

**National Asset Delivery
Technical Surveys and Testing**

**570122 M4 J22-21 Including J22 Eb
Entry Slip EB & WB MP 195.6 – 190.4
RS**

Topographical Survey

Scope

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LIST OF ANNEXES

Appendix 1 **Supplementary Constraints**

FOR INFORMATION ONLY

1 PURPOSE OF THE SERVICES

1.1 Project objectives

- 1.1.1 The principle objective of this project is to carry out a topographic survey of a section of the M4 eastbound carriageway, verge and M4 J22 EB Entry Slip road as shown on drawing HE570122-KIER-HPV-M4_JN_22-21_Z-DE-CH_0100_03.
- 1.1.2 The specification that applies to the *services* is included in Section 6

1.2 Scope of services

1.2.1 The *services* to be provided under this contract are:

- (1) Topographical Survey to be carried out over locations
- (2) PDF and AutoCAD colour-copy factual report.

1.3 Deliverables

1.3.1 The *Consultant* is required to produce the following deliverables:

- (1) Data to be provided in 2D and 3D AutoCAD formats.
- (2) A factual report detailing findings of site and laboratory testing and analysis
- (3) Detailed drawing/map and references (including Marker Posts and OSGRs) to position the actual locations of pavement sampling.

2 EXISTING INFORMATION

- 2.1.1 All relevant existing information including C2 STATS searches can be found within the Pre-Construction Information Pack (PCIP) document. Individual STATS plans provided as part of the handover documents.
- 2.1.2 The Drawings listed below apply to this contract. Refer to the site information for details of existing site conditions including ground conditions, limitation on access, position of existing structures etc. Proposed works requirements are as detailed in Section 6.

Drawing Number	Title	Revision / Date
001	187 – M4 J22-21 Incl J22 Eb Entry Slip EB MP 195.6 – 190.4 RS Defect & Treatment Plan	Rev A
002	187 – M4 J22-21 WB MP 195.6 – 190.4 RS Defect & Treatment Plan	Rev A
HE570122-KIER-HPV-M4_JN_22-21_Z-DE-CH_0100_03	Location Plan – Topographical Survey	C1

3 CONSTRAINTS ON HOW THE CONSULTANT PROVIDES THE SERVICES

3.1 General

- 3.1.1 The *Consultant* Provides the Services in such manner as to minimise the risk of damage or disturbance to or destruction of third party property.
- 3.1.2 The *Consultant* complies with the constraints and meets with the requirements outlined in Appendix 1.
- 3.1.3 The *Consultant* submits information detailing how the *Consultant* will provide the Services to the *Client* prior to the *services* commencing. This information will include any lifting plans, risk assessments, method statements, the *Consultant's* staff training information and any other relevant Health and Safety requirements.

3.2 Working hours & site specific constraints

- 3.2.1 Access to the site for undertaking works will not be possible without the provision of traffic management – This will be provided by the Employer under the Construction Works Frameworks.
- 3.2.2 Due to the requirement for Traffic Management (TM) and specialist access, it is envisaged that works will be restricted to night-time shifts. Temporary Traffic Management (TTM) shall not be implemented prior to the hour of 20:00 hrs nor removed later than 06:00 hrs. Late installation / early removal of Traffic Management or alteration to the length of closure may occur subject to the recorded on-site traffic flow. It is anticipated that in most cases, Traffic Management removal will commence at 04:00 hrs to allow sufficient time for removal.
- 3.2.3 Contractor to remain within the Highways Boundaries for the duration of the works, except where agreed with both the *Employer* and the land owner in advance, as per clause 3.1.3.
- 3.2.4 Traffic Management layout to be confirmed by Construction Works Frameworks Contractor. Layout provided to be in accordance with Traffic Signs Manual (TSM) Chapter 8.
- 3.2.5 Any site and task-specific lighting shall be directed away from dense vegetation and shall be positioned such that it does not cause a hazard to on-coming road users.

3.3 Health, Safety and Environment & Risk Management

Health and Safety requirements

- 3.3.1 In Providing the Services the *Consultant* meets the requirements of Annex 2 of the supplementary constraints relation to health and safety duties.
- 3.3.2 The *Consultant* shall comply with the requirements of Highways England's safety passport scheme and ensure that all of his employees, and any of his subcontractor's, are registered in accordance with the implementation of the scheme. Details on the scheme can be found here:
<http://www.highwaysafetyhub.com/safety-passport.html>
- 3.3.3 For details of the CDM duty holders, refer to the Pre-Construction Information Pack (PCIP), which is issued as part of this package of work.
- 3.3.4 Before commencing the construction phase of the *services*, the *Consultant* confirms to the *Client* that adequate welfare facilities are in place. Where the facilities detailed in section 5 are not deemed adequate, the *Consultant* provides all necessary facilities to Provide the Services and to comply with the minimum requirements set out in HSE guidance document L153.

Environmental requirements

- 3.3.5 In Providing the Services the *Consultant* meets the requirements of Annex 2 of the supplementary constraints in relation to environmental duties.

Risk Management

- 3.3.6 The *Consultant* identifies, manages and mitigates risks in accordance with the principles of ISO31000.
- 3.3.7 The *Consultant* submits a risk register, which captures all risks associated with the delivery of the *services* including those identified by the *Client*, with his tender and maintains it for the contract period.

4 REQUIREMENTS FOR THE PROGRAMME

- 4.1.1 The *Consultant* submits programme to the *Client* with his tender.
- 4.1.2 The *Consultant* Provides the Services taking into account the following programme constraints:
- (i) The *starting date* and *completion date* and any post site works, reporting and review period
 - (ii) The services and other things provided by *Client* (see Section 5)
- 4.1.3 The programme should be in the form of an activity and time related bar chart, produced as a result of a critical path analysis.
- 4.1.4 The programme should preferably be provided in either a PDF or MS Excel format and cover the full contract period including post site activities. Activities should be clearly defined and named, and the programme should detail the following:
- (i) The starting date, completion date & Contractor's planned completion
 - (ii) For each activity, the proposed resources (plant & labour) expected to deliver each activity should be shown on the programme
 - (iii) Review periods for any reporting requirements
 - (iv) Key dates for the Employer to provide 'services and other things'
 - (v) Key dates for co-ordination with Others
 - (vi) Dates and times associated with the project, including the *starting date*, *completion date* & *Contractor's* planned completion, and any other dates or times that will specifically impact the delivery of the project
 - (vii) Activities associated with delivering the project
- 4.1.5 The *Consultant* should provide details of the proposed resources (plant, labour, subcontractors etc.) expected to deliver each activity. This information can either be shown on the programme itself or provided in an associated resource statement included in the Proposal for Providing the Services.
- 4.1.6 The *Consultant* updates the programme every week. The *Consultant* submits an updated programme to the *Client* upon request.

5 SERVICES AND OTHER THINGS PROVIDED BY THE *CLIENT*

5.1.1 The following temporary traffic management will be provided by the *Client* to allow the *Consultant* to Provide the Works:

(1) It is assumed, based on site constraints/traffic flow data that off-peak lane closures will be the preferred traffic management for these works. It shall be assumed that this will consist of:

- M4 J22 Eb Entry Slip Road Closure
- M4 EB Lane 1 Closure
- M4 EB Lane 2 Closure
- M4 WB Lane 1 Closure
- M4 WB Lane 2 Closure

These closures will be undertaken separately to ensure the carriageway remains open with one lane running.

5.1.2 The other things that will be provided by the *Client* are as follows:

(1) Welfare Facilities (to be provided by the Principal Contractor).

6 SPECIFICATION FOR THE SERVICES

- 6.1.1 The *Consultant* shall Provide the Services in accordance with: Design Manual for Roads and Bridges, Volume 5 Contract Documents for Specialist Activities, Section 1 Geodetic Surveys, Part 2 Specification for Geodetic Surveying Services.
- 6.1.2 Topographical Survey to be carried out to National Grid reference and levels.
- 6.1.3 Permanent control stations shall be established on site, these shall be clearly marked, on both the ground and the completed drawings. These control stations shall be properly installed, x, y and z coordinates recorded and in a position such that they may be used to control future works. Topographical Survey to include: -
- Profile of embankments, cuttings, culverts, drainage ditches, river channels etc.
 - Highway furniture – type, dimensions, offset (e.g. marker posts, steps, guardrails, cabinets etc).
 - Lighting columns (offset from kerb edge to front face of the column to be recorded).
 - Structures including bridges, subways, gantries, retaining walls and parapets.
 - Soffit level of overbridges to be recorded at traffic side of verge piers, above rear of hard strip, above hard strip/lane 1 marking, traffic side of central reserve piers.
 - Depth of drainage chambers (pipe diameter and invert levels of all incoming and outgoing pipes).
 - Distance to verge piers from back of hard shoulder.
 - Trees, tree canopies, and areas of vegetation.
 - Signs, including post positions, sizes and diameters, sign face dimensions, height of bottom of sign face from ground level and note if illuminated.
 - Ironwork details to be recorded e.g. manhole covers (all corners), gullies (including type i.e. kerb inlet or carriageway), communications chambers, fire hydrants, stop-valves etc.
 - Depth of non-drainage chambers (ducting diameter and invert levels of all incoming and outgoing ducting).

- Kerb channel level and top of kerb level to be recorded at 10m intervals.
- Carriageway edges i.e. edge of surfacing to be recorded at 10m intervals.
- Carriageway road markings to be recorded at 10m intervals as follows:
 - i) Rib line marking between hard strip/lane 1 – record traffic side of line.
 - ii) Double white lines marking between the eastbound and westbound lanes – record centre of lines.
- Carriageway levels to be recorded longitudinally at 10m centres along carriageway markings (+/- 2mm).
- Carriageway edge levels to be recorded longitudinally at 10m centres along back of hard strip (+/- 2mm).
- Type, level and location (front and back) of any carriageway drainage feature at 10m intervals (levels +/- 2mm), e.g. drainage channel.
- Toe of cutting slope levels to be recorded longitudinally at 10m centres along the back of verge (+/- 2mm).
- Top of cutting slope levels to be recorded longitudinally at 10m centres (+/- 2mm).
- Cutting slope intermediate levels to be recorded longitudinally at 5m centres (+/- 2mm).
- Cut off ditch (located at top of cutting slope), ground and invert levels to be recorded longitudinally at 10m centres (+/- 2mm).
- Traffic face of safety barrier in verge and central reserve to be recorded.
- Level of top of safety barriers to be recorded.
- Ground level adjacent to front of safety barrier to be recorded.
- Type of barrier to be recorded, i.e. steel OBB/TCB or concrete.
- Location and level of overhead cables.
- Location of cross carriageway ducts for street lighting (e.g. marker blocks, pegs).
- Location and colour of pegs identifying buried motorway communications infrastructure, if present, to be recorded.

- Unless otherwise specified, symbols and annotation in topographic survey drawings shall be suitable for presentation at 1:500 scale.
- Where the objects surveyed extend up or down from ground level, separate layers shall be provided for the ground level lines and the other vertical extent. For example, the tops of walls, fences, ditches shall be in separate layers from their bases.
- Features at ground level shall not cross except at a common point.
- Features at ground level shall not be continuous across bridge decks. They shall stop and restart at the ends of the deck.
- Features that represent closed boundaries shall be geometrically closed.
- Property information relating to point assets (spot levels, references etc) shall be provided as linked attributes, not as unrelated text. Within AutoCAD the association shall be achieved through attributed blocks and within MicroStation through tags.
- ADMM codes to be used for Survey Asset Coding.

6.1.4 Output Specification:

- Output data to be in accordance with GG 184 (Specification for the use of Computer Aided Design).
- Layer naming convention to be added to survey drawings.
- Note/hatching to be added to drawings detailing any problematic areas identified during survey e.g. areas where access was difficult to obtain.
- Control Station coordinates list in suitable format (e.g. Word).
- Photographs to be in colour, in JPEG format as .JPG files, at a good and clear resolution.

6.1.5 The *Contractor* must provide the *works* under a quality management system, which is:

- (1) Certified to ISO 9001.
- (2) Incorporates an environmental management system, which works to the principles of ISO 14001.
- (3) Includes requirements for adopting the principles of BS 11000.
- (4) Complies with good industry practice and encourages innovation during the contract duration.
- (5) PDF colour-copy factual report required within two weeks of agreed completion on site to detail the above results.

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