BURO HAPPOLD

Mayfield

Highway Works Phase 1

MAY101-WSD-EXT-BUR-DC-7020-0201

0046688

23 September 2025

Revision P03

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Revision	Description	Issued by	Date	Checked
P01	For Information	WM	27/11/24	CB
P02	Update	HE	19/09/25	PA
P03	Update	HE	23/09/25	PA

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date	**23/09/25**

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Contents

Preamble to the Specification 4

Series 0000: Introduction 6

Series 0100: Preliminaries 18

Series 0200: Site Clearance 39

Series 0500: Drainage and Service Ducts 42

Series 0700: Road Pavements – General 51

Series 1100: Kerbs, Footways and Paved Areas 55

Series 1200: Traffic Signs 56

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Preamble to the Specification

The Specification referred to shall be the "Specification for Highway Works", published as Volume 1 of the Manual of Contract Documents for Highway Works, as modified and extended by the following:-

(a) Appendix 0/1: Contract-specific Additional. Substitute and Cancelled Clauses and Tables.

(b) Appendix 0/2: Contract-specific minor alterations to existing Clauses and Tables.

(c) The Numbered Appendices listed in Appendix 0/3.

Appendix 0/4 contains a list of the Drawings.

Appendix 0/5 has not been used in this Specification, as well as pages specifically regarding Scotland, Wales and Northern Ireland.

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

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

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

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.

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

Statutory Undertakers

Statutory Undertaker specifications shall be used over and above the Specification for Highways Works. If there is a conflict between the two, then the Statutory Undertakers specification shall take precedence.

Description of Works

The contract documents include for the following works.

<u>Foul Water</u>

Foul water connection from the development site to the existing UU sewer located at the London Road/Mancunian Way Junction.

<u>London Road Junction</u>

Highway works at London Road junction with Mancunian Way to include, but not limited to, surfacing, kerbing, drainage, utility amendments, ducting, signage and road markings. Works include the relocation of several traffic signals, for which TfGM have provided a design. TfGM will supply and install the traffic signal equipment, signal controller, signal poles, slot cutting of detector loops, mains electricity supply, controller configuration, the

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commissioning of the site and the installation of the new CCTV camera. The supply and installation of signal ducts, inspection chambers and NAL pole retention sockets shall be done by the civils contractor and is included in this tender.

Also included in this package of works is the installation of HV ducting required for the Mayfield development. All ducting shall be installed to ENW standards.

Permanent Highways

Highway works to Baring Street, Travis Street, Buxton Street and Berry Street to include, but not limited to, surfacing, kerbing, drainage, utility amendments, ducting, signage, road markings, lighting, street furniture ands rain gardens. These works include an area of highway that will have a Prohibition of Driving applied.

Offsite Parking

To cater for the works and removal of parking infrastructure on Buxton Street, there are five areas offsite that require additional parking to be installed as per the MCC design included in the tender package. These are on Lower Ormond Street, Chapeltown Street, Peak Street, River Street and Garwood Street.

Approvals

The contractor shall be responsible for obtaining all approvals relating to works in the highway and to existing services. The Client has sought the following approvals.

- Section 278 approval for highway works
- TfGM approval and design for junction alterations
- UU Section 106 Part 1. The contractor shall be responsible for Part 2.
- UU Section 104 adoption. The contractor shall be responsible for obtaining final survey and sign-off.
- PFI lighting approval with MCC. The contractor shall be responsible for obtaining final sign off and power connection.
- ENW connection for bollards. The contractor shall be responsible for obtaining final sign off and power connection.

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Series 0000: Introduction

Appendix 0/1: Contract-specific Additional, Substitute and Cancelled Clauses, Tables and Figures Included in the Contract

Appendix 0/2: Contract-specific Minor Alterations to Existing Clauses, Tables and Figures Included in the Contract

Appendix 0/3: List of Numbered Appendices Referred to in the Specification and Included in the Contract

List 'A' is a complete list of the Numbered Appendices referred to in the Specification for Highway Works. Those not adopted in this Contract shall be marked with a line through. Those identified by the letters T or C shall be completed by the Tenderer or Contractor respectively.

Key to symbols:

(E) Employer's Agent compiles: identified in the Notes for Guidance examples by the term 'Sample' included in their title.

(E/C) Employer's Agent partially compiles and Contractor completes and returns to Employer's Agent.

(E/T) Employer's Agent partially compiles and Tenderer completes and returns with Tender.

(C) Contractor completes and returns to Employer's Agent.

(I) For Contractor's information only.

(P) This indicates the Appendix is a national pro forma and format must not be altered.

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List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works

Page No.	Completed by	Appendix. No.	Title
			INTRODUCTION
	(E)	0/1	Contract-specific Additional, Substitute and Cancelled Clauses and Tables Included in the Contract
	(E)	0/2	Contract-specific Minor Alterations to Existing Clauses and Tables Included in the Contract
	(E)	0/3	List of Numbered Appendices Referred to in the Specification and Included in the Contract
	(E)	0/4	List of Drawings Included in the Contract
	~~(E)~~	~~0/5~~	~~Special national Alterations of the Overseeing Department of Scotland, Wales or Northern Ireland~~
			PRELIMINARIES
		~~1/1~~	~~Temporary Accommodation and Equipment for the Contract Administrator~~
		~~1/2~~	~~Vehicles for the Contract Administrator~~
		~~1/3~~	~~Communication System for the Contract Administrator~~
	(E)	1/4	Working and Fabrication Drawings
	(E)	1/5	Testing to be Carried out by the contractor
	(E)	1/6	Supply and Delivery of Samples to the Employer's Agent
	(E)	1/7	Site Extent and Limitations on Use
		~~1/8~~	~~Operatives for the Contract Administrator~~
	(E)	1/9	Control of Noise and Vibration
		~~1/10~~	~~Structures to be Designed by the contractor~~
		1/11	Temporary Works Design
	(E)	1/12	Setting Out and Existing Ground Levels
	~~(C)~~	~~1/13~~	~~Programme of Works~~
	~~(E)~~	~~1/14~~	~~Monthly Statements~~
	~~(E)~~	~~1/15~~	~~Accommodation Works~~
	(E)	1/16	Privately & Publicly Owned Services & Supplies
	(E)	1/17	Traffic Safety & Management
	~~(E)~~	~~1/18~~	~~Temporary Diversions for Traffic~~

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List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works

Page No.	Completed by	Appendix. No.	Title
	(E)	1/19	Routing of Vehicles
		~~1/20~~	~~Recovery Vehicles for Breakdowns~~
	(E)	1/21	Information Signs
	~~(E)~~	~~1/22~~	~~Progress Photographs~~
	(E)	1/23	Risks to health and safety from materials or substances
	(E)	1/24	Quality Management System
	~~(E)~~	~~1/25~~	~~Temporary Closed Circuit Television (CCTV) Systems for the monitoring of Traffic~~
	~~(E)~~	~~1/26~~	~~Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks~~
	~~(E)~~	~~1/27~~	~~Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks (TASCAR)~~
		~~1/28A~~	~~Cold Weather~~
			SITE CLEARANCE
	~~(E)~~	~~2/1~~	~~List of Buildings, etc., to be Demolished~~
		2/2	Filling of Trenches & Pipes
	(E)	2/3	Retention of Material Arising from Site Clearance
		~~2/4~~	~~Explosives & Blasting~~
		2/5	Hazardous Materials
		~~2/6A~~	~~Reduced Level Dig~~
			~~FENCING AND ENVIRONMENTAL BARRIERS~~
		~~3/1~~	~~Fencing, Gates and Stiles~~
			~~SAFETY FENCES, SAFETY BARRIERS AND PEDESTRIAN GUARDRAILS~~
		~~4/1~~	~~Safety Fences and Safety Barriers~~
	~~(E)~~	~~4/2~~	~~Information Required to demonstrate compliance of Road Restraint Systems~~

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List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works

Page No.	Completed by	Appendix. No.	Title
			DRAINAGE AND SERVICE DUCTS
	(E)		
	(E)	5/1	Drainage Requirements
		5/2	Service Duct Requirements
	~~(E)~~	~~5/3~~	~~Surface Water Channels and Drainage Channel Blocks~~
		~~5/4~~	~~Fin Drains and Narrow Filter Drains~~
		~~5/5~~	~~Combined Drainage and Kerb Systems~~
		~~5/6~~	~~Linear Drainage Channel Systems~~
		~~5/7~~	~~Thermoplastics Structural Wall Pipes and Fittings~~
		~~5/8~~	~~Maintenance Plans for Soakaways~~
			EARTHWORKS
	(E)	6/1	~~Requirements for Acceptability & Testing etc., of Earthworks Materials~~
	(E)	6/2	~~Requirements for Dealing with Class U2 Unacceptable Material~~
	(E)	6/3	~~Requirements for Excavations, Deposition, Compaction (Other than Dynamic Compaction)~~
	(E)	6/4	~~Requirements for Class 3 Material~~
	(E)	6/5	~~Geotextile Used to Separate Earthworks Materials~~
		6/6	~~Fill to Structures & Fill Above Structural Foundations~~
	(E)	6/7	~~Sub-Formation & Capping & Preparation & Surface Treatment of Formation~~
	(E)	6/8	~~Top soiling, Grass Seeding and Turfing~~
		6/9	~~Earthwork Environmental Bunds, Landscape Areas, Strengthened Embankments~~

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List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works

Page No.	Completed by	Appendix. No.	Title
		~~6/10~~	~~Ground Anchorage's, Crib Walling and Gabions~~
		~~6/11~~	~~Swallow Holes & Other naturally Occurring Cavities & Disused Mine Workings~~
		~~6/12~~	~~Instrumentation & Monitoring~~
		~~6/13~~	~~Ground Improvement~~
		~~6/14~~	~~Limiting Values for Pollution and Controlled Waters~~
		~~6/15~~	~~Limiting values for Harm to Human to Human Health and Environment~~
			ROAD PAVEMENTS - GENERAL
	(E)	7/1	Permitted Pavement Options
	(E)	7/2	Excavation & Reinstatement of Existing Surfaces
		~~7/3~~	~~Surface Dressing~~
	(E)	7/4	Bond Coates, Tack Coates and Bituminous Sprays
		~~7/5~~	~~In Situ Recycling: The Repave Process~~
	(E)	7/6	Breaking Up or Perforation of Existing Pavement
		~~7/7~~	~~Slurry Surfacing Incorporation Microsurfacing~~
		~~7/8~~	~~Not Used~~
		~~7/9~~	~~Cold Milling of Bituminous Bound Flexible Pavement~~
		~~7/10~~	~~Work Sheet Proforma for Results of Testing for Constituent Materials in recycled aggregate and recycled concrete aggregate~~
		~~7/11~~	~~Overband and Inlaid crack sealing Systems~~
		~~7/12~~	~~Arrester Beds~~
		~~7/13~~	~~Saw-cut and Seal Bituminous Overlays on existing Jointed concrete pavements~~
		~~7/14~~	~~Preparation of Jointed Concrete Pavements Prior to Overlaying and Saw-cut and seal of the Bituminous Overlay~~
		~~7/15~~	~~Saw-cut, Crack and Seat Existing Jointed Reinforced Concrete Pavements~~
		~~7/16~~	~~Cracking and Seating of Existing Jointed Unreinforced Concrete pavements and CBM Bases~~

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List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works

Page No.	Completed by	Appendix. No.	Title
		~~7/17~~	~~Cracking Plant and Equipment Progress Record~~
		~~7/18~~	~~Site Specific Details and requirements for cold recycled Bitumen Bound Material~~
		~~7/19~~	~~Site Specific Details and Requirements for Recycled Cement Bound Material~~
		~~7/20~~	~~Site Specific Details and requirements for inducing cracks~~
		~~7/21~~	~~Surface Dressing – Recipe Specification~~
		~~7/22~~	~~Repairs of Potholes~~
			~~ROAD PAVEMENT AND CONCRETE MATERIALS~~
		~~10/1~~	~~Requirements for Insitu Concrete Pavement~~
			KERBS, FOOTWAYS AND PAVED AREAS
	(E)	11/1	Kerbs, Footways & Paved Areas
	~~(E)~~	~~11/2~~	~~Access Steps~~
			TRAFFIC SIGNS
	(E)	12/1	Traffic Signs General
		12/2	Traffic Signs: Road Markings and Studs
	~~(E)~~	~~12/3~~	~~Traffic Signs: marker Posts~~
		~~12/4~~	~~Traffic Signs: Cones, Cylinders, FTDs & Other Traffic Delineators~~
	~~(E)~~	12/5	Traffic Signs: Traffic Signals
		~~12/6~~	~~Traffic Signs: Special Sign Requirements on Gantries~~
			~~ROAD LIGHTING COLUMNS AND BRACKETS~~
	~~(E)~~	~~13/1~~	~~Information to be Provided when Specifying Lighting Columns and Brackets~~
	~~(E)~~	~~13/2~~	~~Column & Bracket Data Sheets 1 & 2~~
	~~(E)~~	~~13/3~~	~~Instructions for Completion of Column & Bracket Data Sheet~~

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List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works

Page No.	Completed by	Appendix. No.	Title
		~~13/4~~	~~Information to be provided when Specifying CCTV Mast~~
		~~13/5~~	~~Typical CCTV Data~~
		~~13/6~~	~~Instruction for Completion of CCTV Mast Data Sheets~~
		~~13/7~~	~~Information to be Provided when Specifying Cantilever Masts~~
		~~13/8~~	~~Typical Cantilever Mast Data- Sheet 1~~
			~~ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS~~
	~~(E)~~	~~14/1~~	~~Site Records~~
		~~14/2~~	~~Location of Lighting Units & Feeder Pillars~~
	~~(E)~~	~~14/3~~	~~Temporary Lighting~~
	~~(E)~~	~~14/4~~	~~Electrical Equipment for Road Lighting~~
		~~14/4~~	~~Schedule H – Road Lighting Column Cabling~~
		~~14/5~~	~~Electrical Equipment for Traffic Signs~~
			~~MOTORWAY COMMUNICATIONS~~
		~~15/1~~	~~Motorway communications~~
		~~15/2~~	~~Cable Duct Requirements~~
			~~PILING AND EMBEDDED RETAINING WALLS~~
	~~(E)~~	~~16/1~~	~~General Requirements for Piling and Embedded Retaining Walls~~
		~~16/2~~	~~Precast Reinforced and Pre-stressed Concrete Piles and Precast Reinforced Concrete Segmental Piles~~
		~~16/3~~	~~Bored Cast-in Place Piles~~
		~~16/4~~	~~Bored Piles Constructed Using Continuous Flight Augers and Concrete or Grout Injection Through Hollow Auger Stems~~
		~~16/5~~	~~Drive Cast-in Place Piles~~

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List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works

Page No.	Completed by	Appendix. No.	Title
		~~16/6~~	~~Steel Bearing Piles~~
		~~16/7~~	~~Reduction of Friction on Piles~~
		~~16/8~~	~~Non-Destructive Methods for Testing Piles~~
		~~16/9~~	~~Static Load Testing Piles~~
		~~16/10~~	~~Diaphragm Walls~~
		~~16/11~~	~~Hard/ Hard Secant Pile Walls~~
		~~16/12~~	~~Hard/ Soft Secant Pile Walls~~
		~~16/13~~	~~Contiguous Bored Pile Walls~~
		~~16/14~~	~~King Post Walls~~
		~~16/15~~	~~Steel Sheet Piles~~
		~~16/16~~	~~Integrity Testing of Wall Elements~~
		~~16/17~~	~~Instrumentation for Piles and Embedded Walls~~
		~~16/18~~	~~Support Fluid~~
			~~STRUCTURAL CONCRETE~~
		~~17/1~~	~~Concrete - Classification of Mixes~~
		~~17/2~~	~~Concrete - Impregnation Schedule~~
		~~17/3~~	~~Concrete - Surface Finishes~~
		~~17/4~~	~~Concrete - General~~
		~~17/5~~	~~Buried Concrete~~
		~~17/6~~	~~Grouting and Duct Systems for Post- Tensioned Tendons~~
			~~STRUCTURAL STEELWORK~~
		~~18/1~~	~~Requirements for Structural Steelwork~~
			~~PROTECTION OF STEELWORK AGAINST CORROSION~~
		~~19/1~~	~~Requirements for Bridges, Parapets and other Highway Structures Except Bearings and Lighting Columns~~
		~~19/2~~	~~Requirements for Other Works~~

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List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works

Page No.	Completed by	Appendix. No.	Title
	~~(E)~~	~~19/3~~	~~Appendix 19/3~~
		~~19/4~~	~~Appendix 19/4~~
		~~19/5~~	~~Appendix 19/5~~
			~~WATERPROOFING FOR STRUCTURES~~
		~~20/1~~	~~Waterproofing for Concrete Structures~~
			~~BRIDGE BEARINGS~~
		~~21/1~~	~~Bridge Bearing Schedule~~
			~~PARAPETS~~
		~~22/1~~	~~Parapet Schedule~~
			~~BRIDGE EXPANSION JOINTS AND SEALING OF GAPS~~
		~~23/1~~	~~Bridge Deck Expansion Joint Schedule~~
		~~23/2~~	~~Sealing of Gaps Schedule~~
			~~BRICKWORK, BLOCKWORK AND STONEWORK~~
	~~(E)~~	~~24/1~~	~~Brickwork, Blockwork and Stonework~~
			~~SPECIAL STRUCTURES~~
		~~25/1~~	~~Requirements for Corrugated Steel Buried Structures~~
		~~25/2~~	~~Requirements for Reinforced Earth and Anchored Earth Structures~~
		~~25/3~~	~~Requirements for Pocket Type Reinforced Brickwork Retaining Wall Structures~~
		~~25/4~~	~~Environmental Barriers~~
		~~25/5~~	~~Requirements for Buried Rigid Pipes for Drainage Structures~~

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List 'A': List of Numbered Appendices Referred to in the Specification for Highway Works

Page No.	Completed by	Appendix. No.	Title
			~~MISCELLANEOUS~~
		~~26/1~~	~~Ancillary Concrete~~
		~~26/2~~	~~Bedding Mortar~~
		~~26/3~~	~~Cored Thermoplastic Node Markers~~

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Appendix 0/4: List of Drawings Included in the Contract

Permanent Highways

Number	Title
0042912-BHE-XX-XX-DR-C-2052	HIGHWAY WORKS - EXISTING UTILITIES PLAN MANCUNIAN WAY SLIP WEST
0042912-BHE-XX-XX-DR-C-2053	HIGHWAY WORKS - EXISTING UTILITIES PLAN BARING, BUXTON & TRAVIS STREETS
0042912-BHE-XX-XX-DR-C-2056	HIGHWAYS WORKS - PROPOSED UTILITIES PLAN MANCUNIAN WAY SLIP WEST
0042912-BHE-XX-XX-DR-C-2057	HIGHWAYS WORKS - PROPOSED UTILITIES PLAN BARING, BUXTON & TRAVIS STREETS
0042912-BHE-XX-XX-DR-C-2102	HIGHWAYS WORKS – PROPOSED SITE CLEARANCE MANCUNCIAN WAY SLIP WEST
0042912-BHE-XX-XX-DR-C-2103	HIGHWAYS WORKS – PROPOSED SITE CLEARANCE BARING, BUXTON AND TRAVIS STREETS
0042912-BHE-XX-XX-DR-C-2202	HIGHWAYS WORKS – GENERAL ARRANGEMENT PLAN MANCUNIAN WAY SLIP WEST
0042912-BHE-XX-XX-DR-C-2203	HIGHWAYS WORKS – GENERAL ARRANGEMENT PLAN BARING, BUXTON AND TRAVIS STREETS
0042912-BHE-XX-XX-DR-C-2302	HIGHWAYS WORKS – PROPOSED PAVEMENT PLAN MANCUNIAN WAY SLIP WEST
0042912-BHE-XX-XX-DR-C-2303	HIGHWAYS WORKS – PROPOSED PAVEMENT PLAN BARING BUXTON AND TRAVIS STREETS
0042912-BHE-XX-XX-DR-C-2402	HIGHWAYS WORKS – PROPOSED ROAD MARKINGS & TRAFFIC SIGNS MANCUNIAN WAY SLIP WEST
0042912-BHE-XX-XX-DR-C-2403	HIGHWAYS WORKS – PROPOSED ROAD MARKINGS & TRAFFIC SIGNS BARING, BUXTON & TRAVIS STREETS
0042912-BHE-XX-XX-DR-C-2450	HIGHWAYS WORKS – PROPOSED ROAD MARKINGS & TRAFFIC SIGNS SCHEDULE
0042912-BHE-XX-XX-DR-C-2502	HIGHWAYS WORKS – PROPOSED DRAINAGE LAYOUT MANCUNIAN WAY SLIP WEST
0042912-BHE-XX-XX-DR-C-2503	HIGHWAY WORKS - PROPOSED DRAINAGE LAYOUT BARING, BUXTON & TRAVIS STREETS
0042912-BHE-XX-XX-DR-C-2750	HIGHWAYS WORKS – VEHICLE TRACKING SHEET 1
0042912-BHE-XX-XX-DR-C-2751	HIGHWAYS WORKS – VEHICLE TRACKING SHEET 2
0042912-BHE-XX-XX-DR-C-2752	HIGHWAYS WORKS – VEHICLE TRACKING SHEET 3
0042912-BHE-XX-XX-DR-C-2800	HIGHWAYS WORKS – PROPOSED PAVING DETAILS SHEET 1
0042912-BHE-XX-XX-DR-C-2801	HIGHWAYS WORKS – PROPOSED PAVING DETAILS SHEET 2
0042912-BHE-XX-XX-DR-C-2850	HIGHWAYS WORKS – PROPOSED DRAINAGE DETAILS SHEET 1
0042912-BHE-XX-XX-DR-C-2851	HIGHWAYS WORKS – PROPOSED DRAINAGE DETAILS SHEET 2
0042912-BHE-XX-XX-DR-C-2852	HIGHWAYS WORKS – PROPOSED HIGHWAY DETAILS
0042912-BHE-XX-XX-DR-C-2006	HIGHWAYS WORKS – MAINTENANCE PLAN

London Road Junction

Number	Title
0042912-BHE-XX-XX-DR-C-2054	HIGHWAYS WORKS – EXISTING UTILITES PLAN LONDON ROAD JUNCTION
0042912-BHE-XX-XX-DR-C-2055	HIGHWAYS WORKS – PROPOSED SERVICES AMENDMENTS LONDON ROAD JUNCTION
0042912-BHE-XX-XX-DR-C-2058	HIGHWAY WORKS – PROPOSED UTILITIES PLAN LONDON ROAD JUNCTION DRAINAGE
0042912-BHE-XX-XX-DR-C-2104	HIGHWAYS WORKS – PROPOSED SITE CLEARANCE LONDON ROAD JUNCTION
0042912-BHE-XX-XX-DR-C-2204	HIGHWAYS WORKS – GENERAL ARRANGEMENT PLAN LONDON ROAD JUNCTION
0042912-BHE-XX-XX-DR-C-2205	HIGHWAYS WORKS – LONDON ROAD JUNCTION VEHICLE TRACKING
0042912-BHE-XX-XX-DR-C-2304	HIGHWAYS WORKS – PROPOSED PAVEMENT PLAN LONDON ROAD JUNCTION
0042912-BHE-XX-XX-DR-C-2404	HIGHWAYS WORKS –PROPOSED ROAD MARKINGS AND TRAFFIC SIGNS LONDON ROAD JUNCTION

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0042912-BHE-XX-XX-DR-C-2405	HIGHWAYS WORKS – HIGHWAYS WORKS PROPOSED ROAD MARKINGS AND TRAFFIC SIGNS LONDON ROAD JUNCTION

TfGM Signal Civils

Number	Title
210289T-MCC-MD-DR-C-1200-001	Proposed P&D Bays Location 01 (Chapeltown Street)
210289T-MCC-MD-DR-C-1200-002	Proposed P&D Bays Location 02 (Peak Street)
210289T-MCC-MD-DR-C-1200-003	Proposed P&D Bays Location 03 (River Street)
210289T-MCC-MD-DR-C-1200-004	Proposed P&D Bays Location 04 (Garwood Street)
210289T-MCC-MD-DR-C-1200-005	Proposed P&D Bays Location 05 (Lower Ormond Street)
TR2_Rev C	Signpost & Foundation Details

Foul Drainage

Number	Title
0131_MAY-BHP-Z01-ZZZ-CL-C-003100	S104 APPLICATION FOUL WATER DRAINAGE CALCULATIONS
0131_MAY-BHP-Z01-ZZZ-DR-C-002502	HIGHWAYS WORKS PROPOSED MANHOLE SCHEDULE PHASE 1A ESTATE ROAD
0131_MAY-BHP-Z01-ZZZ-DR-C-002603	HIGHWAYS WORKS S104 APPLICATION PROPOSED FOUL WATER LAYOUT PHASE 1A ESTATE ROAD
0131_MAY-BHP-Z01-ZZZ-DR-C-002700	S104 APPLICATION LAND REGISTRY COMPLAINT PLAN
0131_MAY-BHP-Z01-ZZZ-DR-C-003100	S104 APPLICATION FOUL WATER DRAINAGE PLAN PHASE 1A ESTATE ROAD
0131_MAY-BHP-Z01-ZZZ-DR-C-003200	S104 APPLICATION FOUL WATER DRAINAGE LOADING SKETCH FOR UU
0131_MAY-BHP-Z01-ZZZ-DR-C-003300	S104 APPLICATION LONG SECTION PHASE 1A ESTATE ROAD
0131_MAY-BHP-Z01-ZZZ-DR-C-003700	S104 APPLICATION CONSTRUCTION DETAILS SHEET 1
0131_MAY-BHP-Z01-ZZZ-DR-C-003701	S104 APPLICATION CONSTRUCTION DETAILS SHEET 2
0131_MAY-BHP-Z01-ZZZ-DR-C-003800	S104 APPLICATION MANHOLE SCHEDULE PHASE 1A ESTATE ROAD

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Series 0100: Preliminaries

Appendix 1/4: Working and Fabrication Drawings

The Contractor shall provide the following information to the Employer's Agent (EA):

1. As built topographic survey data to allow production of as-built drawings in 2D AutoCAD model file (.dwg format), 3D AutoCAD Civil 3D model file (.dwg format) and PDF soft copy drawing. To the topographic specification included as an appendix to this document. The survey shall clearly identify the new works against existing works by using suitably named layers.
2. Pipework and ducting surveys to include line and level survey prior to backfilling.
3. Chamber and manhole cards, including:
    a. Photos.
    b. Invert and cover level information.
    c. Cover opening and loading specification.
4. CCTV inspection of private and adoptable pipelines and ducts as required by Statutory Undertakers.
    a. Carry out and record internal inspection of all pipes and ducts and associated manholes with CCTV equipment.
    b. Carry out mandrel survey of pipes/ducts as required by Statutory Undertakers.
    c. Provide all necessary equipment, including suitable covered accommodation for viewing monitor screen, together with personnel experienced in operation of the equipment and interpretation of the results.
    d. Ensure that adequate intensity of illumination within pipes and ducts is maintained. Provide for continual position recording, still photographs and stopping movement of the camera at any point requested by the OO.
    e. Provide copy of recording on a CD or DVD to the OO.
    f. Obtain instructions from the OO on remedying any defects, which may be revealed.
    g. Where pipelines and ducts are under highways, all construction except for laying of the surface course must be completed before the inspection.
    h. Obtain instructions from the OO on remedying any defects, which may be revealed.
    i. CCTV inspection of all adoptable drainage pipelines shall be co-ordinated and approved by Thames Water.
5. A Traffic Management Plan for the scheme that has met the approval of relevant authorities.

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6. Details of material and products used. To include a list of suppliers by name, address and material/product supplied. Where COSHH regulations apply full details of the product or material specification shall be provided.
7. Method statements as required by this specification and the EA.
8. Material testing certificates.

Appendix 1/5: Testing to be carried out by the Contractor

The Schedule attached should not be regarded as exhaustive. It is included to indicate to the Contractor the frequency of particular tests, which he is to allow for in building up his unit rates.

Routine tests carried out by manufacturers and suppliers in compliance with British Standard or other standard or specification are not included, but where a standard or specification makes provision for a test certificate this is indicated.

Notes to be read in conjunction with the enclosed schedules:

i. Test comparable to those specified in this Appendix will be necessary for any equivalent work, goods or materials proposed by the Contractor (see Sub-Clause 105.4).
ii. (N) indicates that a NAMAS test report or certificate is required.
iii. Unless otherwise shown in this Appendix, tests for work, goods or material, as scheduled under any one Clause, are required for all such work, goods or materials in the Works.
iv. Cube strength tests are not required for concrete complying with Clause 2602.
v. The Contractor shall be responsible for cutting cores for the percentage refusal density test at locations directed by the Employer's Agent in accordance with Clause 927.
vi. Quality management scheme applies. The will be responsible for providing evidence that materials and workmanship comply with the requirements of the Contract and that the manufacturer carries out routine tests to ensure compliance with the Specification.

Certificates

Type A: Prior to commencement of any site work, the Contractor must provide the following level of information as noted in the Comments column of Table 1/1.

A1 Name and address of proposed supplier of goods or services.

A2 Product certification to demonstrate compliance with the requirements of the Specification.

A3 Quality Assurance certification and recent certification to demonstrate continuing compliance with the Quality Assurance system.

A4 Name and address of three referees who have received goods or services from the supplier, on works of similar type and scale as this Contract.

Type B: Required for each batch.

Frequency of Testing

Where a supplier of goods or services is registered under a Quality Assurance Scheme, the Contractor shall supply evidence to the Employer's Agent that the supplier has a system in force and carries out tests to ensure his product or

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services continues to meet the requirements of the Specification and the Quality Assurance system. The Contractor shall advise the EA of the frequency of testing and forward appropriate certification to the EA at regular intervals.

Table 1/1 Typical Testing Details

Clause	Work, Goods or Material		Test		Frequency of Testing	Test Certificate	Comments
Series 500							
501	Pipes for drainage and service ducts					Required	Product certification scheme applies
503	Pipe Bedding		Grading		1 per 500 tonnes	Required	
			Soluble Sulfate Content		1 per source		
			10% fines value				
505	Backfill		Plastic Index			Required	
			10% fines value				
			Soluble Sulfate Content				
			Grading		1 per 500 tonnes		
			Permeability		1 per source		
507	Chambers, manhole steps, steel fitments, covers, grates and frames, cover bolts					Required	Product certification scheme applies
508	Gullies and pipe junction					Required	Product certification scheme applies
509	Water-tightness of drainage joints		Air test		All pipelines with watertight joints	Required	
Series 600							
601 631 to 637 640	Acceptable material					Required	
	Class	General Description					
	1	General granular fill	Grading/uniformity coefficient		Twice a week		
			mc/MCV (N)		2 per 100 m3 up to max of 5 per day		
			SMC of chalk (N)		Twice a week		
			1C only	10% fines value (N)	Weekly		
	2	General cohesive fill	Grading		Twice a week		
			mc/MCV/PL Undrained shear strength (N)		2 per 100 m3 up to max of 5 per day		

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Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
			SMC of chalk (N) Bulk density (PFA) (N)	Twice a week 2 per 100 m3 up to max of 5 per day		
	3	General chalk fill	mc(N)	2 per 100 m3 up to max of 5 per day		
			SMC(N)	Daily		
	4	Landscape fill	Grading/mc/MCV (N)	Daily		
	5	Topsoil	Grading	Daily		
	6	Selected granular fill	Grading/uniformity coefficient	1 per 400 tonnes		
			PI/LL	Daily		
			10% fines value/SMC (N)	Weekly		
			omc/mc, mc or MCG (N)	1 per 400 tonnes		
			Organic matter/water soluble or total sulphate content (N)	Weekly		
			Ph/chloride ion content (N)	Weekly		
			Resistivity (N)			
			Undrained and drained shear parameters (N)			
	7	Selected cohesive fill	Grading/mc/MCV/bulk density (N)	1 per 400 tonnes		
			SMC of chalk (N)	Twice a week		
			Organic matter/water soluble or total sulphate content (N)	Weekly		
			Ph/chloride ion content (N)	Weekly		
			Resistivity (N)	(As required)		
			Undrained and drained shear parameters (N)	(As required)		
			Permeability (N)	(As required)		
	8	Miscellaneous fill	mc/MCV (N)	Daily		
602	Earthworks material beneath surface of a road or paved central reserve (i) Off site source (ii) On site source		Frost heave (N)	1 per source	Required	
609 621	Geotextile		Tensile load	1 per 400 square metres	Required	

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Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
		Permeability			
		Pore size			
612	Compaction of fills				
	Method compaction	Field dry density (N)	Per 250m3		
	End product compaction	Optimum mc (2.5kg rammer/vibrating hammer method (N)	Each class or sub class of material	Required	
613	Formation/Sub-formation	In-situ CBR	1 per 50m3	Required	
618	Topsoiling and grass seeding	Rate of spread of fertiliser	1 per 1000 square metres		
		Rate of spread of seeding			
		Chemical analysis of fertiliser	1 per source		
		Grass seed germination and purity (Manufacturer's test)	1 per source and mix variety	Required prior to sowing	
Series 700					
702	Pavement	Surface Levels	Appendix 7/1		
		Surface Regularity	Clause 702		
705	Sub-base and road base material beneath surface of a road or paved central reserve	Frost heave (N)	1 per source	Required	
Series 800					
801	Unbound sub-base material (other than slag) adjacent to cement bound materials, concrete pavements, structures or products	Soluble sulphate content (N)	1 per 400 tonnes or per location if less than 400 tonnes		
	Blast furnace slag	Bulk density (N)	1 per 500 tonnes		
		Stability (N)			
		Sulphur content (N)			
	Steel slag	Bulk density	1 per 500 tonnes		
803	Granular sub-base material Type 1	Grading Plastic index (N)	1 per 400 tonnes	Required	
		10% fines value (N)	1 per source and then monthly		
		Soundness (N)	1 per source		
		Water absorption (N)			
804	Granular sub-base material Type 2	Grading	1 per 400 tonnes	~~Required~~	
		Plastic index (N)			

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Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
			CBR (N)	1 per source and then monthly		
			OMC/mc (N)			
			Density (N)			
			10% fines value (N)			
			Soundness (N)	1 per source		
			Water absorption (N)	(As required)		
805	Granular sub-base material Type 3		Grading	1 per 400 tonnes	~~Required~~	
			Plastic Index (N)			
			10% fines value (N)	1 per source and then monthly		
			Soundness	1 per source		
			Water absorption (N)			
Series 900						
901 925	Aggregate for bituminous materials				Required	
		Hardness	10% fines value (N)	Monthly		
			Impact value (N)	Monthly		
		Durability	Soundness (N)	1 per source		
			Water absorption (N)	(As required)		
		Cleanness	Sieve test (mass passing 75 µm sieve) (N)	Monthly		Washing and sieving method to be used
		Shape	Flakiness index (N)	Monthly		
		Blast furnace slag	Bulk density (N)	1 per 500 tonnes		
			Stability (N)			
			Sulphur content (N)			
		Steel slag	Bulk density	1 per 500 tonnes		
		Coarse aggregate for wearing courses	PSV (N)	1 per source		
			AAV (N)	1 per source		
	Binders for bituminous materials		Penetration (N)	1 per 750 tonnes		
			Softening point (N)	1 per 750 tonnes		
			(Other BS tests)	(As required)		
	Bituminous mixtures		Grading (N)	1 per 100 tonnes (Min 2 per day)		

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Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
903 to 914, 916, 925, 926, 930, 932 to 934		Binder content (N)		Required	Change to 1 per 200 tonnes of quality is well within specified tolerances
923	Bituminous mixtures from drum mixing plants	Moisture content	1 per 500 tonnes	Required	
931	Rubberised bituminous mixtures	(As required)		Required	
911	Rolled asphalt wearing course (design mix)	Stability value	1 per source	Required	
		Flow value			
		Density			
929	Base and Binder course macadam	Insitu air void content (N)	2 per day	Required	
		Refusal air void content (N)			
		Binder Volume (N)			
		Grading (N)			
		Binder Content (N)			
921	Surface Texture	BS 598: Part 105 Sand Patch (N)	BS 598: Part 105	Required	
924	High Friction Surface	Quality Control Checks	As required in sub-clause 924.5		
		System Coverage	As required in sub-clause 924.6		
	Aggregate	PSV (N)	1 per source		
927	Compacted bituminous material	Percentage refusal density test (N)	As required in BS 4987:Part 2	Required	
Series 1000					
1001 1030	Cement				Quality management and product certification schemes apply
1035		Portland cement			Tests and test certifications are required as scheduled under Clauses 1702 to 1704
		Portland blastfurnace cement			

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Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
		Portland PFA cement				
		Pozzolanic cement			Required (BS 6610)	
		Portland cement with microsilica				BBA certificate required for microsilica
	Pulverised-fuel ash					Tests and test certificates are required as schedule under Clauses 1702 to 1704 Product certification schemes apply
	Ground granulated blast furnace slag					
	Admixtures					
	Aggregates		Soundness value (N)	1 per source		
			Water absorption (N)	Monthly		
			Flakiness index (N)			
			Shell content (N)	1 per source		
			10% fines value (N)	Monthly		
			Grading	Daily		Washing and sieving method to be used for CBM aggregate
			Chloride content (N)	Weekly (1 per source for CBM aggregate)		
		Flint course aggregate containing white flints	Water absorption (N)	3 per source thereafter weekly		
		Fine aggregate	Acid-soluble material (N)	Monthly		Not required for CBM aggregate
		Blastfurnace slag	Bulk density Stability Sulphur content (N)	1 per 500 tonnes		
		Pulverised-fuel ash			Required (BS3892: Part 2)	
1002 1003 1004	Concrete		Air content test			Product Certification scheme applies
			Density of in situ concrete cores (N)	3 per 1200m		
			Cube strength (N)			
1005	Workability		Compacting factor (N)			
			Vebe (N)			
			Slump (N)			

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Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
1030	Wet lean concrete	Density			
		Cube strength (N)			
1036 to 1040	Cement bound material	Laboratory wet density	1 per cube		
		In situ wet density (N)	As required in Clause 1040		
		Cube Strength (N)			
	CBM 1 CBM 2	Immersed cube strength (N)	5 per mix		
Series 1100					
1101	Precast concrete kerbs, channels, edgings and quadrants	Transverse strength	Minimum of 3 per 1000 units of each product (BS 7263: Part 1)	Required	
		Water absorption			
1104	Precast concrete flags	Transverse strength	Minimum of 3 per 1000 units of each product (BS 7263: Part 1)	Required	
		Water absorption			
	Bedding granular material mortar				
1107	Concrete block paving	Compressive strength	16 per 5000 blocks (BS 6717: Part 1)	Required	
1108	Clay pavers	Transverse breaking load	Minimum of 10 per 10000 pavers (BS 6677: Part 3)	Required	
		Skid resistance	Minimum of 5 per 10000 pavers (BS 6677: Part 3)		
Series 1200					
1212	Thermoplastic road marking materials	Tests specified in BS3262: Part 1 (N)			Quality management and product certification schemes apply Sampling procedures are given in BS3262: Part 1

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Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
	Pavement marking paints				Required (BS6044)	Quality management product certification schemes apply
1210	Holding down bolts for bollards					Certification that the holding down bolts and anchorages are capable of complying with the performance requirements of BS 873: Part 3 is required
Series 1700						
1702 1703 1704	Cement	Portland			Required (BS12)	Certificate to be provided monthly for each type of cement
		Portland - blastfurnace			Required (BS146)	Quality management and product certification schemes apply
		Sulphate-resisting Portland			Required (BS4027)	
		Portland pulverised - fuel ash			Required (BS6588)	
		Low heat Portland			Required (BS1370)	
		High Slag blastfurnace			Required (BS4246)	
	Pulverised - fuel ash		Colour index	Monthly	Required (BS3892: Part 1)	Certificate to be provided monthly Product certification scheme applies
	Ground granulated blastfurnace slag				Required (BS6699)	Certificate to be provided monthly Product certification scheme applies

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Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
	Cements (all types)	Chloride content	Monthly		Tests to be carried out by the
	Pulverised-fuel ash	Sulphate content	Monthly		manufacturer and results included on the test
	Ground granulated blastfurnace slag	Acid-soluble alkali content	Daily (CONTRACTOR) Weekly (PFA ggbs)		certificates required above
1702 1703 1704 (cont'd)	Aggregates	Grading	1 per delivery (min 1 weekly per source)		Results of routine control tests by the manufacturer/supplier to be provided Product certification scheme applies
		Shell content (N)	Monthly		
		Flakiness index (N)	Monthly		
		10% fines value (N)	Monthly		
		Drying shrinkage (N)	Monthly		
		Chloride content (N)	Daily or as otherwise agreed		
		Sulphate content (N	Monthly		
	Blastfurnace slag	Bulk density	1 per 500 tonnes		
		Stability (N)	1 per 500 tonnes		
	Aggregates				
		Sulphur content (N)	1 per 500 tonnes		
	Water	Tests specified in BS3148	(As required)		
		Chloride content	Monthly		
		Sulphate content Acid-soluble alkali content	Monthly Weekly		
	Admixtures			Required	Product certification scheme
		Chloride content	1 per consignment	(BS5075)	applies
		Sulphate content	1 per consignment		
		Acid-soluble alkali content	1 per consignment		

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Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
1707	Concrete	Cube strength (N)	Prestressed concrete - two cubes from 10m3 or 10 batches whichever represents the lesser volume		to cast and test sufficient additional cubes to demonstrate cube strength before transfer
			Reinforced concrete - two cubes from 20m3 or 20 batches whichever represents the lesser volume		
			Mass concrete - two cubes from 50m3 or 50 batches whichever represents the lesser volume		
			Additional cubes for special purposes		
		Cube strength - special testing as described in Appendix 17/4 (N)	2 cubes from each or 2 samples of each batch		
		Density	(As required)		
		Modulus of elasticity			
	Fresh concrete	Workability (slump or compacting factor or Vebe) (N)	Each batch		
		Air content	Each batch		
		Cement content Water/cement ratio	(As required)		

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Appendix 1/6: Supply and Delivery of Samples to the Overseeing Organisation

The supply and delivery of samples may be requested by the Employer's Agent where, in their opinion, the materials and workmanship are not in accordance with the Specification.

- Samples comparable to those specified in the Appendix will be necessary for any equivalent work, goods or materials proposed by the Contractor;
- Unless otherwise shown in this Appendix samples of work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.
- Unless otherwise scheduled under Clause 2602 samples of concrete complying with that Clause are not required.
- (N) indicates UKAS or equivalent laboratory accreditation required for sampling.

Appendix 1/7: Site Extent and Limitations on Use

Extent of the Site.

The extent of the site is defined on the BuroHappold contract drawings. Storing of materials is not allowed anywhere outside the site boundary unless written permission is given by the Employer's Agent.

In addition, the Contractor will only be allowed access to erect and dismantle traffic management signs and equipment as required in accordance with Chapter 8 of the Traffic Signs Manual 2016.

Limitations on the Use of the Site

Use of the site will be strictly in accordance with the terms of the Contract.

The Contractor will also ensure that materials are not stored or plant left standing within 1.2 metre of a live carriageway and that site lines for entrances, exits or bends are not obstructed. The Employer's Agent will be the sole judge of what comprises an obstruction and may on occasion require materials to be kept further than 1.2 metres away from a live carriageway where he considers a hazard may otherwise be created.

All driveways and accesses to shops, businesses and houses must be maintained.

Provision must also be made for pedestrian flows.

The Contractor must not erect any structure, store any materials or run any vehicles on grass verges or on land within the curtilage of any individual properties other than those necessary for work in that defined area.

The Contractor is to ensure that at all times the site is kept tidy and that materials are not stored on operational highway. All pallets, steel banding and polythene wrappings are to be cleared away at the end of each working day. The site shall at all times be clear of debris.

Appendix 1/9: Control of Noise and Vibration

Noise

The Contractor shall ensure that all practicable measures to control noise produced by his operations required under or by virtue of any enactment, regulation of working rule of any industry are strictly complied with and shall take all other reasonable measures to minimise noise having regard to the recommendations given in BS 5228 Code of Practice for Noise Control on Construction and Demolition Sites. All requirements outlined in planning regarding noise and vibration shall be followed by the Contractor.

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The Contractor is recommended to apply to the Chief Environmental Health and Trading Standard Officer, (CEH&TSO) to discuss all aspects of the intended works before commencing any activities on the site. This process is advised as establishing good communication links is the quickest way of resolving difficulties, disagreements and potential problems and may make enforcement unnecessary.

The Contractor must, at all times, take all reasonable steps to minimise noise emissions and nuisance from the site. During the course of the works noise levels may be monitored by the CEH&TSO, or his representative, and site visits will be undertaken to ensure that the requirements of BS 5228 are being implemented.

For the Contractor's guidance, the CEH&TSO will consider any request for prior consent but would stipulate conditions, which should not be breached. Such conditions will include maximum noise levels, which must not be exceeded outside any nearby noise sensitive premises.

Without in any way limiting the liabilities and obligations imposed upon the Contractor elsewhere in the Contract, the following requirements shall apply to the site:-

All vehicles and mechanical plant used for the purpose of the works shall be "sound reduced" or muffled models fitted with effective exhaust silencers in accordance with the manufacturer's recommendation. Where acoustic covers are fitted or temporary screens used, they shall be kept closed whenever the machine is in use. Vehicles and plant shall be shut down or throttled down to a minimum on the intervening periods between works.

The Contractor shall furnish such information as may be requested by the CEH&TSO in relation to noise levels emitted by all constructional plant installed on site or which the intends to install on the site and shall afford all reasonable facilities to enable the CEH&TSO to carry out such investigations as he may consider to be necessary.

The Contractor is advised that consent from the Employer's Agent must be agreed first prior to any Saturday working. There should be no working at any other time or on public holidays. Exceptionally consent for work outside these hours may be given by the EA after any necessary consultation with the CEH&TSO. Fourteen day notice is required from the Contractor when seeking such consent.

The EA may limit the use of mechanical plant or appliance of any description to such extent and for such purpose and period as he may decide if, in his opinion, the use of such plant is likely to cause injury to persons or property or be impracticable the Contractor shall have no claims against the Council in respect of any additional cost or expense he may incur in consequence.

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

Vibration

No machine shall be permitted which uses a system of dropping a heavy weight, whether power assisted or by gravity, for the purpose of breaking up paving or foundations.

The Contractor shall take all steps necessary to limit vibration caused by plant and machinery used on the site.

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- The Contractor shall also normally limit vibration levels arising from the Site activities at any residential buildings to a particle velocity of 1.5mm/sec in the vertical direction. No detectable vibration is permitted from work on Site in such building at any other time. Exceptionally for a short period not exceeding 2 hours in any weekday, vibration levels of up to 2mm/sec may be permitted at the discretion of the Environmental Health Officer. In addition to this, plant producing noise or vibration at frequencies less than 10Hz and between 20Hz to 30Hz shall not be permitted within 6m of buildings. Where vibration occurs, reference should be made to ISO 2631 – Whole Body Vibration, and BS 6472 – Human Response to Vibration in Buildings. The use of explosives is not permitted.
- The Contractor shall limit vibration levels arising from the Site activities adjacent to live Statutory Authority services in accordance with the relevant statutory authority standards.
- Vibration limits shall be complied with at noise and vibration control stations at locations to be agreed on on-Site.
- The levels of vibration shall be monitored using an approved vibration meter plus a graphical level recorder, a record of this shall be provided to the Overseeing Organisation.

Appendix 1/11: Temporary Works Design

- The Contractor shall implement a suitable traffic management plan and temporary works arrangement for works outside the Site boundary within external highway areas.
- The Contractor shall adhere to Landsec Site access protocols.
- The Contractor shall liaise with all relevant external parties (including Transport for Greater Manchester and Manchester City Council) and obtain agreement and authority in writing for all Works or measures that are on, or are deemed to affect, the Highway.

Appendix 1/12: Setting Out and Existing Ground Levels

The Contractor shall be responsible for setting out according to the drawings. Any discrepancies should be reported to the EA.

After setting out, the Contractor shall inform the EA so as to afford the opportunity to check the setting out. The EA may make changes to take account of unforeseen circumstances or inaccuracies in the drawings.

The Contractor shall not commence either general site clearance or fencing/hoarding before obtaining the approval of the EA to the setting out of the site boundaries.

The Contractor shall work from an Ordnance Survey Benchmark or the site survey stations and establish and maintain temporary benchmarks on the site.

The existing levels at property boundaries are to remain as existing.

Appendix 1/16: Privately and Publicly Owned Services and Supplies

This Appendix contains details of services and supplies affected by and/or in close proximity to the Works, details of preliminary arrangements that have been made with Statutory Undertakers (and others) for the alteration of services and supplies affected by the Works, and details of any orders already placed.

The Contractor shall make arrangements with the Statutory Undertakers 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.

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Disconnected apparatus shall be removed by the Contractor only with the prior consent of the Authority concerned.

All works indicated on the contract drawings showing diversions and new connections into existing utilities must be agreed with the relevant utility company before works commence.

The Contractor is responsible for providing all protection works to prevent damage to all existing services, including drainage. The operation of any service must not be interrupted without approval from the statutory authorities. The Contractor shall liaise directly with the statutory companies when carrying out the physical works adjacent to and on the service/drainage and ensure that the necessary approvals are in place.

Liability: The Contractor is responsible for all costs associated with breakage, damage and interruption of supply. Appropriate insurance must be held.

Privately owned services: If any privately owned service (water, electricity, drainage etc.) passing through the site is affected by the works, the Contractor is to provide a satisfactory alternative service. Existing buildings are to remain operational throughout the diversions, new installations and excavation works.

The Contractor shall replace any damaged services, marker tapes or protective covers disturbed during site operations to the statutory authority's approval, at his own cost.

Services Affected by Demolition

Services Regulations: Any work carried out to, or which affects new or existing services must be in accordance with the bylaws or regulations of the relevant statutory authority.

Location of Services: Locate and mark the positions of services affected by the work. Arrange with the appropriate authorities for the location and marking of the positions of mains services.

Disconnection of services: Before starting demolition and/or excavation works, arrange with the appropriate Authorities for the disconnection of services and removal of fittings and equipment. Before starting demolition and/or excavations ensure that disconnections have been carried out.

Disconnection of drains: Locate and disconnect all disused drain connections. Grout fill disused drains up to 300mm diameter, all others are to be removed in accordance with the Building Regulations.

Drains in use: Protect drains, manholes, gullies, vent pipes and fittings still in use and ensure that they are kept free of debris at all times. Make good any damage arising from demolition and excavation work and leave clean and in working order at completion.

Bypass connections: Provide as necessary to maintain continuity of services to occupied areas of the same and adjoining properties. Give a minimum of 72 hour notice to occupiers if shutdown is necessary during changeover.

Services are to remain: notify the statutory authority or owner of any damage. Make all arrangements for repair to the satisfaction of the statutory authority or owner. The Contractor shall bear any costs arising from these works.

The Contractor is responsible for confirming the position of all existing services prior to commencing works (including Statutory Undertakers Services).

The Contractor is to make allowance in the cost for the provision for new services required for the Contractor's compound. The scope of works and associated costs are to be included in the final tender sum. It is the Contractor's responsibility to obtain all necessary approvals from the relevant authorities. The required services for the compound

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must not impact or conflict with the existing and proposed new services shown in the design drawings. The Contractor shall also allow in the cost of works for the removal or abandonment of the services prior to leaving the site.

The Contractor shall make arrangements with the appropriate Statutory Undertakers for the co-ordination of his work with all work which needs to be undertaken by them concurrently with the Works, including work undertaken within the Public Highway. Work undertaken on or adjacent to services shall be in accordance with any specifications and conditions required by the Apparatus Statutory Undertaker.

The Contractor shall ascertain and confirm, before works are commenced, from the various public authorities, statutory undertakers and other utility facilities, the positions and depths of all existing above and below ground mains, pipes and cables and other apparatus which may be affected by the works. The Contractor shall take all measures required for the protection of these mains, pipes and cables and other apparatus during the progress of the work.

The Contractor shall allow in the cost for inconvenience in working around existing services, drains and sewers and for taking all necessary precautions to avoid interruptions, disruptions and damage to existing infrastructure/services.

In no circumstances shall any private or public mains, pipes, cables or other apparatus be disturbed in any way without the written consent public undertaking or service facility concerned. Warning notices to this effect shall be provided in all appropriate places to this effect.

The Contractor shall report any damage to existing services, drains or sewers immediately upon occurrence to the relevant authority or owner.

Notwithstanding the specific requirements of the specification, all materials and equipment to be incorporated in the permanent works, must be new and of good quality.

The EA is to be informed prior to any works, involving Statutory Undertakers, beginning on site.

Should any Statutory Body carry out any work during the maintenance period of the Contract, after the Contractor has left the site, the Statutory Body will reinstate in accordance with the Roads and Street Works Act 1991.

Appendix 1/17: Traffic Safety and Management

1. The Contractor shall be responsible for all traffic safety and management and associated works as detailed in this Appendix, Clause 117 of the SHW, Chapter 8 of the Traffic Signs Manual as amended by any subsequent TfGm or MCC and/or advice notes or other general or Site specific instructions or as otherwise directed by the Overseeing Organisation.
2. The Contractor shall be responsible for the detailed design and submission of detailed layout drawings and Method Statements for the safe installation, maintenance and removal of the Temporary Traffic Management Measures required for the execution of the Works. Refer to Appendix 1/4 for submission requirements.
3. The Contractor shall maintain vehicular access where required, particularly to commercial premises. Any claims for loss of trade etc. from persons so affected shall be borne by the Contractor where lack of provision by the Contractor is the cause.
4. The Contractor shall liaise with the Highway Authority for the making of any TTRO's (Temporary Traffic Regulation Order) – taking note of the likely lead-in times.
5. For each separate location the Contractor shall submit to the Overseeing Organisation, traffic safety and management proposals which should include details of the following where appropriate:
    a. Traffic management programme

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b. Chapter 8 layout (Plan) numbers
c. Positions of signs
d. Positions of temporary traffic signals
e. Width of lanes including details of any temporary diversions or widening, coning, lighting and edge protection arrangements
f. Construction and geometrical design of crossovers and diversions
g. Temporary road markings
h. Working area
i. Safety zone and its method of delineation
j. Provision for pedestrians and the disabled
k. Site accesses and exits
l. Provision for emergency vehicles
m. Provision for non-motorised users

6. The details shall be submitted 20 working days prior to commencement of traffic safety and management measures. Installation of the traffic management system shall not commence until the OO's written acceptance of these drawings has been issued. The Contractor shall allow in his programme for obtaining consent of his proposals from MCC and TfGM.

Appendix 1/18: Temporary Highways for Traffic

The Contractor shall design, gain approval and construct diversions required for pedestrians, cyclists and service vehicles to enable construction of the Works along the public highway routes.

Appendix 1/19: Routing of Vehicles

General

Unless otherwise agreed with the Employer's Agent, construction vehicles are only permitted to use routes agreed in advance with the Local Authority.

It is the Contractor's responsibility to protect existing services from damage due to construction plant and vehicles. The Contractor shall indemnify the Employer against the actual and consequential costs of any and all repairs necessary because of damage or disturbance to any existing service, drains or sewers during the progress of the works.

The Use of Permanent Works by Construction Traffic

The structures and finished pavement forming part of the Permanent Works shall only be used to carry construction traffic when measures approved by the Employer's Agent have been taken to protect them from damage.

The Contractor shall not be permitted to use any of the structures or finished pavement forming part of the Permanent Works to carry construction traffic outside the current Motor Vehicle (Construction and Use) Regulations.

The use by construction traffic of the Permanent Works, over or adjacent to property, private property or public highways will only be permitted when suitable protective measures to the Contract Administrator's approval have been implemented. The cost of all such measures shall be borne by the Contractor.

The approval of the EA to proposals to use structures or finished pavement forming part of the Permanent Works for construction shall not relieve the Contractor of his responsibilities under the Contract.

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Permitted Access Routes

Routes to be used by construction vehicles when travelling to and from the site shall be agreed with the Employer's Agent prior to the commencement of works.

Appendix 1/23: Risks to Health and Safety from Materials or Substances

The Contractor must comply with all Health and Safety Policies and the requirements of C.O.S.H.H. (Control of Substances Hazardous to Health Regulations 1988).

The requirements of COSHH are briefly as follows:

i. to assess the risk to health arising from work where hazardous substances are present, and what actions and/or precautions are needed;
ii. to implement the appropriate measures to prevent or control the risk;
iii. to ensure the control measures are used and the equipment is properly maintained and procedures observed;
iv. where deemed necessary, to monitor the exposure of employees and carry out appropriate form of Health Surveillance of their health;
v. to inform instruct and train employees about the risk that are present and the precautions to be taken;

The following measures can be instructed by the Employer's Agent.

i. Traffic Management - Safety Zones, Lane Closures;
ii. Restriction during certain weather conditions;
iii. Screening and signing of the site.

The Contractor shall include in his rates any cost to comply with all current regulations.

All employees and members of the public must be protected against risks.

Appendix 1/24: Quality Management System

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

The Quality Plan shall cover the following items:

i. Contractor's organisation and management
ii. Contractor's method statements and construction procedures
iii. Contractor's construction quality control
iv. (11/03) Organization's Quality Plans

Items i) and iii) of the Quality Plan shall be submitted to the Overseeing Organisation for its acceptance not later than 21 days after award of the Contract.

The Contractor shall submit other parts of the Quality Plan prior to commencement of any related work or activity and to a timetable included in item i).

Method statements are required for all principal activities defined in the Contract and for any other works as requested by the EA. Method statements may be quite brief but must describe each stage of the construction, identify

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the plant and materials to be used, temporary works, safety measures, working space considerations, and where appropriate the requirements for skilled labour and/or special supervision.

Contractor's Organisation and Management

a. The Contractor shall identify who is responsible on Site for Heath, Safety and Welfare and responsibilities within the Contractor's Head and Site offices;
b. Control of liaison and meetings with third parties;
c. Identification of the Contractor's own staff responsible for overseeing each major activity.
d. The main Contractor's control of subcontracts.
e. Document control.
f. Programme for submission of method statements and Organisations' Quality Plans. The Quality Plan shall identify procedures (which may be a part of the Contractor's general procedures) that cover the topics listed below. Copies of these procedures shall be made available to the Overseeing Organisation on request.
g. The quality plans for subContractors and suppliers of work, goods and materials which are the subject of quality management schemes.
h. Procedure for the preparation, review and adjustment of programmes for the effective progression of the Works and the recording of this.
i. Control and approval of purchases of materials.
j. Control of off-Site activities (where appropriate).
k. Procedures for the regular review and recording by the Contractor of the quality of the Works.
l. Control of personnel selection, based on their care, skill and experience.
m. Management review/audits to monitor and exercise adequate control over the implementation of the quality plan.
n. Any other relevant item.

Contractor's Method Statements and Construction Procedures

a. Detailed method statements for each major activity whether directly controlled or subcontracted. Method statements are required for all principal activities defined in the Contract and for any other works as requested by the OO. Method statements may be quite brief but must describe each stage of the construction, identify the plant and materials to be used, temporary works, safety measures, working space considerations, and where appropriate the requirements for skilled labour and/or special supervision.

Contractor's Construction Quality Control

a. Arrangements for 'receiving' and 'in-process' testing.
b. Control of test laboratories.
c. Control of test, measuring and inspection equipment.
d. Document control.
e. Procedure for monitoring and recording the inspection, test and approval status of the constructed/installed work.
f. Procedures for tests and inspections for the purpose of the Contractor certifying that prior to covering up, each part of the Works is complete and conforms to the Contract.
g. Procedure for the review of work submitted for review but not accepted as conforming to the Contract.
h. Procedure for the collation of quality records as identified in BS EN ISO 9001 and provision of copies when requested by the Overseeing Organisation.

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Organisations Quality Plans

a. Definition of the product or service to be provided.
b. The organization organogram shall describe the line of command and stating the name of the senior manager responsible for the contracted Work and the name of the Organization's on-Site Management representative. Contact addresses, telephone numbers etc. shall be provided.
c. Identification of the relevant parts of Organization's quality system relevant to the product or service being provided. (Copies to be provided to the Overseeing Organisation on request).
d. The control of personnel selection (at works and on Site), including special requirements for skilled personnel e.g. certification of welders, training of operatives, experience requirements etc.

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Series 0200: Site Clearance

The contractor shall refer to BuroHappold Drawings 0042912-BHE-XX-XX-DR-C-2102, 0042912-BHE-XX-XX-DR-C-2103 and 0042912-BHE-XX-XX-DR-C-2104 for works relating to site clearance.

Appendix 2/2: Filling of trenches and pipes

Backfilling and reinstatement to trenches in public highways shall be in accordance with the requirements and specifications of the adopting authority, or, in the absence of such, in accordance with the requirements of 'The Street Works Regulations 2007' and relevant provisions of H.A.U.C. 'Specification for the Reinstatement of Openings in Highways' 2010, both under Section 71 of the New Roads and Street Works Act 1991.

Appendix 2/3: Retention of Material Arising from Site Clearance

With the approval of the Employer's Agent, all re-useable material arising from the site clearance may be used by the Contractor. Unsuitable materials should be removed from site and disposed of appropriately.

Statutory Undertakers and Public Utilities

List of requirements for material arising from site clearance:

Description	Location	Requirements
Statutory Undertakers Apparatus	Any	Not to be removed unless with approval of the corresponding Statutory undertaker and disposed to tip.
Public Utility Apparatus	Any	Not to be removed unless with approval of the corresponding Statutory undertaker and disposed to tip.
Abandoned below ground services apparatus	Any	All other abandoned services are to be removed and taken to the Contractor's tip.

It is the Contractor's responsibility to provide a method statement detailing how they will deal with any contamination found on site. If contamination is found on site the Contractor, work must stop immediately and contact the EA.

It is the Contractor's responsibility to use dust suppression measures on all vehicles using the site, to reduce any risk of harm from airborne contaminants to the workforce and the general public.

It is the Contractor's responsibility to ensure that the public highway is kept clean at all times. This is to be detailed in a method statement.

It is advisable that appropriate PPE equipment shall be used at all times and hand washing facilities included as part of the Contractor's compound.

Materials arising from any excavations onsite that are suitable for re-use should be stored in a stockpile on site in an area approved by the EA. The stockpile should not exceed 2m in height.

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All voids result from site clearance shall be backfilled immediately with course granular fill as specified by series 600 in the Specification for Highway Works.

Appendix 2/4: Explosives and Blasting

Explosives shall not be used on this contract.

Appendix 2/5: Hazardous Materials

The police and the fire service have the primary role when dealing with emergencies involving spillage or leakage of hazardous materials onto the Site. The Contractor shall provide assistance and materials for containment of any chemical spillage and shall remove any substances which have been rendered safe, but which shall be handled with care to avoid contamination or pollution.

The Contractor shall dispose of any hazardous material when ordered to do so by the Project Manager, following consultation with the Emergency Services or Waste Disposal Officer. Any hazardous material shall be disposed of at a fully licensed site approved by the Environment Agency Waste Regulation Officer and in full compliance to the Environmental Protection Act 1990.

Additional note

Removal of Kerbs

The contractor is responsible for the removal of existing kerbs as part of the site clearance operations. This work shall be carried out in accordance with the following guidelines:

Carefully remove existing kerbs to avoid damage to adjacent structures and surfaces.

Dispose of removed kerbs in accordance with environmental regulations and project specifications.

Ensure that the area is left clean and free of debris following kerb removal.

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Series 0300: Fencing

Appendix 3/1: Fencing, Gates and Stiles

Hoarding

Hoarding shall be erected and inspected by the Overseeing Organisation prior to any other work starting on Site. It shall remain in place until the completion of all construction works and shall only be dismantled upon approval by the OO.

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Series 0500: Drainage and Service Ducts

Appendix 5/1: Drainage Requirements

General

Drainage requirements shall generally be in accordance with the Drawings, Sewers for Adoption and the Highways Agency (7th Edition), Manual of contract documents for Highways Works, Volume 1 "Specification for Highways Works (SHW)" and Volume 2 "Highway Construction Details (HCD)".

Refer to foul water drainage plan 0131_MAY-BHP-Z01-ZZZ-DR-C-003100 and detail sheets 0131_MAY-BHP-Z01-ZZZ-DR-C-003700 and 0131_MAY-BHP-Z01-ZZZ-DR-C-003701.

Pipe Materials

Surface water drainage design is based on using vitrified clay pipes and concrete pipes with a surface roughness (k) of 0.6 and a foul water roughness coefficient (k) of 1.5. Pipes with surface roughness values greater than stipulated shall not be used without the approval of the Overseeing Organisation.

Clay Pipelines for Drainage Diameter ≤ 300 mm

Pipes, bends and junctions: Vitrified clay to BS EN 295-1, with flexible joints, Kitemark certified.

Manufacturer and reference: Hepworth Clay Hepline or approved equivalent

Size(s): Refer to drawings as listed above.

Jointing type: Spigot and socket joints with sealing ring.

Type of subsoil: Refer to geotechnical investigation reports.

Bedding class: In accordance with detail sheets listed above.

Warning marker tape: not required

Concrete Pipelines for Drainage Diameter > 300 mm

Pipes, bends and junctions: concrete to BS 5911-1 and BS EN 1916, with flexible joints, Kitemark certified.

Manufacturer and reference: CPM or approved equivalent. Sulfate resisting Portland cement required for concrete pipes to recommendations within BRE Special Digest (Class 4 – DC4).

Size(s): Refer to drawings as listed above.

Jointing type: Gasket joints cast into pipe socket.

Type of subsoil: Refer to geotechnical investigation reports.

Bedding class: In accordance with detail sheets listed above.

Warning marker tape: not required

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Pipe Joints

Rubber seal joints to be installed in accordance with the manufacturer's recommendations to ensure watertight joints.

Joints shall comply with Highways Agency Manual of Contract Documents for Highway works, Volume 1, Specification for Highway Works, Clause 504.3.

Fittings for joints shall comply with BS 4962, Clause 9.

All drainage pipe joints shall be flexible and water tight in accordance with SHW Clause 504.3. The Contractor shall carry out air/and or water tests to all sections of non-filter drains in accordance with SHW Clause 509.

Compressible filler for interrupted concrete protection to pipelines or ducts shall consist of bitumen impregnated insulated board to BS 1142: Part 3 or other equally compressible material. The thickness of compressible filler shall be shown on the drawings. These shall be applied at each pipe joint.

Compressible packing for use between pipes or ducts and precast concrete setting blocks shall consist of bitumen damp proof sheeting complying with BS 743.

Flexible Joints in Concrete Surround to Pipes with Flexible Joints

Flexible Joints in concrete surround to pipes with flexible joints shall employ the joint filler "Flexcel" manufactured by Expandite Limited, Chase Road, London, NW10 of 12mm thickness or equivalent. The joint will be formed to coincide exactly with the pipe joint and the material is to be cut so as to follow the outline of the pipe at this point and to extend completely through the concrete surround. "Flexcell Joints" shall be formed at Approximately 2 metre centre.

Connections to existing drains are to be made with rigid joints.

Abandoned pipes outside of any carriageway works within one metre of formation shall be broken out, removed and the excavation backfilled with acceptable material to clause 608 and compacted to clause 612 of MCHW. Drains in excess of one metre from formation to abandoned outside any carriageway works shall be sealed throughout their length with a cement/pfa mixture grout as described in clause 506 of MCHW.

Excavation and Backfill of Trenches

The contractor shall supply all necessary support to ensure the stability of the side of the trenches during pipe laying and manhole construction.

The contractor shall at all times keep the excavations dry and free of sub-soil and water. The contractor shall not, without written permission of the Employer's Agent and Water Authority, pump into any steam or sewers or highway drain.

Excavations deeper than 1.5m should not be left overnight , and should be covered with heavy boarding or shall have ramped access.

No backfilling of trenches shall take place until the pipeline has been inspected by the EA.

Excavated Material

Unless otherwise specified, set aside in-situ material etc. for use in reinstatement.

Lower part of Trench - General

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From bottom up to 300mm above crown of pipe the trench must have vertical sides and be of a width as small as practicable but not less than external diameter of pipe plus 300mm or larger dimension if specified

Lower part of Trench – Transition Depth

Where the depth of cover exceeds the transition depth for the size of pipe, trench width up to 300mm above crown of pipe to be not more than:

Nominal pipe size DN	100	**150**	**225**	**300**
Transition depth (m)	6.0	5.4	4.0	2.9
Maximum trench width (mm)	600	700	800	900

Lower part of Trench – Class S bedding

Where bedding Class S is specified, trench width to be not more than the following, regardless of depth of cover:

Nominal pipe size DN	100	150	225	300
Maximum trench width (mm)	600	700	800	900

Assumed Type of Sub-soil

Where the type of subsoil at the level of the crown of the pipe differs from that stated for the type of pipeline, obtain instructions before proceeding.

Formation for Beds Generally

- Excavate to formation immediately before laying beds or pipes.
- Remove mud, rock projections, boulders and hard spots and replace with consolidated bedding material.
- Harden local soft spots by tamping in bedding material.
- Inform Supervisor in advance to give him reasonable opportunity to inspect excavated formation for each section of the work.

Combined Trenches

Where one pipe is at a lower level than another adjacent pipe in a common trench:

- A sub-trench is permissible provided the soil of the step is stable and unlikely to break away.
- If a sub-trench is not permissible, the whole trench must have a depth related to the lower pipe, with increased thickness of bedding to the upper pipe as necessary.
- The lower pipe must be backfilled with compacted granular material to not less than half way up the higher pipe.

Trench Supports

Remove trench supports and other obstacles sufficiently to permit compacted filling of all spaces.

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Backfilling to Pipelines Generally

Unless specified otherwise, backfill from top of specified surround or protective cushion with material excavated from the trench, compacted in layers not exceeding 300 mm thick. Do not use heavy compactors before there is 600 mm of material over pipes.

Trench Backfilling under Road and Paving

Backfill from top of specified surround or protective cushion up to formation level with Granular Sub-base Material Type 1 as per Highways Agency Manual of Contract Documents for Highway Works Volume 1, Specification for Highway Works, March 1998, Clause 803; laid and compacted in 150 mm layers.

Backfilling over Concrete

Do not start backfilling within 24 hours of placing concrete. Do not use heavy compactors and prevent imposition of traffic loads within 72 hours of placing concrete.

Temporary Bridges

Provide temporary bridges over trenches as necessary to prevent construction traffic damaging pipes after backfilling.

Class S Granular Surround

- Lower part of trench width shall be as specified above for Class S surround. – Granular material: To BS 882:

Pipe size (DN)	Nominal single size (mm)	Graded size (mm)
100 & 150	10	not permitted
225 & 300	10 or 20	20 to 5
All sizes above	10 or 20	20 to 5

- Lay and compact to a thickness not less than 50 mm for sleeve jointed pipes, 100 mm for socket jointed pipes, over full width of trench. Where trench bottom is uneven due to hard spots or other reason, increase depth by 100 mm. Scoop out locally at couplings/sockets and lay pipes digging slightly into bed and resting uniformly on their barrels. Adjust to line and gradient.
- After initial testing, lay and compact more granular material in 100 mm layers to 150 mm (250 mm for adoptable sewers) above crown of pipe.

Class Z Concrete Surround

- ST4 Concrete or better mix subject to approval. Different mixes may be used for different parts of the drainage work subject to approval by the Employer's Agent.
- Lay concrete blinding, 25 mm thick over full width of trench and allow to set.
- Lay pipes on blinding on folding wedges of compressible board to give a minimum 150 mm clearance under the pipe. Anchor the pipeline or fill with water, if necessary, to prevent flotation.

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- Form vertical construction joints in surround at face of flexible pipe joints using 18 mm thick compressible board pre-cut to profile of pipe. Fill any gap between spigot and socket with resilient material to prevent entry of concrete.
- After initial testing, place and compact more concrete for full width of trench to encase pipe to 150 mm above crown or to other height as specified or shown on drawings.

Manholes, catchpits and inspection chambers

Chambers are to be constructed in accordance with Sewers for Adoption 7th Edition.

Raising and Lowering of Manhole Covers

Any alterations to manhole covers, utility pits and ducts/cables/pipes are to be agreed with the relevant utility companies.

Frames broken out shall be reinstated during the same working day. Where, in exceptional circumstances beyond the control of the Contractor, this is not possible, the Contractor shall, after consultation and agreement with the Project Manager, undertake traffic safety measures.

Where existing covers, gratings or frames have to be replaced, the Contractor shall remove any damaged parts and clean, re-grease and re-caulk any to be re-used. Any concrete or mortar bedding and any defective brickwork shall be broken out, the surface prepared and the frame, grating or cover bedded or replaced to its original position using a HAPAS approved fast set rapid strength bedding mortar which shall be agreed with the Project Manager. Any overbreak shall be filled with HAPAS approved fast set rapid strength concrete as agreed with the Project Manager.

Where the levels of existing covers or gratings have to be adjusted the Contractor shall excavate for and remove the existing cover or grating and frame, which shall be cleaned of all adhering material. The underlying brickwork, concrete or mortar bedding, chamber or shaft walls shall then be broken down or made up to the required level and the surface prepared to receive new construction. Where instructed, reinforced concrete cover slabs shall be broken out. Undamaged precast concrete cover slabs shall be lifted off and cleaned ready for re-use.

The Contractor shall report to the Project Manager at the earliest opportunity, any covers or gratings or frames which cannot be opened or are damaged.

Where instructed, existing drainage channels shall be removed and the surface prepared to receive the new channel.

New construction in brickwork or concrete shall be built on the existing chamber or shaft and shall comply with Series 500. The Contractor shall, wherever possible, re-use existing precast concrete cover slabs and existing covers, gratings and frames.

Any foreign matter entering chambers shall be removed. On completion of the works, each cover shall be lifted and the frame and seating cleaned and greased. Where covers or gratings are likely to be subject to early loading a quick setting epoxy mortar shall be used.

When instructed by the Project Manager, Statutory Undertakers' frames and covers shall be adjusted in accordance with the requirements of this clause and any additional requirements contained in Special Requirements.

The Contractor shall be responsible for the costs of repair, reinstatement and disruption to service resulting from any damage caused as a result of his execution of the works. Contact details for Statutory and other Undertakers for seeking advice or reporting damage is in the Special Requirements.

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Pre-Adjustment

The Contractor shall erect and maintain "Raised Ironworks" signs at each Site. Adjustments on each Site shall be started not more than five days before surfacing on each Site.

The level of ironworks shall be adjusted prior to surfacing. The levels to which the ironworks shall be adjusted shall be within the tolerances of the finished surface levels as specified in this clause.

The effects of any milling, regulating or reshaping of the carriageway shall be taken into account in setting the levels.

The requirements for other test results, certificates and samples to be carried out or supplied in association with the Contract information works shall be as described in Appendix 1/5 and Appendix 1/6.

The adjusted level of the ironworks shall be:

All chamber, hydrant etc. frames and covers shall be adjusted such that when the surface course material has been laid and compacted they are no more than 3mm higher or no more than 3mm lower than the finished level of the surrounding surface course when measured with a two metre straightedge. Where the frame and cover have been manufactured so that one is proud of the other, the level shall be taken from the higher.

All gully gratings and frames shall be adjusted such that when the surface course material has been laid and compacted they are not higher than or no more than 5mm lower than the finished level of the surrounding surface course when measured with a two metre straightedge. Where the grating and frame have an inbuilt dish, the level shall be taken from the front and rear and not the low point of the dish.

Raised ironworks shall be surrounded with temporary ramping material. The material shall be a fine macadam or sand carpet or similar proprietary material and shall be laid and compacted to a gradient not steeper than 1:20 or to the edge of the reinstatement cavity whichever width is greater. The temporary ramping material shall be inspected and maintained by the Contractor.

All excavated, waste and surplus material shall be collected, removed from Site and disposed of at a licensed tip. The disposal of broken or otherwise renewed ironworks shall comply with Series 200.

Correcting Defects

The Contractor shall correct defects in the ironwork adjustment Materials and workmanship for a period of twenty four months from the date of opening of the subsequent resurfacing to traffic at each Site.

The Contractor shall be notified of any ironwork adjustment failing to meet the performance criteria and shall be invited to inspect the Site in order to confirm the extent of the failure. Ironworks confirmed as being defective shall be reset by the Contractor in accordance with the original Specification or an alternative proposal subject to approval by the Project Manager.

All remedial work shall be subject to the same performance criteria as the original work and subject to the same twenty four month period to start from the date of completion of each item of remedial work.

Performance Criteria Cover, Grating and Frame Levels

At any time during the twenty four month period, the Project Manager shall select a number of ironworks to be tested. The Project Manager and Contractor shall jointly take measurements using a two metre straightedge and measure the

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difference in level between the cover or grating and the surrounding surface in both longitudinal and transverse directions. The measurements shall be taken from the points on the frames, gratings and covers.

Reinstatement around Ironworks

The service shall be assessed as being defective if, at any time during the twenty four month period, there is any loss of material, multiple cracking or any single crack wider than 2mm and longer than 300mm in the area of the reinstatement.

Replacement of selected access covers

At locations directed by the Project Manager within areas of proposed pavers, the Contractor shall replace existing access covers to the recessed cover detail provided in 0042912-BHE-XX-XX-DR-C-2851. Recessed access cover arrangements are to be agreed with each relevant statutory undertaker as required.

Appendix 5/2: Service Duct Requirements

General

The location of services shown on the Drawings is indicative only and the Contractor shall verify the location of all services by trial pits prior to construction.

The Contractor shall make allowances for diverting existing services. In each location the Contractor must verify the location of existing services by means of trial pits.

Pavements shall be reinstated to match existing above all trenches that have been excavated for the installation of utilities.

Raising, lowering, rotating, moving and replacing of access covers shall be in accordance with the contract drawings. Any alterations to utility pits and ducts/cables/pipes are to be agreed with the relevant utility companies.

Cover Types to be as per the below table:

A15	For use in pedestrian and cycling areas only
B125	For use in car park and pedestrian areas, with no heavy vehicular traffic
C250	For use in car parks, forecourts, industrial Sites and areas with slow moving traffic. (up to 500mm from the kerb and 200mm into the verge path)
D400	For use in areas with fast moving traffic, high streets, trunk roads, carriageways and hard shoulders

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Ducts

6mm polypropylene draw rope shall be installed in all ducts and secured by fixing the draw cord to the stopper. Two metres of slack rope shall be provided at either end of every duct and terminated at ground level or inside chambers.

Cover to all ducts shall be 750mm minimum in carriageway (measured from proposed completed carriageway surfacing), and 450mm minimum in footway or verge unless otherwise instructed.

Plastic ducts for electrical services shall be red or black overlaid with purpose made marker tape, for power, orange for Street Lighting and Traffic Signals, grey ducts shall be used for BT Comms and white ducts to be used for Spare Comms and Landlord Comms. Power and data cables (including fibre optics) shall not be installed in the same duct. The electrical service shall be permanently marked on the outside of the duct in white.

Further to information provided below refer to relevant utility drawings for duct diameters, arrangement and utility specific levels.

Low Voltage Ducts

LV electricity ducts shall be twin wall rigiducts or approved equivalent. Tile tape shall be used to statutory undertaker specification.

High Voltage Ducts

High voltage electrical ducts and pits shall be installed in accordance with ENW standard details and specifications.

Traffic Signal Ducting and Chambers

Ducting and chambers for traffic signals shall be in accordance with UTC Traffic Signal Installation Guide and associated drawings included as part of this tender pack.

Telecommunications Ducts

Telecommunications ducts shall be installed in accordance with the following documents:

- Openreach Developers' Guide
- BT specification LN 550

Bed and Surround

Bedding and surround to service ducts shall be as agreed with the relevant utility supplier. Unless instructed otherwise bedding and surround to ducts and cables in verges shall be sand and ST4 concrete under roads.

Backfilling of Trenches

The backfill, in footways, above the cover material shall be Class 8 material to Table 6/1 up to formation level and above this level reinstatement shall be as stated in the Contract documents.

Drawpits & Chambers

Further to information provided below refer to respective utility drawings for sizes and positions of each chamber.

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LV & HV Chambers

All works associated with existing pits and duct infrastructure must be completed by a National Electricity Registration Scheme (NERS) accredited Contractor with all necessary liaison and approvals from ENW.

Telecommunications Joint Boxes

All Telecommunications joint boxes shall be installed in accordance with the following documents:

- Openreach Developers' Guide
- BT specification LN 550

Access chambers for all telecommunication duct systems to be BT Openreach approved CUBIS STAKKAbox or approved equivalent.

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Series 0700: Road Pavements – General

Appendix 7/1: Permitted Pavement Options

The proposed kerbing and pavement details are indicated on the proposed pavement plan drawings 0042912-BHE-XX-XX-DR-C-2302, 0042912-BHE-XX-XX-DR-C-2303 and also on detail sheets 0042912-BHE-XX-XX-DR-C-2800, 0042912-BHE-XX-XX-DR-C-2801 and 0042912-BHE-XX-XX-DR-C-2850. Permitted materials are listed below.

P1/P1A – Trafficable Asphalt Carriageway Paving

Surface Course: 40mm THICK SMA (10mm Stone) PMB to BS EN 13108 PD6691 Black

Binder Course: 60mm THICK ASPHALTIC CONCRETE BINDER COURSE 100/150

Base Course: 100mm THICK DENSE ASPHALTIC CONCRETE BASE COURSE 100/150

Sub-base Course: 225mm THICK TYPE 1 RECYCLED GRANULAR SUB BASE (IN ACCORDANCE WITH MCHW CLAUSE 803) COMPACTED TO 95% MAXIMUM DRY DENSITY (assumed CBR 5%)

Foundation: CBR VALUE TBD THROUGH CORE TEST

P3/P3A Pavement construction

Surface Course: 30mm SURFACE COURSE. AC6

Binder Course: 50mm BINDER COURSE. AC20

Sub-base Course: 150mm TYPE 1 GRANULAR SUB BASE.

Foundation: CBR VALUE TBD THROUGH CORE TEST

P5/P5A Pavement construction

Surface course: 200mm x 100mm x 100mm Natural Stone Setts with 8-12mm LARSEN STREETSCAPE JOINTING MOTAR JOINTS TO BS 753. MIN STRENGTH 40N/mm^2. Sett to landscape architect specification. 80mm depth sett to be used within bollard unit trays and within recessed access covers.

Bedding: 40mm LARSEN STREETSCAPE BEDDING MORTAR TO BE LAID IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION

Base Course: 200mm THICK C32/40 UNREINFORCED CONCRETE BASE. DOWELED CONTRACTION AND EXPANSION JOINTS TO BE PROVIDED AT 6m AND 80m SPACINGS, RESPECTIVELY.

Slip Membrane: DPM / VISQUEEN SLIP MEMBRANE OR EQUIVALENT APPROVED.

Sub-base Course: 225mm THICK TYPE 1 SUBBASE. BASED ON ASSUMED CBR VALUE OF 5%.

Separation Layer: TERRAM 1000 GEOTEXTILE OR EQUIVALENT APPROVED.

Foundation: COMPACT SUBGRADE – CBR VALUE TBD THROUGH CORE TEST.

P6 Pavement construction

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Surface Course: 25mm SURFACE COURSE. AC6

Binder Course: 90mm BINDER COURSE. AC20

Sub-base Course: 320mm TYPE 1 SUBBASE IF CORE TESTS FIND CBR TO BE BETWEEN 2.5% AND 4%
210mm TYPE 1 SUBBASE IF CORE TESTS FIND CBR TO BE GREATER THAN 4%

Foundation: EXISTING SUBGRADE – CBR VALUE TBD THROUGH CORE TEST.

P7 Pavement construction

Surface course: STAFFORDSHIRE BLUE CLAY PAVER. PLAN DIMENSIONS TO BE PROVIDED BY SEW. 65mm MINIMUM THICKNESS with 8-12mm LARSEN STREETSCAPE JOINTING MOTAR JOINTS TO BS 753. MIN STRENGTH 40N/mm^2. Sett to landscape architect specification.

Bedding: 40mm LARSEN STREETSCAPE BEDDING MORTAR TO BE LAID IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION

Base Course: 200mm THICK C32/40 UNREINFORCED CONCRETE BASE. DOWELED CONTRACTION AND EXPANSION JOINTS TO BE PROVIDED AT 6m AND 80m SPACINGS, RESPECTIVELY.

Slip Membrane: DPM / VISQUEEN SLIP MEMBRANE OR EQUIVALENT APPROVED.

Sub-base Course: 225mm THICK TYPE 1 SUBBASE. BASED ON ASSUMED CBR VALUE OF 5%.

Separation Layer: TERRAM 1000 GEOTEXTILE OR EQUIVALENT APPROVED.

Foundation: COMPACT SUBGRADE – CBR VALUE TBD THROUGH CORE TEST. #

P8 Pavement construction

Surface course: HOWLEY PARK STONE FLAGS. PLAN DIMENSIONS TO BE PROVIDED BY SEW. 100mm MINIMUM THICKNESS with 8-12mm LARSEN STREETSCAPE JOINTING MOTAR JOINTS TO BS 753. MIN STRENGTH 40N/mm^2. Sett to landscape architect specification. 80mm depth flag to be used within bollard unit trays and within recessed access covers.

Bedding: 40mm LARSEN STREETSCAPE BEDDING MORTAR TO BE LAID IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION

Base Course: 200mm THICK C32/40 UNREINFORCED CONCRETE BASE. DOWELED CONTRACTION AND EXPANSION JOINTS TO BE PROVIDED AT 6m AND 80m SPACINGS, RESPECTIVELY.

Slip Membrane: DPM / VISQUEEN SLIP MEMBRANE OR EQUIVALENT APPROVED.

Sub-base Course: 225mm THICK TYPE 1 SUBBASE. BASED ON ASSUMED CBR VALUE OF 5%.

Separation Layer: TERRAM 1000 GEOTEXTILE OR EQUIVALENT APPROVED.

Foundation: COMPACT SUBGRADE – CBR VALUE TBD THROUGH CORE TEST.

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Appendix 7/2: Excavation, Trimming and Reinstatement of Existing Surfaces

The locations of any trenches, pits, etc., which require to be excavated in existing paved surfaces in order to carry out the works shall be given in the Contract information.

The locations of existing paved areas to be trimmed, regulated and reinstated to tie-in new pavements and existing surfaces shall be given in the Contract information.

All trenches shall be reinstated in accordance with clause 706. Reinstatement is to comply with clause 706.5.

Vertical faces of all ironwork shall be painted with suitable bitumen.

Before excavating kerbs, drainage ducts etc. in excavating pavements, whether they are to be surfaced over or not, trenches shall be sawn both sides through existing bituminous and concrete surfaces.

Old trench reinstatements, after prior assessment and agreement of the Project Manager as to their extent, shall be further planed / excavated to a depth of 100mm and reinstated with 100mm DBM base.

The areas that require crack sealing shall be agreed with the Project Manager on Site after planning and sweeping.

When existing signs or items of street furniture are removed the resultant void shall be reinstated to match the surrounding surface in accordance with the appropriate Standard Detail.

Appendix 7/4: Bond Coats, Tack Coats and Other Bituminous Sprays

Location: Unless otherwise stated in the Contract information, tack coat shall be applied on all areas of planed carriageway and existing surfaces which are to be overlaid with new surface course.

Type of Treatment Required: In accordance with MCHW clause 903.4 prior to placing bituminous material on any new or existing bound substrate, a bond coat or tack cost shall be applied in accordance with clauses 920 or 942, as appropriate. For clause 942 Thin Surface Course Systems, a proprietary bond coat as required by the manufacturer's Thin Surface course System and included in the BBA HAPAS Certificate shall be used.

Existing Surfacing and overlay material: To be given in the Contract information.

Surface Preparation: Before spraying is commenced, the surface shall be free of all loose material and standing water. Surface preparation shall be carried out in accordance with BS 594987:2010, or for certified products, in accordance with the BBA/HAPAS Certificate.

Masking of street furniture, drop-kerbs, etc.: Where street furniture, drop-kerbs, etc. are likely to be affected by the Works then they shall be masked in accordance with the Specification.

Rate of Spread: In accordance with MCHW clause 920.8.

Treatment to joints Reference shall be made to sub-clause 901.22 (iii) with regard to treatment of joints. The application of tack cost / bond coat to the vertical faces of joints in thin surface course systems if required by the manufacturer shall be in accordance with the manufacturer's instructions.

Appendix 7/6: Breaking Up or Perforation of Existing Pavement

Where instructed in the Contract information, existing pavements shall be broken up.

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Breaking up of the existing pavement shall be undertaken with intent to recycle and re-use suitable recovered material.

Adequate precautions shall be taken to ensure that breaking of the existing pavement does not exceed the specified boundaries that form part of the existing pavement. Areas of the pavement to be broken or perforated shall be delineated both longitudinally and transversely by saw cutting prior to works.

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Series 1100: Kerbs, Footways and Paved Areas

Appendix 11/1: Kerbs, Footways and Paved Areas

General

When instructed by the Contract information, the Contractor shall construct, repair and/or reinstate kerbs, footways and other paved areas in accordance with Series 1100 of Volume 2: Service Information, Part 4: Standard Details.

The carriageway surfacing adjacent to new kerbs, kerb blocks and channels, etc. shall be made good by saw cutting the existing surfacing to a straight square edge, applying a tack coat and surfacing, with surface course material stated in Appendix 7/1.

Kerbs

The kerb details are indicated on the highway detail drawings 0042912-BHE-XX-XX-DR-C-2800, 0042912-BHE-XX-XX-DR-C-2801 and 0042912-BHE-XX-XX-DR-C-2850. All finishes and sizes shall be as per the landscape architects specification.

If kerbs need to be replaced, then kerbs, channels, edgings, quadrants, paving and bedding materials shall be transported, stored and laid in accordance with the manufacturer's instructions, unless detailed otherwise in the contract documents.

Precast units are to be manufactured and tested in accordance with the relevant parts of BS EN 1340:2003.

Mortar infill around chambers etc. in slabs or blocks shall be 50mm wide maximum.

Cut blocks and slabs shall be not less than 150mm wide.

Blocks shall be cut evenly and symmetrically around obstructions to avoid small dimensions.

Footways and Paved Areas

All pavement build-ups and surface finishes in the public highway and footway shall be agreed and approved by the MCC prior to installation and construction.

The reinstatement of public highways shall also be in accordance with the Department of Transport's Code of Practice 3rd Edition (England) 'New Roads and Street Works Act 1991 Specification for the Reinstatement of Openings in Highways' dated April 2010.

At edges or obstructions such as gully or chamber covers and frames, blocks shall be cut to fit. Gaps of less than 50mm at the edges of block or brick paving, including against obstructions within paved areas shall be filled and compacted to the full depth of the paving block with Class 1 mortar to clause 2404.

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Series 1200: Traffic Signs

Appendix 12/1: Traffic Signs: General Traffic Signs: Marker Posts

All road signs and road markings to be in accordance with Traffic Signs Regulations and General Directions 2016.

Temporary Traffic Signs

Temporary traffic signs shall be faced with retroreflective sheeting, meeting the requirements of BS 8442:2006.

Temporary traffic signs shall be White, Yellow or Orange and in accordance with the table above.

The Contractors' proposals for temporary traffic signs shall be discussed with the police and Project Manager before formal submission to the Project Manager for statutory authorisation and approval.

Appendix 12/2: Traffic Signs: Road Markings and Studs

General

The Contractor shall provide and install permanent road markings in accordance with the drawings listed in Appendix 0/4, the 1200 Series Specification Clauses, the Employer's Requirements and this Appendix.

Permanent road marking shall be thermoplastic material complying with the requirement of BS EN 1871. They shall be white unless otherwise stated on the Drawings.

All markings shall be reflectorised with glass beads and shall be in accordance with Clause 1212.4 of SHW.

The markings shall have the road performance in accordance with Clause 1212.5 of SHW for improved visibility in wet conditions at night.

Skid Resistance

The Contractor shall provide and install skid resistance properties for permanent road markings complying with the requirements of Class S3 to BS EN 1436 Table 7.

Temporary Road Markings

The Contractor shall be responsible for the design and implementation of all temporary road markings required for traffic management.

Prefabricated temporary road markings shall only be permitted on the new permanent works where road markings are required, and the permanent road markings cannot be installed in their permanent location. They shall be of a material capable of removal without resultant damage to or defacement of the surface of the carriageway.

When a traffic management system requires the realignment of the road markings and studs (e.g. narrow lanes), the existing road studs are to be removed and the resulting void made good with appropriate surfacing materials. The existing road markings shall be removed or covered with an appropriate material.

Removal of Road Markings

Permanent Removal:

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Where existing road markings are to be permanently obliterated, they shall be completely removed by grit blasting, grinding, scabbling or other approved method. Obliteration of road markings using either bituminous or resinous paint shall not be permitted.

Temporary Removal:

Where existing road markings on bituminous pavements are to be temporarily obliterated for traffic management or any other purpose the markings shall be completely covered by black tape or covering which shall be able to withstand the traffic load upon it for the required period. Upon removal of the black tape or covering the original markings are to be upgraded to the standard apparent before the temporary obliteration. Temporary covering of road markings on concrete pavements shall not be permitted.

Appendix 12/5: Traffic Signs: Traffic Signals

TfGM will undertake works to the traffic signals and the contractor shall co-ordinate works with the TfGM team. The contractor shall undertake all civil works relating to the traffic signals, including ducting, chambers and signal foundation.

All ducting shall be 100mm orange flexible duct to TfGM standards.

The foundation shall be ST4 Concrete Mix 1000x1000x450mm deep, bedded on 75mm Type 1 material to accommodate a NAL pole box (NAL RS1115).

Temporary Traffic Signals

Where required and as agreed with MCC/TfGM the contractor shall provide temporary traffic signals to ensure continuous use of the junction.

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Series 1400: Electrical Work for Road Lighting and Traffic Signs

All electrical works to street lighting and road signage to be designed and installed by MCC PFI Contractor AMEY.

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