0201	Phase 1 - Site Clearance and Excavations (Sheet 1)	D2
60629784-SHT-30-PCP1-CT-0202	Phase 1 - Site Clearance and Excavations (Sheet 2)	D2
60629784-SHT-30-PCP1-CT-0203	Phase 1 - Site Clearance and Excavations (Sheet 3)	D2
60629784-SHT-30-PCP1-CT-0204	Phase 1 - Site Clearance and Excavations (Sheet 4)	D2
60629784-SHT-30-PCP1-CT-0401	Phase 1 - Guardrail and Bollards (Sheet 1)	D2
60629784-SHT-30-PCP1-CT-0402	Phase 1 - Guardrail and Bollards (Sheet 2)	D2
60629784-SHT-30-PCP1-CT-0403	Phase 1 - Guardrail and Bollards (Sheet 3)	D2
60629784-SHT-30-PCP1-CT-0404	Phase 1 - Guardrail and Bollards (Sheet 4)	D2
60629784-SHT-30-PCP1-CT-1101	Phase 1 - Kerbs and Footways (Sheet 1)	D2
60629784-SHT-30-PCP1-CT-1102	Phase 1 - Kerbs and Footways (Sheet 2)	D2
60629784-SHT-30-PCP1-CT-1103	Phase 1 - Kerbs and Footways (Sheet 3)	D2
60629784-SHT-30-PCP1-CT-1104	Phase 1 - Kerbs and Footways (Sheet 4)	D2
60629784-SHT-30-PCP1-CT-1201	Phase 1 - Road Markings and Signs (Sheet 1)	D2
60629784-SHT-30-PCP1-CT-1202	Phase 1 - Road Markings and Signs (Sheet 2)	D2
60629784-SHT-30-PCP1-CT-1203	Phase 1 - Road Markings and Signs (Sheet 3)	D2
60629784-SHT-30-PCP1-CT-1204	Phase 1 - Road Markings and Signs (Sheet 4)	D2
60629784-SHT-30-PCP1-CT-1205	Phase 1 - Sign Schedule	D2
60629784-SHT-30-PCP1-CT-1206	Phase 1 - SSE Signage (Sheet 1)	D1
60629784-SHT-30-PCP1-CT-1207	Phase 1 - SSE Signage (Sheet 2)	D1
60629784-SHT-30-PCP1-CT-1208	Phase 1 - SSE Signage (Sheet 3)	D1
60629784-SHT-30-PCP1-CT-1209	Phase 1 - SSE Signage (Sheet 4)	D1

Drawing No.	Title	Revision
60629784-SHT-30-PCP2-CT-0101	Phase 2 - General Arrangement (Sheet 1)	D2
60629784-SHT-30-PCP2-CT-0102	Phase 2 - General Arrangement (Sheet 2)	D2
60629784-SHT-30-PCP2-CT-0103	Phase 2 - General Arrangement (Sheet 3)	D2
60629784-SHT-30-PCP2-CT-0111	Phase 2 - Proposed Contours (Sheet 1)	D2
60629784-SHT-30-PCP2-CT-0112	Phase 2 - Proposed Contours (Sheet 2)	D2
60629784-SHT-30-PCP2-CT-0113	Phase 2 - Proposed Contours (Sheet 3)	D2
60629784-SHT-30-PCP2-CT-0114	Phase 2 - Longsections and Cross Sections (Sheet 1)	D2
60629784-SHT-30-PCP2-CT-0115	Phase 2 - Longsections and Cross Sections (Sheet 2)	D2
60629784-SHT-30-PCP2-CT-0116	Phase 2 - Longsections and Cross Sections (Sheet 3)	D2
60629784-SHT-30-PCP2-CT-0117	Phase 2 - Longsections and Cross Sections (Sheet 4)	D2
60629784-SHT-30-PCP2-CT-0118	Phase 2 - Longsections and Cross Sections (Sheet 5)	D2
60629784-SHT-30-PCP2-CT-0201	Phase 2 - Site Clearance and Excavations (Sheet 1)	D2
60629784-SHT-30-PCP2-CT-0202	Phase 2 - Site Clearance and Excavations (Sheet 2)	D2
60629784-SHT-30-PCP2-CT-0203	Phase 2 - Site Clearance and Excavations (Sheet 3)	D2
60629784-SHT-30-PCP2-CT-0401	Phase 2 - Guardrail and Bollards (Sheet 1)	D2
60629784-SHT-30-PCP2-CT-0402	Phase 2 - Guardrail and Bollards (Sheet 2)	D2
60629784-SHT-30-PCP2-CT-0403	Phase 2 - Guardrail and Bollards (Sheet 3)	D2
60629784-SHT-30-PCP2-CT-1101	Phase 2 - Kerbs and Footways (Sheet 1)	D2
60629784-SHT-30-PCP2-CT-1102	Phase 2 - Kerbs and Footways (Sheet 2)	D2
60629784-SHT-30-PCP2-CT-1103	Phase 2 - Kerbs and Footways (Sheet 3)	D2
60629784-SHT-30-PCP2-CT-1201	Phase 2 - Road Markings and Signs (Sheet 1)	D2
60629784-SHT-30-PCP2-CT-1202	Phase 2 - Road Markings and Signs (Sheet 2)	D2
60629784-SHT-30-PCP2-CT-1203	Phase 2 - Road Markings and Signs (Sheet 3)	D2
60629784-SHT-30-PCP2-CT-1204	Phase 2 - Sign Schedule	D2
60629784-SHT-30-PCP2-CT-1205	Phase 2 - SSE Signage (Sheet 1)	D1
60629784-SHT-30-PCP2-CT-1206	Phase 2 - SSE Signage (Sheet 2)	D1
60629784-SHT-30-PCP2-CT-1207	Phase 2 - SSE Signage (Sheet 3)	D1
60629784-SHT-30-PCP6-CT-0101	Phase 6 - General Arrangement (Sheet 1)	D2
60629784-SHT-30-PCP6-CT-0102	Phase 6 - General Arrangement (Sheet 2)	D2
60629784-SHT-30-PCP6-CT-0103	Phase 6 - General Arrangement (Sheet 3)	D2
60629784-SHT-30-PCP6-CT-0104	Phase 6 - General Arrangement (Sheet 4)	D2
60629784-SHT-30-PCP6-CT-0105	Phase 6 - General Arrangement (Sheet 5)	D2
60629784-SHT-30-PCP6-CT-0106	Phase 6 - General Arrangement (Sheet 6)	D2

Drawing No.	Title	Revision
60629784-SHT-30-PCP6-CT-0107	Phase 6 - General Arrangement (Sheet 7)	D2
60629784-SHT-30-PCP6-CT-0108	Phase 6 - General Arrangement (Sheet 8)	D2
60629784-SHT-30-PCP6-CT-0109	Phase 6 - General Arrangement (Sheet 9)	D2
60629784-SHT-30-PCP6-CT-0110	Phase 6 - General Arrangement (Sheet 10)	D2
60629784-SHT-30-PCP6-CT-0111	Phase 6 - Proposed Contours (Sheet 1)	D1
60629784-SHT-30-PCP6-CT-0112	Phase 6 - Proposed Contours (Sheet 2)	D1
60629784-SHT-30-PCP6-CT-0113	Phase 6 - Proposed Contours (Sheet 3)	D1
60629784-SHT-30-PCP6-CT-0114	Phase 6 - Proposed Contours (Sheet 4)	D1
60629784-SHT-30-PCP6-CT-0115	Phase 6 - Proposed Contours (Sheet 5)	D1
60629784-SHT-30-PCP6-CT-0116	Phase 6 - Proposed Contours (Sheet 6)	D1
60629784-SHT-30-PCP6-CT-0117	Phase 6 - Proposed Contours (Sheet 7)	D1
60629784-SHT-30-PCP6-CT-0118	Phase 6 - Proposed Contours (Sheet 8)	D1
60629784-SHT-30-PCP6-CT-0119	Phase 6 - Proposed Contours (Sheet 9)	D1
60629784-SHT-30-PCP6-CT-0120	Phase 6 - Proposed Contours (Sheet 10)	D1
60629784-SHT-30-PCP6-CT-0121	Phase 6 - Longsections and Cross Sections (Sheet 1)	D1
60629784-SHT-30-PCP6-CT-0201	Phase 6 - Site Clearance and Excavations (Sheet 1)	D2
60629784-SHT-30-PCP6-CT-0202	Phase 6 - Site Clearance and Excavations (Sheet 2)	D2
60629784-SHT-30-PCP6-CT-0203	Phase 6 - Site Clearance and Excavations (Sheet 3)	D2
60629784-SHT-30-PCP6-CT-0204	Phase 6 - Site Clearance and Excavations (Sheet 4)	D2
60629784-SHT-30-PCP6-CT-0205	Phase 6 - Site Clearance and Excavations (Sheet 5)	D2
60629784-SHT-30-PCP6-CT-0206	Phase 6 - Site Clearance and Excavations (Sheet 6)	D2
60629784-SHT-30-PCP6-CT-0207	Phase 6 - Site Clearance and Excavations (Sheet 7)	D2
60629784-SHT-30-PCP6-CT-0208	Phase 6 - Site Clearance and Excavations (Sheet 8)	D2
60629784-SHT-30-PCP6-CT-0209	Phase 6 - Site Clearance and Excavations (Sheet 9)	D2
60629784-SHT-30-PCP6-CT-0210	Phase 6 - Site Clearance and Excavations (Sheet 10)	D2
60629784-SHT-30-PCP6-CT-0401	Phase 6 - Guardrail and Bollards (Sheet 1)	D2
60629784-SHT-30-PCP6-CT-0402	Phase 6 - Guardrail and Bollards (Sheet 2)	D1
60629784-SHT-30-PCP6-CT-0403	Phase 6 - Guardrail and Bollards (Sheet 3)	D1
60629784-SHT-30-PCP6-CT-0404	Phase 6 - Guardrail and Bollards (Sheet 4)	D1
60629784-SHT-30-PCP6-CT-0405	Phase 6 - Guardrail and Bollards (Sheet 5)	D1
60629784-SHT-30-PCP6-CT-0406	Phase 6 - Guardrail and Bollards (Sheet 6)	D1
60629784-SHT-30-PCP6-CT-0407	Phase 6 - Guardrail and Bollards (Sheet 7)	D1
60629784-SHT-30-PCP6-CT-0408	Phase 6 - Guardrail and Bollards (Sheet 8)	D1
60629784-SHT-30-PCP6-CT-0409	Phase 6 - Guardrail and Bollards (Sheet 9)	D1
60629784-SHT-30-PCP6-CT-0410	Phase 6 - Guardrail and Bollards (Sheet 10)	D1
60629784-SHT-30-PCP6-CT-0501	Phase 6 - Proposed Drainage (Sheet 1)	D2

Drawing No.	Title	Revision
60629784-SHT-30-PCP6-CT-0502	Phase 6 - Proposed Drainage (Sheet 2)	D2
60629784-SHT-30-PCP6-CT-0503	Phase 6 - Proposed Drainage (Sheet 3)	D2
60629784-SHT-30-PCP6-CT-0504	Phase 6 - Proposed Drainage (Sheet 4)	D2
60629784-SHT-30-PCP6-CT-0505	Phase 6 - Proposed Drainage (Sheet 5)	D2
60629784-SHT-30-PCP6-CT-0506	Phase 6 - Proposed Drainage (Sheet 6)	D2
60629784-SHT-30-PCP6-CT-0507	Phase 6 - Proposed Drainage (Sheet 7)	D2
60629784-SHT-30-PCP6-CT-0508	Phase 6 - Proposed Drainage (Sheet 8)	D2
60629784-SHT-30-PCP6-CT-0509	Phase 6 - Proposed Drainage (Sheet 9)	D2
60629784-SHT-30-PCP6-CT-0510	Phase 6 - Proposed Drainage (Sheet 10)	D2
60629784-SHT-30-PCP6-CT-1101	Phase 6 - Kerbs and Footways (Sheet 1)	D2
60629784-SHT-30-PCP6-CT-1102	Phase 6 - Kerbs and Footways (Sheet 2)	D2
60629784-SHT-30-PCP6-CT-1103	Phase 6 - Kerbs and Footways (Sheet 3)	D2
60629784-SHT-30-PCP6-CT-1104	Phase 6 - Kerbs and Footways (Sheet 4)	D2
60629784-SHT-30-PCP6-CT-1105	Phase 6 - Kerbs and Footways (Sheet 5)	D2
60629784-SHT-30-PCP6-CT-1106	Phase 6 - Kerbs and Footways (Sheet 6)	D2
60629784-SHT-30-PCP6-CT-1107	Phase 6 - Kerbs and Footways (Sheet 7)	D2
60629784-SHT-30-PCP6-CT-1108	Phase 6 - Kerbs and Footways (Sheet 8)	D2
60629784-SHT-30-PCP6-CT-1109	Phase 6 - Kerbs and Footways (Sheet 9)	D2
60629784-SHT-30-PCP6-CT-1110	Phase 6 - Kerbs and Footways (Sheet 10)	D2
60629784-SHT-30-PCP6-CT-1201	Phase 6 - Road Markings and Signs (Sheet 1)	D2
60629784-SHT-30-PCP6-CT-1202	Phase 6 - Road Markings and Signs (Sheet 2)	D2
60629784-SHT-30-PCP6-CT-1203	Phase 6 - Road Markings and Signs (Sheet 3)	D2
60629784-SHT-30-PCP6-CT-1204	Phase 6 - Road Markings and Signs (Sheet 4)	D2
60629784-SHT-30-PCP6-CT-1205	Phase 6 - Road Markings and Signs (Sheet 5)	D2
60629784-SHT-30-PCP6-CT-1206	Phase 6 - Road Markings and Signs (Sheet 6)	D2
60629784-SHT-30-PCP6-CT-1207	Phase 6 - Road Markings and Signs (Sheet 7)	D2
60629784-SHT-30-PCP6-CT-1208	Phase 6 - Road Markings and Signs (Sheet 8)	D2
60629784-SHT-30-PCP6-CT-1209	Phase 6 - Road Markings and Signs (Sheet 9)	D2
60629784-SHT-30-PCP6-CT-1210	Phase 6 - Road Markings and Signs (Sheet 10)	D2
60629784-SHT-30-PCP6-CT-1211	Phase 6 - Sign Schedule	D2
60629784-SHT-30-PCP6-CT-1212	Phase 6 - SSE Signage (Sheet 1)	D1
60629784-SHT-30-PCP6-CT-1213	Phase 6 - SSE Signage (Sheet 2)	D1
60629784-SHT-30-PCP6-CT-1214	Phase 6 - SSE Signage (Sheet 3)	D1
60629784-SHT-30-PCP6-CT-1215	Phase 6 - SSE Signage (Sheet 4)	D1
60629784-SHT-30-PCP6-CT-1216	Phase 6 - SSE Signage (Sheet 5)	D1
60629784-SHT-30-PCP6-CT-1217	Phase 6 - SSE Signage (Sheet 6)	D1
60629784-SHT-30-PCP6-CT-1218	Phase 6 - SSE Signage (Sheet 7)	D1

Standard Drawings Supplied to Each Tenderer

Standard Drawings Inspected by Each Tenderer

AECOM
16

Drawing No.	Title	Revision

Standard Drawings Brought into the Contract by Reference

Drawing No.	Title	Revision
[NOT USED]		

APPENDIX 1/1: TEMPORARY ACCOMMODATION AND EQUIPMENT FOR THE OVERSEEING ORGANISATION

Accommodation location

The following accommodation will be required for the sole use of the Employer:

- (i) Principal office within the site compound, for the Overseeing Organisation. Offices will comfortably accommodate two or more people (while also taking into account current social distancing measures) and appropriate fittings and furnishings with space to store documents and work wear.
- (ii) Offices shall be within 15 minutes or less, by walking, from the furthest part of the works which are active at any one time. The office may have to be relocated at different times during the work to facilitate this requirement.
- (iii) Work spaces must comply with all relevant legislation, with particular regard to Workplace (Health, Safety and Welfare) Regulations 1992 and the Approved Code of Practice.
- (iv) Offices for the use of the Overseeing Organisation are to be afforded a power supply and high-speed internet.
- (v) The location and extent of welfare facilities are to be confirmed by the Principal Contractor in advance of commencement.
- (vi) Negotiations to seek approval for the use of third-party land for the location of welfare facilities will be the responsibility of the Principal Contractor. Any costs/charges in the relation to the use of third-party land will be the responsibility of the Principal Contractor.

Fittings and Furnishings of Accommodation, and other Equipment Required

The following will be provided for the sole use of the Overseeing Organisation for the duration of the works:

- (i) Two Desks, with lockable drawers
- (ii) First Aid kit and fire extinguisher (CO2).
- (iii) Storage area for work equipment and work wear
- (iv) Printer, suitable for printing in colour at A4 and A3. Supplied with paper and ink as required for the duration of the works
- (v) High-speed internet access wired via ADSL or fibre or if wired access is unavailable then 4G mobile dongles.
- (vi) Offices for the use of the Overseeing Organisation are to be lockable, with keys to be provided to the Overseeing Organisation, and only accessible using the keys held by the Overseeing Organisation.
- (vii) Offices for the use of the Overseeing Organisation are to be heated and capable of being maintained at a minimum of 21°C throughout the duration of the works.
- (viii) 2 No. filing cabinets capable of storing A4 and A3 documents with a minimum of four drawers per cabinet.
- (ix) 1 No. drawing hanger frame for storing A1 drawings, with a minimum of 8 No. hangers or as otherwise advised by the Project Manager.
- (x) 3 x high vis coats and long sleeve upper garment. 3 x high vis trousers, 3 x hard hats, gloves, safety glasses and safety shoes, sizes and colour to be determined at a later date.
- (xi) A laptop for the Project Manager which is capable and meets the recommended hardware specification required to run AutoCAD 2018 or later. The laptop will be supplied with all cables, connections and equipment needed plus MS Office, MS Project and a standalone AutoCAD Licence.
- (xii) Measuring wheel, 2 x 7.5m tape measure, 3m spirit level, infra-red temperature gun, 5 x road marking spray, optical level (SD 2.5mm / km or less) with 20x magnification, tripod and levelling staff.

- (xiii) A 10 Megapixel digital camera.
- (xiv) Toilet
- (xv) Kitchen area with associated cups, plates, washing facilities etc
- (xvi) Ongoing consumables such as tea, coffee and milk.
- (xvii) Cleaning of accommodation 1 x week

APPENDIX 1/4: WORKING AND FABRICATION DRAWINGS

Working and Fabrication Drawings

Series	Description of drawing	Minimum period for submission
100	Traffic Management and Safety	Refer to App. 1/17
100	Temporary Diversions for Traffic	Refer to App. 1/17
100	Site layout plan (inc. compound, stockpiles etc.)	2 weeks before commencement
500	Linear drainage systems	4 weeks before installation
500	Drainage As Built Drawings	8 weeks after Completion
1200	Permeant bollards	2 weeks prior to fabrication
1200	Fabricators drawing for signs (including temporary signs)	4 weeks before installation
1200	Traffic Signal As Built Drawings	8 weeks after Completion
-	General As Built – Resurfacing extents, new kerb lines etc.	8 weeks after Completion

- 1 All drawings are to be submitted to the Project Manager for acceptance.
- 2 Plans are to be drawn at a suitable scale and show all salient details of the works, including:
 - (i) Proposed equipment to be used
 - (ii) Access and entry locations
 - (iii) Significant health and safety hazards
 - (iv) Traffic management, including pedestrian and cyclist diversions
- 3 The Project Manager will provide acceptance, or otherwise require alterations to be made, to pre-construction drawings. The Contractor will not undertake any works referred to in the drawing until such acceptance has been given.

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR

- 1 Unless otherwise shown in this Appendix tests and/or samples for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.
- 2 Unless otherwise scheduled under Clause 2602 samples of concrete complying with that Clause are not required.
- 3 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.
- 4 Where alternative materials are proposed a schedule of testing and sampling equivalent to the testing required by this appendix must be submitted to the Project Manager for acceptance.
- 5 Unless otherwise indicated in this Appendix, tests for all works, goods and materials shall be carried out by the Contractor.
- 6 Unless otherwise shown in this Appendix test certificates shall relate to work, products, goods or materials tested within the previous 12 months.
- 7 On a weekly basis the Contractor will submit to the Supervisor a programme of his anticipated testing regime for the following week's work. The programme must be submitted to the Supervisor by 1200 hrs on the Friday proceeding the week of testing.
- 8 The Contractor shall ensure the timely undertaking of all testing and submission of all results to the Supervisor. The Contractor shall submit a list of all samples/tests taken that day to the Supervisor.
- 9 The Supervisor will instruct, or undertake any testing considered necessary to determine the quality of the work in the event that the Contractor fails to submit the results of a test, or fails to undertake any testing required by this appendix.
- 10 The Supervisor must be given the opportunity to witness all tests.
- 11 Refer to Appendix A of the Specification for Highway Works where reference is made to Quality Management Systems.
- 12 Refer to Appendix B of the Specification for Highway Works where reference is made to Product Certification Systems.
- 13 Refer to Appendix C of the Specification for Highway Works where reference is made to BBA Certification.
- 14 In addition to the tests described in Volume 1 Specification for Highway Works, the Contractor shall be responsible for carrying out the tests detailed in the following table in accordance with Clause 105.

Table 1/5-1

Clause	Work, Goods, or Material	Test	Frequency of testing	Test Certificate	Comments
411	Pedestrian parapets and guard rails		Manufacturer's tests: yield/proof strength of material, ultimate strength and the extension at break		(N) Refer to sub-clause 411.8
501	Pipes for Drainage: Vitrified Clay				Product certification scheme or equivalent for products not falling under the Construction Products Regulation (CPR)
501	Pipes for Drainage:				Product certification scheme or equivalent for

Clause	Work, Goods, or Material	Test	Frequency of testing	Test Certificate	Comments
	PVC-U				products not falling under the Construction Products Regulation (CPR)
507	Chambers: Pre-cast concrete				Product certification scheme or equivalent for products not falling under the Construction Products Regulation (CPR)
507	Chambers: Cover bolts				Quality management scheme or equivalent
508	Gillies and pipe junctions				Product certification scheme or equivalent for products not falling under the Construction Products Regulation (CPR)
509	Water tightness of joints	SHW Cl. 509.4 SHW Cl. 509.5	All pipelines	Required	CCTV Survey report in accordance with Appendix 90/1
517	Linear Drainage Channel Systems	SHW Cl. 517.2	All systems		Product certification scheme or equivalent for products not falling under the Construction Products Regulation (CPR)
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 1 per location if less than 400 tonnes	Required	
		Oxidisable sulphides (OS) content and total potential sulphate (TPS) content (N)	1 per 400 tonnes 1 per location if less than 400 tonnes	Required	
801, 803, 804, 805, 806	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)	1 per week		
		Resistance to fragmentation (N)	1 per 6 months		
		Resistance to wear - micro-Deval test			
		Resistance to freezing and thawing (magnesium sulphate soundness) (N)	1 per source		
		Water absorption (N)	1 per 6 months		
		Volume stability of blast furnace slags	1 per 6 months		

Clause	Work, Goods, or Material	Test	Frequency of testing	Test Certificate	Comments
		Volume stability of steel (BOF and EAF) slags	1 per 6 months		
		CBR (N)	1 per source and then monthly		
901 925 937 938 943	Aggregates for bituminous materials	Resistance to fragmentation (N) Soundness (N) Water Absorption (N) Sieve test (mass passing 0.063 mm sieve) (N) Flakiness index (N) Bulk density (N) Soundness (N) Dicalcium silicate disintegration (N) Iron Disintegration (N) Bulk Density Volume Stability (N) Resistance to polishing (PSV) (N) Resistance to surface abrasion (N)	1 per source	Required	
901 925 937 938 943	Binders for bituminous materials	Penetration (N) Softening point (N) Other tests required by BS EN	12 months	Required	
903 to 907, 909 to 912, 914, 916, 925, 926, 929, 930, 937,	Bituminous mixtures	Grading (N) Binder content (N)	1 per source	Required	

Clause	Work, Goods, or Material	Test	Frequency of testing	Test Certificate	Comments
938, 941, 943, 946 to 948					
915	Coated Chippings	Grading (N) Binder content (N) Flakiness index (N) Resistance to polishing (PSV) (N) Resistance to surface abraision (AAV) (N) Hot sand test (N) Rate of spread (N)	1 per source	Required	
921	Surface macrotexture	Volumetric Patch (N)	As required in appendix 7/1	Required	
943	HRA Surface course and binder (performance related design mixtures)	Permanent Works - In situ air void content (N) Permanent Works - Deformation resistance Deformation resistance (design)	As required in appendix 7/1		
920	Bond coats, tack coats and other bituminous spray: Binder	Product identification Vialit cohesion Accuracy of spread Rate of spread Penetration at 25°C and 5°C (N)	1 per source	Required	HAPAS or BBA Certificate required
1101	Precast concrete kerbs, channels, edgings and quadrants	Bending strength	Minimum of 8 per 1000 units of each product (BS EN 1340)		
1217	Traffic Signals				Statutory approval of equipment applies

Clause	Work, Goods, or Material	Test	Frequency of testing	Test Certificate	Comments
1217	Traffic Signals: Cables				Product certification schemes
1217	Traffic Signals: Controllers	Tests as specified in Appendix 12/5	Each controller before delivery to site and again after installation		
1217	Traffic Signals: Cabling	Tests a, b, c, e, f, g, h, j as defined in sub-Clause 1424.2	Each traffic signals installation	Required	Certification the installation complies with BS 7671 (the IEE Wiring Regulations) is required
1218	Detector Loops: Cable			Required	Certification that completed cables comply with specification TR 2029 is required
1218	Detector Loops: Epoxy Resin			Required Where considered appropriate	Certification that the epoxy resin complies with specification MCH 1540 is required
1218	Detector Loops: Feeder cable			Required	Certification that completed cables comply with specification TR 2031 is required
1218	Detector Loops: Joints	Pull test (4kgf)	Each crimp		
1218	Detector Loops: Installation	Series resistance Insulation Resistance Inductance	Each loop	Required	Certification in accordance with specification MCH 1540 is required

General requirements for testing identified in Clause 1 of this Appendix.

- (i) Unless otherwise stated, all sampling and testing shall be by the Contractor.
- (ii) In Table 1/5-1 (N) indicates that a UKAS or equivalent accredited laboratory sampling and test report or certificate is required.
- (iii) Cube strength tests are not required for concrete complying with Clause 2602.
- (iv) Unless otherwise shown in Table 1/1 tests for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.

APPENDIX 1/7: SITE EXTENT AND LIMITATION ON USE

Extent of the site

- (i) The extent of the full scheme is shown on:
 - (a) 60629784-SHT-00-PCP0-CT-0100
 - (b) 60629784-SHT-00-PCP0-CT-0101
- (ii) The extent of the work for the full scheme is shown on:
 - (a) Phase 1: 60629784-SHT-30-PCP1-CT-0101 to 0104
 - (b) Phase 2: 60629784-SHT-30-PCP2-CT-0101 to 0103
 - (c) Phase 6: 60629784-SHT-30-PCP6-CT-0101 to 0110
- (iii) The Contractor will agree the positioning of site cabins, offices, messes and welfare facilities with the Project Manager.
- (iv) The working areas are the areas shown on the drawings listed in clause 1(i) of this appendix and as amended by the Project Manager in accordance with the contract.

Limitations on use of the site

- (i) The Contractor shall not use the site for any purpose other than for carrying out this contract.
- (ii) The Contractor will obtain the acceptance of the Project Manager for all locations used to store plant, materials, waste, and materials necessary for the execution of the works. Except those already accepted into the working areas by the Project Manager for the sole use of the Contractor, for example the site compound.
- (iii) The Contractor will restrict operations to the working areas defined in this Appendix, or as amended by the Project Manager, for all works except for approved traffic management, access and egress from the site, and operations specifically agreed by the Project Manager.
- (iv) The Contractor shall not store any materials on the carriageway or footway within or outside the working areas unless written approval has been given by the Project Manager.
- (v) The Contractor shall always allow Statutory Bodies or Undertakers and their Contractor's access to their plant.
- (vi) The Contractor will provide access for residents and businesses that are restricted by the site operations, throughout the works and without undue delay, unless the Contractor agrees, in writing, any works with the Project Manager.

APPENDIX 1/9: CONTROL OF NOISE AND VIBRATION

General

- 1 The Local Authority having responsibility for the area is:

Knowsley Metropolitan Borough Council

Directorate of Regeneration & Economic Development

Planning & Transportation Division

P.O. Box 24, Archway Road, Huyton, Knowsley, Merseyside, L36 9YU

Telephone Number: 0151 443 2300

- 2 The measures detailed in this Appendix are given as a guide; however, it is for the Contractor to decide whether to seek the Local Authority's formal consent to his proposed methods of work and to the steps he proposes in order to minimise noise.
- 3 The Contractor is required to contact Knowsley Council using the details listed in clause 1 of this appendix, 2 weeks before commencing these works detailing the date ranges during which it is expected that works will be undertaken within 40m of noise sensitive receptor(s) during the hours detailed in clause 1 under the noise limits heading found below in this appendix.
- 4 The Contractor is required to contact Knowsley Council using the details listed in clause 1 of this appendix 1 week before commencing parts of the work which fall within 40m of noise sensitive receptor(s) during the hours detailed in clause 1 under the noise limits heading found below in this appendix.
- 5 Any works that must be undertaken and are expected to exceed the façade noise levels detailed in clause 1 under the noise limits heading found below in this appendix, require 14 days' notice and are subject to the acceptance of the Project Manager. Such acceptance will be withheld if the Contractor does not demonstrate the effect of the works (duration, sound level and proximity to receptors) will be limited so far as is practicable.
- 6 The Contractor may be required to monitor noise levels at property boundaries and frontages as instructed by the Project Manager.

Restrictions on Working Hours

- 1 The Contractor should contact the responsible authority identified in clause 1 of this Appendix for time dependant noise limits.
- 2 In the event that work outside the hours detailed in Appendix 1/13 is granted additional noise limits may be required by the Project Manager.
- 3 Any working outside of the prescribed hours will require written approval from the Project Manager.

Noise Limits

- 1 Where required monitoring of noise levels will be undertaken during normal working hours, or as directed by the Overseeing Organisation.
- 2 The following façade noise levels should not be exceeded:

Noise Sensitive Receptor	Critical Health Effect	Sound Level ($L_{Aeq, \tau}$) dB(A)	Time
Dwellings and offices	Speech intelligibility	75	0700 - 1900
Schools	Speech intelligibility	65	0800 - 1630
Dwellings (evening)	Speech intelligibility	65	1900 - 2300
Dwellings (night)	Sleep disturbance	45*	2300 – 0700

* Or ambient +5dB(A), whichever is the higher

Vibration

- 1 Vibration resulting from the Contractors activity will be limited to $0.4 \text{ m/s}^{1.75}$ in residential buildings and healthcare facilities and $0.8 \text{ m/s}^{1.75}$ in schools, offices and other places of work during the day. During the night vibration will be limited to $0.2 \text{ m/s}^{1.75}$ in residential buildings and healthcare facilities.
- 2 Vibration will be monitored in accordance with BS 6472-1:2008 if directed to do so by the Project Manager.
- 3 The Contractor will employ the best practical means to minimise vibration produced by the works.
- 4 The Contractor will conduct the works in accordance with the recommendations laid out in BS 5228 and BS 6472.
- 5 The Project Manager may instruct remedial activity, additional monitoring, and changes to the Contractor's method, should vibration experienced with in a structure, outside the site extent, exceed reasonable levels as a result of the works.

APPENDIX 1/12: SETTING OUT AND EXISTING GROUND LEVELS

- 1 A topographical survey drawing will be provided in AutoCAD and pdf format to the Contractor with the contract documents.
- 2 The Contractor will check and confirm the accuracy of all survey control points within 5 working days of access to the site. All discrepancies must be reported to the Project Manager.
- 3 Setting out points and levels will be determined by the Contractor using a total station theodolite.
- 4 Setting out information is given in form of setting out drawings and 3D string lines.
- 5 The Supervisor must be given the opportunity to inspect setting out, on site, prior to construction. However, no action undertaken by the Supervisor or Project Manager will relieve the Contractor of its responsibility for providing the works in accordance with the Works Information.

APPENDIX 1/13: PROGRAMME OF WORKS

1. The Contractor shall provide the programme in the form of a network/bar chart, produced as a result of a 'critical path analysis' and must abide by the constraints below. It shall show the level of detail appropriate to each of the works and all activities and restraints, each of which shall be given a short title. All events shall be numbered and annotated with the earliest and latest event dates.
2. Formal site progress meetings will take place every 2 weeks. Likewise, risk reduction meetings will be compulsory and an allowance of 4 should be made. In advance of progress meetings the contractor is responsible for producing;
 - A schedule of early warnings
 - A schedule of compensation events (costed)
 - An updated programme
 - Cost of work done to date
 - Forecast the cost of work to still undertake
 - Cost against progress (earned value as an example)
 - Key risks and associated mitigation

The Contractor shall provide a copy of his programme in Microsoft Project format (.mpp)

3. The Contractor will ensure that the programme details the start and end dates of main activities and clearly differentiate between works undertaken during the day and works undertaken during the night. The Contractor's programme shall show the following activities, as a minimum:
 - (ii) Preliminary works
 - (iii) Implementation of traffic and pedestrian management
 - (iv) Investigation works
 - (v) Site clearance works
 - (vi) Excavation
 - (vii) Drainage
 - (viii) Carriageway pavement works
 - (ix) Traffic signs and road markings
 - (x) Traffic signals and associated detection
 - (xi) Utility diversions
 - (xii) Street lighting
 - (xiii) Lead-in times for the procurement of materials/goods,
 - (xiv) Traffic Management phases including requirements for any temporary closures/diversions
 - (xv) The Contractor should also incorporate information from KMBC's nominated Traffic Signage / Street Lighting Contractor and Traffic Signals Contractor.
4. Hold Points - The Contractor will build hold points into the programme which require acceptance from the Project Manager before work can progress. The Project Manager requires at least 1 full working day notice in advance of a hold point. Hold points required by the contract are as follows:
 - a. Acceptance of the Construction Phase Plan by the Project Manager
 - b. Acceptance of the Quality Management Plan in accordance with Appendix 1/24.
 - c. Access to the site
 - d. Recommencement of works after a stoppage longer than 2 days, or 3 days if one day is a bank holiday.
 - e. Planing of the carriageway
 - f. Laying of bituminous material in the carriageway
 - g. Works affecting statutory undertaker's equipment, including pipework and cables.
 - h. Works which will restrict access to property
 - i. Full road closures
 - j. Disconnection of permanent or temporary traffic signals
 - k. Activation of permanent or temporary traffic signals, other than for testing

The Contractor will provide, at the Project Manager's request, any information required to verify accordance with the Works Information.

5. A reason for the Project Manager not accepting the release of a hold point described in clause 8 of this appendix is that acceptance, approvals by a third party or the Employer, works, testing, sampling, or inspections have not been provided in accordance with the Contract.

Schedule of Constraints

The following is a list of applicable programming constraints, it is not exhaustive, and all the work elements should be considered for their programming requirements and constraints.

- (i) Normal site working hours are:

Location	Day	Hours
Phase 1 – Manchester Road	Monday to Friday	0930 – 1530 : Works off the carriageway and single lane closures, with minimum 3.20m running lane.
Phase 2 – Carr Lane	Monday to Friday	0930 – 1530 : Works off the carriageway and single lane closures, with minimum 3.20m running lane.
Phases 1, 2 & 6 – all other areas	Monday to Friday	0930 – 1530 : Single lane closures, with minimum 3.20m running lane. Closures of side roads in any direction providing a diversionary route is provided. 1900 – 0500 : Works away from the carriageway
All locations	Saturday	0700 – 1900 : Works away from the carriageway
All locations	Sunday	1000 – 1400 : Works away from the carriageway and single lane closures
All locations	Bank holidays	Not permitted

- (ii) No surfacing works on the carriageway or within the footway will be permitted until all works that could create a scar in any surface course is fully completed. For the avoidance of doubt base course work is permissible and as such the Contractor should make an allowance allowances to make good edges that could cause a trip or provide temporary ramps for DDA purposes for any period created between base course and surface course works.
- (iii) Exceptionally, the Overseeing Organisations written consent for work outside these hours may be given after necessary consultation with the Project Manager and the relevant parties listed in Appendix 1/17.
- (iv) Refer to Appendix 1/9 (noise and vibration) and 1/17 (for Local Authority Traffic Management approval periods and acceptable periods of working).
- (v) The implementation of new traffic management measures or subsequent adjustment of, aside from emergency works, is to be undertaken between 0930 and 1530 or between 1900 and 0500 and is subject to Knowsley Council approval.
- (vi) The Contractor may be required to temporarily halt construction to accommodate local events, or periods of increased traffic volume. Notification of such events will be given by the Employer when the works information is issued.
- (vii) No works may be undertaken which obstruct the highway during the following periods:
 - (a) The Pre-Christmas Embargo Period specified by Knowsley Council)
 - (b) Easter Weekend (beginning 1900 the Thursday prior to Easter, ending 0700 the Tuesday following Easter)

The listed restrictions apply unless approval from the Project Manager is given in writing.

- (viii) The Contractor will provide at least 24hrs notice to the Supervisor and Project Manager to enable inspection of the following elements before they are overlaid:
- (a) Ironwork
 - (b) The milled surface
 - (c) Laid binder
6. The Contractor will ensure that the programme details the start and end dates of main activities and clearly differentiate between works undertaken during the day and works undertaken during the night. The Contractor's programme shall show the following activities, as a minimum:
- (i) Preliminary works
 - (ii) Implementation of traffic and pedestrian management
 - (iii) Investigation works
 - (iv) Site clearance works
 - (v) Excavation
 - (vi) Drainage
 - (vii) Carriageway pavement works
 - (viii) Kerbing and footway works
 - (ix) Traffic signs and road markings
7. The Contractor will notify all residents and businesses which can be reasonably assumed to be affected by the works. The contractor will:
- (a) 21-days before the commencement of the works the Contractor will deliver a notification letter to residents and businesses. The letter will specify basic information about the works and a provisional start date.
 - (b) At 14-days before the works commence the Contractor will notify residents and businesses to outline access arrangements and the outline programme of works. Periods of disruption will be highlighted.
 - (c) At 7-days before the works commence the Contractor will notify residents and businesses reminding them of imminent works and additionally provide an out of hours contact number, key dates and times (such as dates and times of road closures, any access restrictions etc.), and confirm the start date and expected scheme duration.
 - (d) 7-days before the implementation of any road closure, including side roads, or other measures requiring a diversion or access restrictions notify residents and businesses affected by the diversion.
 - (e) 7-days before the commencement of any works which may result in noise levels which may exceed those outlined in appendix 1/9 the Contractor will notify receptors which may be affected.
 - (f) The Project Manager may require the Contractor to conduct additional notifications during the works due to delays, changes to the scope or programme, or where the time between initial notification and a key event such as a road closure, by design or delay, makes it prudent to do so.
8. The Contractor will provide a copy of any notification letter to the Project Manager for acceptance 3-days before delivery. A reason for not accepting the letter will be that it does not suitably define the works, provide contact details for the Contractor, or doesn't provide a definite period for the works being notified.
9. No later than 14-days before access to the site is given the Contractor will provide a copy of the Quality Management Plan in accordance with Appendix 1/24 to the Project Manager for acceptance. Works will not start on site until the Project Manager has accepted the Quality Management Plan.
10. 14-days before access is given to site the Contractor will provide a Construction Phase Plan (CPP) (as defined by CDM regs. 2015 regulation 12) to the Project Manager for acceptance. Access will not be given until the Project Manager has accepted the CPP. A reason for not accepting the CPP will be that it does not provide the following information in sufficient detail:
- (a) The Health & Safety aims for the project, which can be discussed and agreed with the wider project team.
 - (b) The site rules.

- (c) Arrangements for coordination and communication of site work. E.g. Tool Box talks, site meetings etc.
- (d) Arrangements for liaison with the workforce.
- (e) Arrangements for liaison with the public.
- (f) Site induction material and the procedure.
- (g) The level of welfare provision to be provided.
- (h) Emergency procedures.
- (i) A site plan – including the location of the contractor's compound, materials stockpiles, workshops, stores etc.
- (j) Security provisions
- (k) Safety audit procedure
- (l) Details of, and specific control measures for, any hazardous materials known to be on site.
- (m) Details and specific measures employed to control risks associated with Schedule 3 activities, where present.
- (n) Details of specific measures employed to maintain the safe operation of the site, in particular:
 - (1) Protection of workers from vehicle incursion into the work area
 - (2) Protecting the public from the works, or any consequences of the work
 - (3) Noise pollution reduction measures
 - (4) COSHH assessments
 - (5) Relevant task specific RAMS
 - (6) Site wide PPE requirements

APPENDIX 1/14: PAYMENT APPLICATIONS

- 1 The payment applications submitted to the Project Manager in accordance with the Conditions of Contract by the Contractor shall, whenever dealing with matters covered by the Bill of Quantities, be set out under Part and Section headings similar to those in the Bill of Quantities and shall separately identify each item and specify the quantity, unit, rate and value. Items not described in Bill of Quantities but appropriate for inclusion as measured work shall be shown at the end of the relevant section or under section headings as appropriate indicating quantity, unit rate and value.
- 2 In respect of all other matters referred to in the Conditions of Contract the Contractor shall separately show in the statement quantities, units and rates of goods and/or materials and also details of any other matters to which he considers himself entitled. The Contractor shall allow the Project Manager to inspect invoices for goods or materials included in the statement as may be required.
- 3 The Contractor shall provide a Forecast of Outturn Costs with submission of his monthly applications for payment.

APPENDIX 1/16: PRIVATELY AND PUBLICLY OWNED SERVICES AND SUPPLIES

- 1 This Appendix contains details of services and supplies affected by the Works, details of preliminary arrangements that have been made with Statutory Undertakers, utility companies and others for the alteration of services and supplies affected by the Works, and details of any orders already placed.
- 2 The Contractor will make arrangements with the Statutory Undertakers, utility companies and others concerned, for the co-ordination of his work with all work which needs to be done by them or their contractors concurrently with the Works. Compliance with the periods of notice given in this Appendix does not relieve the Contractor of his obligations.
- 3 Private services to individual properties have not generally been listed or shown on the Drawings. The Contractor will make arrangements with the Statutory Undertakers and others concerned for the phasing of all necessary disconnections and diversion of private services affected by the Works.
- 4 The names, addresses and contact details of the Statutory Undertakers, utility companies and authorities serving in the locality are listed below.

Name	Address	Contact Details	Contact
SP Energy	SP Power System Ltd	Tel: 0141 614 7488	Steve
	General Administration	Tel: 0151 609 2494	Hawkesworth
	2nd Floor Avondale House	Email: Steve.hawkesworth@sppowersystems.com	
	Phoenix Crescent		Steve Lloyd
	Strathclyde Business	Tel: 01516145840	33kV+
	Park Bellshill	Email: Steve.lloyd@sppowersystems.com	
	ML4 3NJ		Eddie Rigby
			33kV+
		Tel: 07753 624406	
		Email: eddie.rigby@spenergynetworks.co.uk	
United Utilities	United Utilities Group	Tel: 034 5072 6067 / 07785342331	Simon Taylor
	PLC	Email: simon.taylor@uuplc.co.uk	(Water)
	Haweswater House		
	Lingley Mere Business	Tel: 01925 679 411(int 79411)	
	Park	Email: john.lunt@uuplc.co.uk	John Lunt
	Lingley Green Avenue		(Waste water)
	Great Sankey		
	Warrington		
	WA5 3LP		
BT - Openreach	PP519 Lancaster House	Tel: 0113 807 4316 / 07743 843518	Paul Baylis-
	Old Hall Street	Email: Paul.baylis-wareing@openreach.co.uk	Wareing
	Liverpool		
	L3 9PY		
BT - Payphones	BT PLC BT Payphones	Tel: 07740562770	John Sherlock
	Fourth Floor Monument	Email: john.g.sherlock@bt.com	
	TE		
	11-13 Great Tower St	Email: btpcfo@bt.com	
	London		
	EC3R 5AQ		
Merseytravel	Merseytravel	Tel: 0151 330 1874	Tony Hamilton
	Mann Island	Email: tony.hamilton@merseytravel.gov.uk	
	PO Box 1976		
	Liverpool		
	L69 3HN		

Vodafone	Vodafone	Tel: 07901 331307 Email: lan.gordon@vodafone.co.uk	Ian Gordon
SSE	Stetton Way Huyton Knowsley Merseyside L36 6JF	Tel: 07469 411059 Email: nic.budd@sse.com	Nic Budd
Sky	Sky	Tel: 07718 511425 Email: chris.birch@sky.co.uk	Chris Birch
National Grid Gas	Mersey Road North Hollinwood Failsworth Manchester M35 9FF	Tel: 0151 728 1974 / 07890 256639 Email: philip.janes@balfourbeatty.com	Philip Janes
Instalcom	Instalcom Limited Borehamwood Ind Park Rowley Lane Borehamwood WD6 5P	Tel: 0208 731 4600 / 07557264120 Email: gordon.thompson@instalcom.co.uk	Gordon Thompson

Services and Supplies Affected by the Works

Services drawings have been provided with the Works Information.

It is not anticipated that the works will require diversion, or accommodation works by Statutory Undertakers.

Location	Description	Group	Drawing No.	Details
[NOT USED]				

APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT

Submission of Traffic Safety and Management Proposals

- 1 The Contractor is required to apply for any TTROs, and Permits required to undertake the works and will bear the cost of such orders.
- 2 The Contractor must refer to Appendix 1/9 and 1/13 for the permitted working hours during which agreed Traffic Management measures may be implemented.
- 3 Proposals requiring a TTRO require a minimum of 6 weeks from submission of the application to implementation of the order.
- 4 The Contractor shall submit their traffic management proposal to the Project Manager and Knowsley Council Roadworks for approval at least 2 weeks before the commencement of the Works. As a minimum the submitted proposal must include:
 - (a) A written method statement
 - (b) 1:500 scale drawings

The following information shall be provided and clearly identified on one or both documents:

- (a) Proposed implementation dates, times and durations
- (b) Copies of the required Permits from Knowsley Council
- (c) Copies of the required TTROs
- (d) Working areas
- (e) Lateral and longitudinal safety zones
- (f) Traffic signs and road markings
- (g) Pedestrian routes, widths and protection measures
- (h) Traffic lanes and widths
- (i) Provisions for bus stops affected by the proposals
- (j) Provisions for emergency vehicle routing
- (k) Points of access to working areas
- (l) Provision of temporary signals
- (m) Arrangements for delivery of equipment and materials

Written approval will be required from both Knowsley Council and acceptance provided by the Project Manager before any measures are implemented or modified.

- (iv) The Contractor must consult emergency services and the Project Manager to discuss and review traffic safety, management and emergency procedures prior to the starting date.

Meetings

- 5 The Contractor will be required to present and discuss traffic management proposals ahead of the works and at intervals for the duration of the works. The Contractor may be instructed to modify traffic management proposals following the outcome of one of these meetings. Meetings will be arranged by the Contractor:
 - (a) Before the commencement of the works to review all proposals and discuss traffic management strategy.
 - (b) Before any significant changes to the traffic management scheme to review the details specific to the change.
 - (c) Before the commencement of the works to liaise and coordinate works with Merseytravel.

- (d) To address any serious incident, or with the objective of avoiding any serious incident, on the network, in conjunction with these works.

Traffic Safety and Management Requirements and Constraints

- 6 Pedestrian, cycle or vehicular traffic routes are not to be obstructed by the Works until a suitable alternative has been established.
- 7 Works requiring full closures are to be kept to a minimum and will only be permitted between 1900 and 0500 and in all instances will be approved, in advance of the works, by the Project Manager and Knowsley Council.
- 8 Day-time lane closures should be kept to a minimum in all instances will be approved, in advance of the works, by the Project Manager and Knowsley Council and will only be permitted between 0930 and 1530.
- 9 Adjustment or provision of new traffic management measures, aside from emergency works, is to be undertaken between 0930 and 1530 or between 1900 and 0500 and is subject to approval by Knowsley Council Roadworks Team.
- 10 The Contractor will not be permitted to develop relaxations to the standard layouts given in the Traffic Signs Manual Chapter 8.
- 11 Work that requires temporary traffic management may not be undertaken:
 - (a) The Pre-Christmas Embargo Period Specified by Knowsley Council)
 - (b) Easter Weekend (beginning 1900 the Thursday prior to Easter, ending 0700 the Tuesday following Easter)
 - (c) Bank Holiday Weekends (beginning 1900 the Friday prior to the holiday, ending 0700 the Tuesday following the holiday)

The Contractor may propose to the Project Manager that the Works Information is changed to allow work requiring traffic management to be undertaken in the above listed periods.

- 12 Phasing of the works will endeavour to minimise the effect on traffic, residents and businesses as far as is reasonably practicable.
- 13 Outside of full closures at least one lane of 3.2m (minimum) width must be maintained in each direction.
- 14 The Contractor will be required to take account of local events which may generate elevated volumes of traffic, both vehicular and pedestrian.
- 15 Advance warning signs shall be erected two weeks prior to the start of the works on all approaches advertising of the start date and duration of the works. The Project Manager may require advance warning signs to be mounted to lampposts. All sign faces and locations shall be agreed in advance of the Works with the Project Manager.

Traffic Safety and Control Officer (TSCO)

- 16 A Traffic Safety and Control Officer (TSCO) will be required during the duration of the works.
- 17 A TSCO will be required when adjustments are made to an existing traffic management layout or a new layout is implemented.
- 18 TSCOs will liaise with Warrington the Overseeing Organisation three weeks before the first access date of the works.

Temporary Traffic Regulation Orders and other Statutory Orders

- 19 No orders have been applied for prior to the time of tender.
- 20 For any TTROs required for the undertaking of these Works the Contractor should apply in writing to Knowsley Council to ensure compliance.

Knowsley Metropolitan Borough Council
Directorate of Regeneration
Economy and Skills
P.O.Box 24 Archway road

Huyton
Knowsley
Merseyside
L36 9YU.
Contact Richard Thorpe 0151 443 2320 or 07768 032553

- 21 Any temporary traffic signals for use on the highway, or the adjustment of existing traffic signals, will require the approval of Knowsley Council. It is recommended that before developing any traffic management solutions the Contractor consults the Traffic Systems Manager to enable a greater level of network coordination.
- 22 The Contractor will be responsible for the cost of any TTRO required for the duration of the Works.
- 23 The Contractor must ensure that relevant Highway Opening Notices, under Section 50 of the New Roads and Street Works Act (NRSWA), are in place. The notice will be served by the Council's term maintenance contractor and the Contractor will bear the cost of the notice.

Crossovers

None

Driver Information Signs

- 24 Driver information signs are to be provided before the works commence for three weeks prior to commencement.
- 25 Driver information signs will be required two weeks before night-time works.
- 26 The following signs will be required:
 - (a) Signs to diagram 7003.1 to indicate start date and duration of works, on each approach to the works.
 - (b) Signs to diagram 7002B to indicate dates of night-time closures, at the start and end of the proposed closure, including side roads.
- (ii) The format and wording of each sign and exact locations will be confirmed by the Project Manager.

Temporary Speed Cameras

- 27 Temporary speed cameras are not required.

APPENDIX 1/19: ROUTING OF VEHICLES**1 Access Routes**

- (i) Permitted access routes to and from the site shall be agreed with Knowsley Council and the Project Manager.

2 The Use of the Permanent Works by Construction Traffic

- (ii) The finished pavement forming part of the Permanent Works shall only be used to carry construction traffic when measures approved by the Project Manager have been taken to protect them from damage.
- (iii) The Contractor shall submit information and supporting calculations at least four weeks before it is proposed to use any of the finished pavement forming part of the Permanent Works to carry constructional traffic outside the current Motor Vehicles (Construction and Use) Regulations. The proposals shall not be implemented by the Contractor without the written approval of the Project Manager.

3 Movement of Machinery and Plant Across Public Roads

- (i) Labour, plant and materials shall be kept within the confines of the Working Areas and site compound and shall not use areas of carriageway within the Site that are open to the public except in the following circumstances:-
 - i) Labour and plant required for traffic management purposes;
 - ii) Labour, plant and materials being moved to and from the Working Area by suitable vehicles.
- (ii) No item of plant or vehicle used by the Contractor or his sub-Contractor in carrying out the Works shall be operated on carriageway lanes open to the public in such a manner that it would disrupt the normal flow of traffic.
- (iii) Tracked plant will only be permitted to work or run on the sections of carriageway, which are to be reconstructed or overlaid unless the surface over which movement is to take place is protected to the satisfaction of the Project Manager.
- (iv) All crossings shall be kept clear of mud and debris to prevent danger to the public. Warning signs shall be erected to warn drivers, pedestrians and machine/plant operators of crossing points.

APPENDIX 1/21: INFORMATION BOARDS

- 1 The Contractor shall provide, erect, maintain and remove information boards required to promote the project to the public. An allowance of 4 boards should be made. the location of these will be agreed with Project Manager on site. These signs should comply with the following minimum requirements:

Size: Minimum width 1500mm height 1500mm
Letter: colour Black
Background: White
Border: Black
Material: Non reflective
x-height: 75mm

- 2 In addition to the scheme information boards, signs will be required (in addition NRSWA requirements) advising the public of a start date and a completion date for the works. Drawings showing the arrangement for information boards will be provided to the Contractor by the Project Manager. These signs should comply with the following minimum requirements:

Size: Minimum width 1150mm height 960mm
Minimum Area: 1.10 sq.m.
Letter: colour Black
Background: Yellow
Border: Black
Material: Microprismatic reflective
x-height: 50mm

APPENDIX 1/22: PROGRESS PHOTOGRAPHS

- 1 Progress photos are required prior to any work taking place, monthly during the works starting at one month from the Contract Date, and one set immediately following Completion. Further sets of photographs may be required following the completion of the rectifying of defects until the defects date. Each set of photographs shall be taken from the same locations as far as is practicable, which shall be agreed with the Project Manager and which shall show the full extent of the works.
- 2 Additional pre-start photographs shall be taken as required to include photographs of adjacent buildings, and other features, including vegetation and historic sites and buildings that may be the subject of damage caused by the works. Such photographs shall be of a detail and frequency to establish accurately the condition of such items prior to the works.
- 3 Photographs shall be provided in hard copy at a size of no smaller than 8" x 10", and also in JPEG format at a resolution of no lower than 8MP, supplied to the Project Manager at the intervals stated in Clause 1 of this appendix on a DVD or other suitable media as agreed with the Project Manager. Such media shall be guaranteed as being virus- and malware-free by the Contractor.
- 4 The copyright of all photographs shall be vested with the Employer in accordance with the contract and shall be supplied to the Project Manager within 1 week of being taken.

APPENDIX 1/23: RISKS TO HEALTH AND SAFETY

- 1 Details of known specific and extraordinary hazards are listed in the Pre-Construction Information (PCI) Pack, document reference: 60629784-REP-30-PC-CT-0004 and Designer's Risk assessment and Hazard Elimination, document reference: 60629784-REP-30-PC-CT-0003.

APPENDIX 1/24: QUALITY MANAGEMENT SYSTEM

- 1 The Quality Plan shall be submitted to the Project Manager for acceptance not later than three weeks after award of the Contract.
- 2 The Quality Plan shall include details on the following as a minimum:
 - (i) The Contractor's Organisation and Management, including:
 - (a) Including the organisation of the contract, line command and communication links between parties involved in the Contract on and off site.
 - (b) The names, roles, responsibilities and authority of principals and key personnel.
 - (ii) Identification of the parts of the Contractor's Quality Management System relevant to the Works.
 - (iii) Supply Chain Management, including:
 - (a) Including details of control and communications processes, assessment of the supplier's and subcontractor's quality management systems and quality control capabilities, monitoring arrangements, review and acceptance of work items being undertaken by the subcontractor or supplier.
 - (b) Details and scheduling of Quality Plans required by relevant National Highways Sector Schemes or other quality management schemes.
 - (c) Details of registration to relevant National Highway Sector Schemes or other quality management schemes.
 - (iv) Document control procedures, including:
 - (a) Controls relevant to the Works, including the control and processing of testing results, materials and workmanship certification and quality records.
 - (b) The management of quality records as required in sub-Clause 104.7
 - (c) The control and scheduling of all documentation to be submitted to the Project Manager as required by the Specification throughout the Works.
 - (v) Resource Management procedures, including:
 - (a) Details of relevant skills and experience of personnel involved in the Works.
 - (b) The relevant training and/or competency assessment certificates and/or registration/skills cards as required by sub-Clause 104.10 or scheduling of when they shall be provided.
 - (vi) Method Statements.
 - (a) The Contractor shall submit method statements prior to commencement of any related work or activity and to a timetable included in the Quality Plan.
 - (vii) Hold Points.
 - (a) Refer to Appendix 1/13 for a list of hold points required by the Overseeing Organisation.

APPENDIX 2/3: RETENTION OF MATERIALS ARISING FROM SITE CLEARANCE

1 Specific instructions for materials arising from site clearance:

Description	Location	Delivered To:	Requirements
Carriageway planings and bituminous materials	Site wide	Licensed tip off site	
Chamber covers, Gully Gratings, Gully Frames	Site wide	Licensed tip off site	
Topsoil and soft excavated material	Phase 1 & 6	Licensed tip off site	
Topsoil and soft excavated material	Phase 2	Retained on site	All material to remain on site and be re-used for path gradings

- 2 The Contractor is responsible for liaison with the waste facility and should determine ahead of the works whether the materials will be accepted. In the event that materials are rejected the Contractor is responsible for making alternate arrangements.
- 3 Approval must be granted by the waste facility before the commencement of works.
- 4 The Contractor shall give the Overseeing Organisation 3 days' notice before delivering materials to the Overseeing Organisations store. This work shall include carefully unloading and stacking the materials as directed by the Yard Supervisor and allow for the provision of all plant and labour required.
- 5 The Contractor shall ensure that no material arising from his works is deposited on adjacent land. Any such material must be removed immediately and together with all other surplus and waste materials disposed of to the contractor's tip. In particular, no concrete or grout spillage or washing out of equipment may take place within the site or into the highway drainage system.

APPENDIX 4/1: ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)

1 Vehicle Restraint Systems

- (i) There are no vehicle restraint systems provided.

2 Pedestrian Restraint Systems

- (i) The location for pedestrian parapets and pedestrian guardrails are shown on drawings:
 - (a) Phase 1: 60629784-SHT-30-PCP1-CT-0401 to 0404
 - (b) Phase 2: 60629784-SHT-30-PCP2-CT-0401 to 0403
 - (c) Phase 6: 60629784-SHT-30-PCP6-CT-0401 to 0410
- (ii) Pedestrian guardrail must be installed in accordance with detail drawing 60629784-SHT-30-PC-CT-9001.
- (iii) Pedestrian guardrails shall be in accordance with BS 7818 as detailed below:
 - (a) Design Class 2, (Table 2).
 - (b) Class B. (Table 3) vertical bar infill. Intermediate rails as required.
 - (c) Posts shall be at 2.0m centres along straight alignments and placed where to accommodate change in alignment orientation of the guardrails.
 - (d) The height of pedestrian guardrails panels is to be 0.9m with total height from ground to top of guardrail being 1.0m.
- (iv) Foundations must be constructed as specified in detail drawing 60629784-SHT-30-PC-CT-9001:
 - (a) 350mm x 350mm x 450mm concrete mix ST4.
- (v) Fabricated using hot-rolled steel.
- (vi) Finish to be hot dipped galvanised.
- (vii) All hollow sections shall be drained or sealed against ingress of water

APPENDIX 5/1: DRAINAGE REQUIREMENTS

- 1 The Contractor will provide pipework and connections as shown on drawing numbers

- (i) Phase 6: 60629784-SHT-30-PCP6-CT-0501 to 0510

- 2 Permitted pipework and bedding combinations:

Pipework Material	Manufacturing Standard	Permitted Bedding
Vitrified clay extra strength	BS 60 or, BS EN 295	A, S, B, F, N
Sulphate resistant concrete	BS 5911-1 and BS EN 1916 Or, 5911-110	A, S, B, F, N
PVC-U	BS EN 1401	S, T

Short lengths of pipework, for instance connections from gullies should use Type Z bedding for all types of pipework

Flexibly jointed pipework, when used with Type-Z bedding, requires compressible filler to break the Type Z surround at each joint.

- 3 Existing drains no longer required shall be sealed or replaced in accordance with sub-clause 506.3. Drains that are to be abandoned are identified on the drawings listed in Appendix 5/1, Clause 1.
- 4 New chambers and chambers identified for cover renewal are identified on the drawings listed in Appendix 5/1, Clause 1. All covers located within the carriageway shall be ductile iron to BS EN 124, heavy duty, double triangular manhole cover and frame, to the specification:

Chamber Cover and Frame

Class: D400

Clear Opening Size: 600 x 600mm (minimum)

Frame Depth: 150mm

Type: Non-rock

PSRV: 60

- 5 Brickwork is to comply with sub-Clause 507.3 and mortar is to comply with sub-Clause 507.16.
- 6 Type G1 gullies shall be pre-cast concrete, with frames bedded on mortar complying with sub-Clause 507.16 and brickwork complying with sub-Clause 507.3.

G1 Gully Grating and Frame

Class: D400

Waterway: 450 x 450mm

- 7 Type G2 gullies shall be pre-cast concrete, with frames bedded on mortar complying with sub-Clause 507.16 and brickwork complying with sub-Clause 507.3.

G2 Gully Grating and Frame

Class: C250

Waterway: 370 x 430mm

- 8 Before new connections are made to existing pipework the existing pipework will be proven, by flushing with water, to the satisfaction of the Supervisor.

APPENDIX 5/2: SERVICE DUCTS REQUIREMENTS

1. Where ducting for street lighting is supplied for the Distributor Network Operator (DNO), it is the Contractors responsibility to establish the requirements and specification of the ducting within the project location.
2. All ducts must be installed in accordance with the manufacturer's recommendations and Clauses 501.7 and 8 of the Specification.
3. Ducts for road lighting and sign lighting cables shall be 100mm internal diameter and shall be of H.D.PE/M.D.PE material with smooth bore and be inscribed 'STREET LIGHTING' at 1 metre intervals. Ducts to be 100mm diameter for the main network. 50mm for the lateral connections from network to element (i.e. lighting column base).
4. Ducts for cables for road lighting and sign lighting shall, when required by the schedules, have cable marking tape above in accordance with Clause 1421.14.
5. Ducts for electricity cables will comply with the Energy Networks Association Technical Specification (ENATS) 12-24 - 125mm twin walled black rigid duct with the 'electric cable' embossed white marking on either side of the duct at a metre apart, ducts to be placed so that markings face upwards.
6. Marker Blocks and Location Posts required for ducts will be provided in accordance with HCD11 where appropriate.
7. In accordance with sub-clause 501.7 and 518.4 and HSE Booklet HS(G)47, ducts shall be colour coded as shown below:
8. These colours are as per NJUG guidance – Identification of Services by Colour

Utility	Colour of Duct
Gas	Yellow
Water	Blue
Electricity	Black
Telecoms	Grey
Street Lighting	Black
Traffic Signals	Orange

9. Ducts beneath the carriageway shall be installed with a minimum depth of cover not less than 750mm.
10. In verge and footway areas. ducts shall be installed with a minimum depth of cover not less than 600mm.
11. A draw cord should be left in the bottom of each duct with an additional length of 1m left every 20 metres.
12. Materials for all ducts shall be in accordance with Clause 501, Table 5/2.
13. All ducts shall be tested with a mandrel as HCD I2.
14. Where ducting is supplied for the Distributor Network Operator (DNO), it is the Contractors responsibility to establish the requirements and specification of the ducting within the project location.

APPENDIX 5/6: LINEAR DRAINAGE SYSTEM

1. The locations, size and type of Linear Drainage systems are shown on drawing number 60629784-SHT-30-PCP6-CT-0508.
2. The linear drainage channel systems are to be designed by the contractor in accordance with the Specification of Highway works, this appendix and the manufacturer's installation details.
3. The linear drainage channel system shall be certified to load class D400 as defined in BS EN 1433:2002. The contractor shall confirm suitability of their proposed system in accordance with Clause 517.2 of the Specification for Highway Works.
15. Linear drainage channel system limiting dimensions:
 - (a) Internal width = 100mm
 - (b) Length = 1000mm and 500mm
16. Concrete surround – all concrete shall be to the manufacturer's installation requirements.
17. Gratings for linear drainage systems will be galvanised and be class D400.
18. The only joints permitted in the channel portion of the linear drain are parallel to the transverse axis.
19. The grating will be of a locking or anti-theft design. It must be removable, but only using specialist keys or equipment.
20. The only joints permitted in the grating will be parallel to the transverse axis of the unit.
21. The grating will be pedestrian friendly, with inlets no greater than 10mm wide.
22. The grating will not rock or shift under loading.
23. The bottom of the channel will be curved, in cross-section.
- 24. General**
 - (i) The standard units shall be installed together with the manufacturer's accessories as required for the scheme.
 - (ii) The linear drainage channel outfalls will be connected to the adjacent existing gully lateral pipe.
 - (iii) Linear drainage system outlet drains less than 1.2m deep to have Type Z bed and surround and shall be measured separately.
 - (ii) The designed / proposed linear drainage channel system shall be submitted to the Project Manager for their review at least two weeks before the construction of the linear drainage channel systems. The following information is to be provided to the designer:
 - a. Calculated design flows and maximum capacities for the outfalls
 - b. Typical details for the channels, access units and the outlet units
 - c. Construction details

APPENDIX 6/1: REQUIREMENTS FOR ACCEPTABILITY AND TESTING OF EARTHWORKS MATERIALS

1. Excavated Material

(a) Unacceptable Material

The following classes of unacceptable material are included in the Contract.

<u>Class</u>	<u>Description</u>
U1A	Unacceptable material as defined in Clause 6012(i)(a) and 601.2(i)b
U1B	Unacceptable material as defined in Clause 6012(i)(a) and 601.2(ii)a
U2	Presence of material as defined in Clauses 6013(i) shall be notified to the Project Manager.

APPENDIX 6/2: REQUIREMENTS FOR DEALING WITH CLASS U1B AND CLASS U2 UNACCEPTABLE MATERIALS

- 1 Unacceptable material as defined in Clause 601 of MCHW shall be deemed unsuitable for inclusion in the permanent works.
- 2 No areas of U2 material have been identified.
- 3 Handling of Class U2 unacceptable material must be strictly dealt with in accordance with the following acts and statutes:
 - (i) Environmental Protection Act 1990;
 - (ii) Control of Pollution Act, 1974;
 - (iii) Special Waste Regulations, 1981;
 - (iv) Hazardous Waste (England and Wales) Regulations 2005;
 - (v) Radioactive Substances Act 1993; and
 - (vi) any other relevant documents.
- 4 Should Naturally Occurring Radioactive Materials or other contaminated materials be discovered the Contractor shall notify the Project Manager immediately. A detailed site investigation will be undertaken if required to verify the contamination status of the materials considering the proposed end use of the development as a road. The investigation will be planned and undertaken in accordance with British Standard BS 5930:1999+A2:2010 and BS10175:2011
- 5 A method statement must be submitted to the Project Manager detailing how this unsuspected contamination shall be dealt with and no further development shall be carried out until written approval has been received from the Project Manager.
- 6 All identified Class U2 unacceptable material must be disposed of at a suitably licensed tip.

APPENDIX 6/3: REQUIREMENTS FOR EXCAVATION, DEPOSITION, COMPACTION (OTHER THAN DYNAMIC COMPACTION)**1. Drawings**

Refer to the following drawings for the extent of works:

- i. Phase 1: 60629784-SHT-30-PCP1-CT-0201 to 0204
- ii. Phase 2: 60629784-SHT-30-PCP2-CT-0201 to 0203
- iii. Phase 6: 60629784-SHT-30-PCP6-CT-0201 to 0210

2. General

- i. Method Compaction shall be carried out in accordance with Table 6/4 of the Specification for Highway Works (SHW) otherwise end-product compaction will be required. The Contractor shall submit his proposal in writing to the Designer for approval where end-product compaction is to be carried out.

APPENDIX 6/5: GEOTEXTILES USED TO SEPARATE EARTHWORKS MATERIALS

- 1. Contract specific requirements and details:

Characteristics	Test Standard	Value and Unit
Tensile strength	BS EN ISO 10319	18 kN/m

- 7 Geotextile used to be categorised as a root barrier system capable of acting as a barrier against vegetation roots to protect the proposed pavement construction.

APPENDIX 6/8: TOPSOILING

- 8 Topsoil shall be formed to the proposed levels as required by Clause 618.
- 9 Topsoil generated from the site to be stored in accordance with Clause 602.10.
- 10 Topsoiling of the soft areas / grading extents to be via using material excavated as part of the widening of existing footpaths and through greenfields (Class 5A).
- 11 If there is insufficient topsoil arising on site, Class 5B topsoil imported for use shall comply with BS 3882:2007.

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

1. The material used for reinstatement will be agreed before reinstatement work commences and will depend on the location of the reinstatement.
2. The use of asphalt reinforcement in permanent trench reinstatement Works shall be agreed with the Contractor's Design Representative before any such work commences. The asphalt reinforcement shall be glass fibre reinforcement fabric.
3. The Contractor shall carry out all permanent reinstatement of excavations opened by Statutory Undertakers or others in the course of their diversionary Works in areas of carriageway or paved areas which are to be subsequently overlaid.
4. Before any overlaying or trimming of existing surfaces is carried out, the Contractor shall ensure that:
 - I. All existing road studs shall be taken up and assessed for their potential to be reused. See the details in Appendix 2/3;
 - II. All existing channels shall be thoroughly cleaned and any vegetation encroaching onto the carriageway shall be removed or else restricted from encroaching onto the carriageway;
 - III. The surface shall be mechanically swept, and any debris or surplus material shall be removed to an offsite tip.
5. A tack coat or bond coat shall be applied where necessary before any new pavement layer is constructed.
6. Hot bituminous binder is to be applied to both the horizontal and vertical faces of exposed bituminous materials in existing pavements and the vertical face of kerbing, beneath finished road level, prior to the laying of bituminous reinstatement materials.
7. Temporary reinstatement of existing carriageway may be required in order to construct the scheme. This temporary reinstatement may need to be trafficked for an indeterminate length of time. This temporary reinstatement shall have a minimum PSV of 65 and shall be included for in the rates supplied for the reinstatement of trenches for pipes ducts and cables.
8. All work is to be carried out in accordance with the 'Specification for Reinstatement of Openings in Highways' 3rd Edition 2010 issued by the Highway Authorities and Utilities Committee.
9. The construction detail for joints between bituminous surfacing can be seen on KNOWSLEY COUNCIL standard detail drawing no. E/SD/700/06.
10. Figure 1 below illustrates a typical trench re-instatement in bituminous pavements.

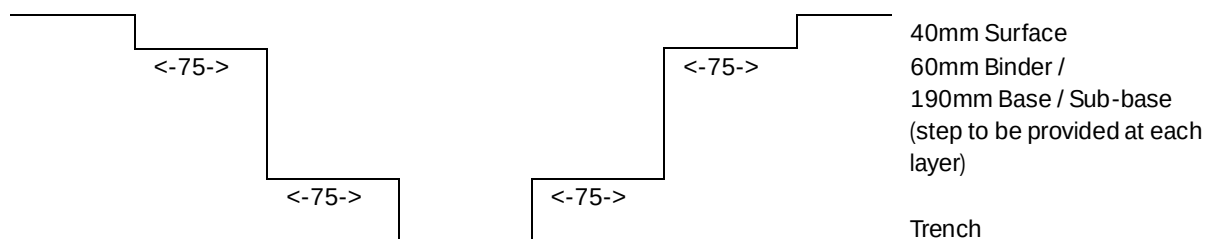


Figure 1: Typical Trench Re-instatement in Bituminous Pavements

APPENDIX 7/4: BOND COATS, TACK COATS AND OTHER BITUMINOUS SPRAYS

1. All new and existing bituminous surfaces which are to be overlaid shall receive a bond coat in accordance with Clause 920.
2. The Contractor will use a CE marked bond coat complying with Clause 920 which is either:
 - (i.) A catatonic polymer modified bitumen emulsion complying with BS EN 13808, or;
 - (ii.) A polymer modified bitumen complying with BS EN 14023.
3. The bond coat will be applied at the rate of spread specified in BS 594987, or as described in the manufacturer's instructions. Should there be a disagreement between the manufacturer's instructions and BS 594987 then the manufacturer's instructions will prevail.
4. Pendulum Class 4 bond coat (minimum peak cohesion¹ 1.0 J/cm²) or Pendulum Class 5 (minimum peak cohesion¹ 1.2 J/cm²) bond coat will be applied to all surfaces that will receive bituminous material.
5. Before receiving a bond coat surfaces will be thoroughly cleaned and allowed to dry.
6. All vertical faces of ironwork within the surface course depth shall be coated with bitumen immediately prior to laying the surface course.
7. The Contractor shall ensure that when applying the bond suitable approved procedures to ensure that kerbs, edgings or any other features in the footway or carriageway are not marked or stained are employed.

Information to be provided by the Contractor

The Contractor shall provide the following information prior to the commencement of the work:

8. The product or products proposed for use together with their data sheets, product identification data, cohesivity data as specified.
9. 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.
10. The spraying equipment proposed, and a test certificate.
11. The source or sources of blinding material proposed.
12. Contingency plans in the event of any breakdown.
13. The results of any other tests or other data the Contractor considers would assist the Overseeing Organisation in assessing the technical merit of the treatment such as:
14. Tackiness test and/or trafficability time and methods of test.
15. Breaking time test results for different weather conditions and substrates.

Binder Data Sheet – Appendix 7/4		Bond Coats, Tack Coats and Other Bituminous Sprays			
Manufacturer of Binder:			Product name:		
Binder type:			Batch no:		
Binder Grade (highlight as required)					
Conventional Intermediate Premium Super-premium Non-tack Other					
Binder	Source →		Recovered Binder		Recovered Binder after Ageing Test
	Test ↓		Recovered in accordance with Clause 923		Ages in accordance with Clause 923

¹ Vialit Pendulum Peak Cohesion

Penetration at 25°C 0.1 mm (100g and 5s)		
Penetration at 5°C 0.1 mm (200g and 60s)		
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 to BS EN 12591 and cutback bitumen to BS EN 12591:2009 and BS EN 13924:2006. 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:		

APPENDIX 11/1: KERBS, FOOTWAYS AND PAVED AREAS**General**

1. All new kerb lines are to be set to the co-ordinated information that will be supplied to the successful tenderer and, where necessary, agreed on site with the Engineer.
2. No unit of kerb, channel or edging shall be used if its length is less than 300mm.
3. Kerb Types shall be as indicated on Drawings
 - i. Phase 1: 60629784-SHT-30-PCP1-CT-1101 to 1104
 - ii. Phase 2: 60629784-SHT-30-PCP2-CT-1101 to 1103
 - iii. Phase 6: 60629784-SHT-30-PCP6-CT-1101 to 1110
4. Precast concrete kerbs, edgings and angle kerbs shall be hydraulically pressed complying with BS 7263: Part 1 and shall be laid and bedded on a layer of Class 1 mortar not less than 10mm and not more than 40mm thick.
5. All kerbs and edgings shall be installed in accordance with detail in drawing: 60629784-SHT-30-PC-CT-9001.
6. All kerbs and edgings shall be laid on a ST4 concrete foundation and backed with ST4 concrete haunch with sulphate resisting cement unless otherwise stated on the Contract Drawings.
7. If kerbing is laid in a wet concrete foundation a mortar bed is not required. The haunch to the kerb must be laid within 2 hours of the kerb being laid.
8. For a radius of 12 metres or less, kerbs of appropriate radius shall be used unless the Contract Drawings state that cut lengths of kerb are to be used. The minimum cut length is to be 300mm and cuts shall be perpendicular to the line of the curve.
9. The surface level of units of kerb, edging and edging kerb shall not deviate from the design level +/- 6mm, 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.

Kerbs, Channels and Edgings

10. The PCC units detailed in Table A below are specified in this contract and their locations are shown on Drawings:

- i. Phase 1: 60629784-SHT-30-PCP1-CT-1101 to 1104
- ii. Phase 2: 60629784-SHT-30-PCP2-CT-1101 to 1103
- iii. Phase 6: 60629784-SHT-30-PCP6-CT-1101 to 1110

Table A – Kerbs and Edgings

Ref	Kerb Type	Material	Dimensions (Length x width x height) mm	Surface Textures	Base	Backing	Joint	Notes
A	Standard Half-battered (HB2)	PCC	914x125x255	Standard	150mm ST1	150mm	2-4mm	Refer to setting out information for upstand
B	Dropped Bull Nosed Kerb (BN2)	PCC	914x125x150	Standard	150mm ST1	150mm	2-4mm	6mm upstand
C	Half-battered to Bullnose Transition	PCC	914x125x255 To	Standard	150mm ST1	150mm	2-4mm	Full upstand to

Ref	Kerb Type	Material	Dimensions (Length x width x height) mm	Surface Textures	Base	Backing	Joint	Notes
			914x125x150					6mm upstand
D	Edging	PCC	914x50x150	Standard	100mm ST1	100mm	2-4mm	0mm upstand / flush

Footway and Paved Areas

For Kerbs, Footways, and Paved Areas for details relating to footway construction, refer to drawings.

- iv. Phase 1: 60629784-SHT-30-PCP1-CT-1101 to 1104
- v. Phase 2: 60629784-SHT-30-PCP2-CT-1101 to 1103
- vi. Phase 6: 60629784-SHT-30-PCP6-CT-1101 to 1110

Footway Construction: Type A - Resurfacing

Surfacing	Clause	Material	Thickness	Special Requirements
Surface Course	1105	Asphalt Concrete	20 mm	Dense Surf Course, AC 6 Dense Surf, 100/150 (EN 13108 - 1)
Binder Course	1105	Asphalt Concrete	60 mm	Dense Bin, AC 20 Dense Bin, 100/150 (EN 13108 – 1)

Footway Construction: Type B – Full Construction:

Surfacing	Clause	Material	Thickness	Special Requirements
Surface Course	1105	Asphalt Concrete	20 mm	Dense Surf Course, AC 6 Dense Surf, 100/150 (EN 13108 - 1)
Binder Course	1105	Asphalt Concrete	60 mm	Dense Bin, AC 20 Dense Bin, 100/150 (EN 13108 – 1)
Subbase	803	Type-1 unbound mixture	200 mm	Mixtures containing crushed gravel coarse aggregates are not permitted.

Blister Tactile Paving Footway Construction

Surfacing	Clause	Material	Thickness	Special Requirements
Blister Paving	-	Pre-cast concrete 450x450mm Red coloured (controlled crossings) Buff coloured (uncontrolled crossings)	70mm	Max. fall 1:12 or to match resulting falls of existing surface constraints / levels
Laying course	-	Mortar Bed	25mm	3:1 class (i) sand/cement mortar

Surfacing	Clause	Material	Thickness	Special Requirements
Subbase	803	Type-1 unbound mixture	200mm	Mixtures containing crushed gravel coarse aggregates are not permitted.
Surface mounting tactile paving	-	GRP/Polyurethane 450x450mm	6mm	To be laid on iron/manhole covers only. Colour RED for controlled Colour Buff for uncontrolled crossings Mounted as per manufacturer's recommendations.

Corduroy and Tramline Tactile Paving Footway Construction

Surfacing	Clause	Material	Thickness	Special Requirements
Corduroy Paving	-	Pre-cast concrete 400x400mm Buff coloured	65mm	Laid for 800mm in total length
Laying course	-	Mortar Bed	25mm	3:1 class (i) sand/cement mortar
Subbase	803	Type-1 unbound mixture	200 mm	Mixtures containing crushed gravel coarse aggregates are not permitted.

APPENDIX 12/1: TRAFFIC SIGNS: GENERAL**Schedule of Traffic Signs**

1. Refer to the drawing number for location of traffic signs
 - i. Phase 1: 60629784-SHT-30-PCP1-CT-1201 to 1209
 - ii. Phase 2: 60629784-SHT-30-PCP2-CT-1201 to 1207
 - iii. Phase 6: 60629784-SHT-30-PCP6-CT-1201 to 1221
2. The location of signs shall have due regard for the requirements for visibility in particular at junctions. The final position of each traffic sign shall be agreed with the Project Manager on site before the erection is started.
3. Refer to the drawings listed above for diagram number in Schedules 1, 2, 3, 4, 5 or 7 of the Traffic Signs Regulations and General Directions 2002 No. 3113 and drawing numbers giving Contract-specific details.
4. Refer to drawings listed above for overall sizes of sign plates and details of any light-spill screens.
5. Refer to drawings listed above and Knowsley Council Standard Details for requirements for type of material, preparation and finish, for sign plates, posts, etc.
6. Refer to drawings listed above for number, type and size of posts including details of any baseplates or flange plates to requirements of sub-clause 1204.
7. Refer to drawings listed above for the type of sign face material including the Class of any retroreflective material.
8. Refer to drawings listed above for the type of any direct illumination; whether internal or external, overhead mounted or upward pointing luminaires and whether free standing on separate foundations. Also the luminance and impact categories of the signs and luminaires.
9. The method of switching the illumination is by photo-electric control.
10. Temporary Traffic Signs: Refer to drawings listed above for all temporary traffic signs. See Chapter 8 – Traffic Signs Manual.

Additional Information

11. Requirements for the covering of signs to comply with sub-clause 1209.1.
12. All traffic sign housings shall be provided with vandal and weather resistant locks. Types of lock to traffic sign housings shall be agreed with DCC and shall be supplied with six (6 No.) keys of any one type.
13. Location identifying marks shall be in accordance with Appendix 13/1 for lighting columns. One set of numerals shall be fixed to each sign post carrying/adjacent to a luminaire below the lower edge of the sign.
14. All sign plates shall be clearly and durably marked on the back (not exceeding 100mm x 150mm) with the following information, self-adhesive stickers will not be accepted.
 - (i) Sign manufacturers name or trade mark, month and year of manufacture;
 - (ii) Allocated sign number in the order or schedule;
 - (iii) Date of erection.
15. Requirements for filling pockets in concrete foundations to comply with the requirements of sub-Clause 1208.4.
16. Prior to the placement of orders for any signs the Contractor shall:
 - (iv) Agree the position of all signs with DCC;
 - (v) Confirm the existing verge and highway boundary is wide enough for the sign;
 - (vi) Check suitable visibility to the sign face is achievable.
17. Minimum mounting heights shall be:
 - (vii) Over footpaths: 2.1m

(viii) Over grass verges: 1.0m

(ix) Over cycle routes: 2.4m

18. All signs are to have Class 1 retro-reflecting material unless noted otherwise.

19. The sign face shall be covered with fully retro-reflective sheeting to comply with current standard BS EN 12899 – 1:2001. All materials and finishes used for the sign face shall be compatible so as to avoid failure or deterioration due to electrolytic action or by differential thermal expansion. A manufacturer's guarantee of not less than 10 years shall be obtained for both the retro-reflective and non retro-reflective parts of that face.

20. Minimum clearance between kerb face and sign edge should be not less than 450mm.

21. Signs required to be illuminated shall either be lit throughout the hours of darkness or during the street lighting period in accordance with the requirements of the adopting authority DCC.

22. Temporary signs, to be erected for a period of 3 months following completion of the works and to be removed by the Contractor.

(x) Where signs are to be illuminated, illumination is to be external unless otherwise stated;

(xi) Posts shall be provided with suitably sized integral base housing.

23. All existing signs to be relocated shall be inspected by DCC and approved for relocation. If the signs are not in a satisfactory condition or do not comply with current regulations, then new signs shall be erected in place of existing.

24. Foundations for Permanent Traffic Signs and Signals to the requirements of clause 1203.

25. All completed sign plates including those with grey screen surround shall have rounded corners, as Traffic Signs Manual Chapter 7. Sign Plates for Permanent Traffic Signs to comply with sub-clause 1205.

26. Faces for Permanent Traffic Signs to the requirements of sub-clause 1206.

27. Construction and Assembly of Permanent Traffic Signs to the requirements of sub-clause 1207.

Permanent Bollards

28. For bollards to be placed within Phase 6 (shown on drawings 60629784-SHT-30-PCP6-CT-1201 to 1210), wooden sign directional bollards to be used. Such bollards to be Glenwood Post range or equal approved. Installation of bollards and foundation details to be as per manufacturer's recommendations.

29. For bollards to be placed within Phases 1 and 2 (shown on 60629784-SHT-30-PCP1-CT-1201 to 1209 and 60629784-SHT-30-PCP2-CT-1201 to 1207), plastic sign directional bollards to be used. Such bollards to be Ensign bollard or equal approved. Installation of bollards and foundation details to be as per manufacturer's recommendations.

APPENDIX 12/3: ROAD MARKINGS AND STUDS

General

1. The proposed permanent road markings are shown on drawings:
 - iv. Phase 1: 60629784-SHT-30-PCP1-CT-1201 to 1204
 - v. Phase 2: 60629784-SHT-30-PCP2-CT-1201 to 1203
 - vi. Phase 6: 60629784-SHT-30-PCP6-CT-1201 to 1210
2. Markings shall comply with Traffic Signs and General Directions 2016 and Traffic Signs Manual (Chapter 5).
3. New road markings must tie in correctly with existing road markings on the limit of the Works.
4. All enforceable road markings and traffic signage shall not be installed prior to completion of the relevant Traffic Regulation Order.

Materials and Application

5. All permanent road markings shall be of thermoplastic material complying with BS 3262 Class A. All road markings shall be yellow or white and shall be reflectorised as described in Clause 1212.3 with additional solid glass beads placed on the surface.
6. Temporary road markings shall be in accordance with the requirements of sub-Clauses 1212.13 to 1212.16. Temporary markings shall be reflectorised to the same standard as permanent markings and in accordance with Clause 4 of this Appendix.
7. Bond coats are not required except on concrete surfaces, setts or where otherwise instructed by the Overseeing Organisation.
8. Permanent or temporary lines and studs which conflict with the permanent road markings shall be removed to the satisfaction of the Project Manager / Supervisor.
9. The method employed for removing road markings shall be grit blasting. Throughout the grit blasting process, a road sweeper shall be present on the site to remove the associated grit and resulting debris.

